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PLENARY LECTURES

Current State Of The Application Of The ICF In Physical Medicine And Rehabilitation

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Rehabilitation medicine can be defined as the medicine of human functioning. Therefore, the international classification of functioning, disability and health (ICF) as approved by WHO in 2001 is of utmost importance for our specialty. The ICF is the basis for the conceptualisation of the rehabilitation strategy completing the curative, preventive and supportive health strategies. The ICF and the ICF-based conceptualisation of the rehabilitation strategy are again the basis for the conceptualisation of our specialty, the organisation of human functioning and rehabilitation research in distinct scientific fields and the development of research capacity with respect to academic training programs, interdisciplinary university centres and national/international collaboration networks. Next to these conceptual developments, there is now a wide range of activities throughout the world of rehabilitation in the development of practice tools and applications of the ICF including the development of ICF Core Sets.

Rehabilitation medicine can be defined as the medicine of human functioning. Therefore, the international classification of functioning, disability and health (ICF) as approved by WHO in 2001 is of utmost importance for our specialty [1]. The ICF is the basis for the conceptualisation of the rehabilitation strategy completing the curative, preventive and supportive health strategies. The ICF and the ICF-based conceptualisation of the rehabilitation strategy are again the basis for the conceptualisation of our specialty, the organisation of human functioning and rehabilitation research in distinct scientific fields and the development of research capacity with respect to academic training programs, interdisciplinary university centres and national/international collaboration networks. The conceptualisation, organisation and development of human functioning in rehabilitation based on the ICF are discussed in a special issue of the Journal of Rehabilitation Medicine [2]. All articles are open access [<http://jrm.medicaljournals.se/issue/39/4>]. Clinicians and researchers worldwide are now encouraged to write to the editor of the Journal of Rehabilitation Medicine to express their views on the published concepts and ideas.

Next to these conceptual developments, there is now a wide range of activities throughout the world of rehabilitation in the development of practice tools and applications of the ICF. First of all, the ICF can serve as reference for the comparison, selection and further development of existing measures of human functioning. The mapping of the world of measures can now rely on established linkage rules [3]. The development of minimal standards for the assessment and reporting of functioning based on the ICF as a reference has made progress over the last years in cooperation between ISPRM, the ICF Research Branch WHO CC FIC (DIMDI), Germany, and WHO. The Brief ICF Core Sets are the standards for reporting and planning of studies as well as for clinical encounters. The Comprehensive ICF Core Sets are the standards for multi-disciplinary assessments for example in the context of rehabilitation medicine. ICF Core Sets have now been developed to cover functioning for the acute hospital and early post-acute rehabilitation facilities [4] and for an increasing number of chronic conditions [5]. In

addition to the ICF Core Sets published in 2 supplements, there are currently a number of ICF Core Sets under development for spinal cord injury [6] and a number of other health conditions including ankylosing spondylitis, psoriasis and psoriasis arthritis, multiple sclerosis, bipolar disorders, upper airway cancer, headache, vision and manual medicine in cooperation with partner association specialised in these conditions. The first versions of the ICF Core Sets for chronic conditions relevant for the community context have undergone extensive international testing and validation in 51 countries in more than 300 centers. These data will serve as basis for the identification of categories relevant for a Generic ICF Core Set. Another most important development in relation to the ICF in clinical practice and research is the operationalization of the ICF qualifiers as a means to directly apply the ICF in practice and research. Under the leadership of a newly formed functioning and disability reference group of the WHO FIC network, a task force is therefore coordinating the further development of coding rules and specific measurements in relation to one ICF or more ICF categories. This reference group chaired by Ros Madden (Australia) and Gerold Stucki (Germany) is also advising WHO about the upcoming update of the ICF, the development of electronic tools, educational materials and the operationalization of environmental factors. In cooperation with WHO the Munich team at the ICF Research Branch is also embarking in the development of ICF Core Sets for children and the developing of a personal factor approach for the classification in the context of the ICF.

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Mhadie Project Experience In Using Icf'S Capacity And Performance Qualifiers: Distinct Dimensions To Capture The Role Of Environmental Factors.

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Introduction:

One of the aims of EU-MHADIE project (Measuring Health and Disability in Europe: supporting policy development) was to prove the utility and feasibility of ICF model in clinical setting. According to ICF, disability is the outcome of the interaction between a person's health condition and his/her environmental factors activity limitations and participation restrictions are the dimensions affected by such complex interaction. In order to evaluate them, two indicators have been developed in ICF: performance (i.e. what a person actually does in a given environment) and capacity (i.e. what a person could do without any help or hindrance from the environment). Here we show how these dimension are distinct and relevant in the measurement of health and disability.

Methods:

1194 patients with 13 chronic diseases were enrolled by MHADIE researchers and interviewed using ICF tools (checklist, core-sets and WHO-DAS II), quality of life instruments and specific assessments. This paper reports the results of the use of ICF checklist, a selection of 128 ICF categories, whose structure is identical to the ICF, and includes 32 categories from body functions components (28% of all ICF body-function codes), 16 (29%) from body structures, 48 (41%) from activities and participation, and 32 (43%) from environmental factors. Each ICF category was considered in terms of its relevance and applicability to each single patient and, if so, available information on the extent of the problem was evaluated and qualifiers 0-4 (from no problem to complete problem) were applied if no adequate information on the extent of an actual problem was available, qualifier 8 (not specified) was used. If an ICF category was considered as not applicable to the patient, qualifier 9 (not applicable) was used for such item.

Performance and capacity data were analysed with a descriptive methodology, and a count-based method was applied to ICF chapters in A&P, to evaluate the most limited areas of functioning. By means of count-based analysis, two indexes were developed: extension, defined by the number of categories rated with qualifiers 1-4 severity, defined by the number of categories rated with qualifiers 3-4. To facilitate comparison among different domains, these indexes were then transformed on a 0-100 scale, with lower scores meaning lower problems, according to the following procedure: $(\text{value}/\text{max}) \times 100$. For instance, if a patient in the domain D5-Self care, reported 2 categories (out of 5) rated appropriately, his/her index was $2/5 \times 100 = 40$.

Results:

The clinical sample is composed of 1194 patients, with the following diseases: 598 patients with neurological diseases (50.1% of the total sample), 100 patients with cardiovascular disease (8.4%), 199 patients with psychiatric disorders (16.6%), 296 patient with musculoskeletal disorders (24.9%). Mean age is 52.72 ± 15.57 years (range 18-90), female are

669 (56.3%). Educational level is wellbalanced: 24.8% of the sample has low educational level (no formal schooling, less than primary school, primary school completed), 48.7% completed the secondary or the high school, 26.5% has high educational level (college/University and postgraduate degree completed). Employed patients are 42.3%, while unemployed, both for health and age reasons, are 57.7 %. The majority of the patients are married or cohabiting (62.4%), the remaining never got married (19.9%), were separated/divorced (9.7%) or widowed (8%). In three A&P domains (D4-Mobility, D5-Self-care, D6-Domestic life) all ICF checklist categories were rated with appropriate qualifiers. Performance is reduced in comparison with capacity: at extension index, capacity mean value is 22.4 and performance is 18.4 (a reduction of 17.9%) at severity index capacity mean value is 6.9 and performance is 5.0 (a reduction of 27.5%). The domains in which a larger decrease was observed are D3-Communication (extension of capacity 14.6, extension of performance 2.8, i.e. a reduction of 80.8%), D5-Self-care (extension of capacity 31.0, extension of performance 16.4, i.e. a reduction of 47.1%) and D6-Domestic life (extension of capacity 38.3, extension of performance 30.3, i.e. a reduction of 20.9%).

Discussion and Conclusion:

The EU-MHADIE project data show that capacity and performance are two distinct dimensions: as a matter of fact a remarkable decrease was observed in these dimensions, both in extension and severity, as a consequence of the positive influence of environmental factors. This count-based method is useful for synthesizing ICF information, especially in A&P domains, and gaining prompt understanding of improvements, both in symptoms and functional limitations, as well as allowing researchers to suit the level of precision to their needs, i.e. specific or more general. In addition, this method allows comparison of functional information between different health conditions, centres, countries or at different timepoints.

Robotics In Rehabilitation

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Magnetic resonance imaging (MRI) is a standard tool in clinical diagnostic and in the research of a human body. Over the past few years a functional magnetic resonance imaging (fMRI) has proved indispensable in a human brain research.

Clinical studies have investigated human brain activation during voluntarily arm movements. However a controlled arm movement task could provide new insights on a human motor control. To perform such a task a magnetic resonance (MR) compatible haptic interface is needed. A device used inside MR environment demand high level of safety and electromagnetic compatibility.

There are three major difficulties imposing limits on the use of a electromechanical device inside MR scanner. High magnetic flux density which in modern MR scanners exceeds 1 T makes the use of a ferromagnetic materials impossible. High level of a radio frequency electromagnetic field and the sensitivity of the scanner receiver coils limits the use of electronic circuits. There is also limited space within the scanner bore. A typical diameter of a scanner bore is sixty centimeters. These limitations makes a design of a MR compatible device a challenging task.

The research in the human motor control lead to the need of a tool capable to dynamically control arm movements inside MR scanner. A few such devices have been developed recently. A hand rehabilitation MR compatible devices are introduced in [1], [2]. More sophisticated haptic devices are described in [3], [4]. A two degree of freedom (DOF) haptic device presented in [3] uses hydraulic actuators to generate force. Ultrasonic motors are used to power two DOF haptic device presented in [4]. However best to our knowledge no three DOF haptic interface was ever introduced to MR environment. To imitate reality as much as possible while a fMRI research in progress a three dimensional virtual environment is needed. This has motivated us to modify the Phantom Premium 1.5 haptic device to work inside a MR examination room. A mechanical carbon fibre extension with a three DOF joint has been developed and coupled with the Phantom haptic device.

This ensures the Phantom haptic device to work in a safe distance outside the high magnetic field of the MR scanner. A virtual environment which controls haptic and visual feedback has been programmed. This enables us to investigate a human subject brain activation during the execution of different virtual environment tasks. Experiments were carried out on a Siemens Trio 3 T fMRI scanner.

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Mild TBI: What It Really Is And How To Really Treat It

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GENERAL OBJECTIVE:

This presentation will provide attendees with an overview of the incidence, etiology, pathophysiology, diagnosis, differential diagnosis and management of post-concussive disorders (PCD). The clinical distinction between impairments resulting from brain trauma, cranial/cranial adnexal trauma and cervical acceleration/deceleration injury (whiplash) will be emphasized. Neuromedical and rehabilitative treatment and prognosis will be discussed from a neuropsychiatric standpoint. Issues relating to organicity assessment will also be explored.

SPECIFIC OBJECTIVES:

- a) define the incidence, mechanisms and pathophysiology associated with mild traumatic brain injury/concussion
- b) differentiate etiologies of post-concussive symptoms related to cerebral vs. cranial concussion vs. cervical whiplash injury
- c) examine diagnostic and treatment options for post-concussive type symptoms and PCD
- d) discuss the rehabilitative approach to this patient population as well as the general long term functional prognosis
- e) examine the key assessment strategies used in differentiating organic from non-organic conditions such as malingering and somatoform disorders that may present as PCD

Geriatric Rehabilitation: Sarcopenia And Exercise

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By the year 2025, the number of people above age 60 in the world will exceed one billion. The main challenge associated with advanced adult age is the dramatic decline in functional capacity and the associated loss of independence. Since maximal physiological capacities are greatly diminished with aging, the ability to perform physical tasks at the same level of energy expenditure or muscular force becomes limited. One important contributor to the functional loss leading to impairment, limited physical activity, and reduced participation is the decline in skeletal muscle mass (sarcopenia) and strength. Strengthening exercise has been shown to be the only intervention that is safe and effective in reversing, at least partially, these changes in older adults.

Skeletal muscle in the elderly Cross-sectional studies of muscle strength and mass have shown significant reductions in isokinetic strength of the elbow and knee extensors and flexors in the range of 15.5 to 26.7%. Longitudinal studies show even more significant losses. An example of the variability of the aging process is the observation that depending on the muscle group and sex, between 7 and 32% of the subjects showed gains in muscle strength over 10 years. A reduction in muscle size explains, at least partially, the muscle weakness commonly seen in elderly. The relative contribution of muscle atrophy, however, is not clear and macroscopic changes in thigh cross-sectional area may reflect not only muscle atrophy, but also an increase in the amount of non-contractile tissues (i.e. fat and connective tissue). In addition to muscle wasting, a change in muscle fiber quality could also contribute to muscle weakness in the elderly.

We have reported an age-related reduction in the specific force of single muscle fibers expressing type I and IIa myosin heavy chain isoforms in older men. One possible site for the alteration resulting in contractile dysfunction is the cross-bridge and more specifically the myosin protein. At least three molecular/cellular mechanisms may contribute to a qualitative alteration in the myosin motor: 1) a reduction in gene transcription 2) a slow protein turnover rate resulting in accumulation of dysfunctional myosin molecules and/or 3) post-translational modifications of the myosin protein such as glycosylation or oxidation. Alone or in combination, these changes could alter the properties of the molecule resulting in a reduction in the force generated per cross-bridge.

Strength training in the elderly Since 1988, many studies have demonstrated that strengthening exercises result in significant improvements in skeletal muscle function and structure as well as in the performance of functional tasks. The type of training device has included free weights, pulleys, and isokinetic and variable resistance devices. Most studies have used 5-15 repetitions per set and 2 to 6 sets per training session for each muscle group. The weekly frequency of training has ranged between 2 and 5 days and the intensity of the training has varied from 40 to 90% of the one RM. Short (2 weeks) and long duration studies (1-2 years) have been reported although most studies are in the 12-24 week range. Static and dynamic muscle strength has been shown to increase significantly with strength training even in the frail elderly. The relative magnitude of the strength gains ranges between 10 and 180%. The adaptations in strength are noticeable after a few days of training and are more significant when the testing technique is similar to the training method suggesting the presence of neural adaptations. Although the nature of the neural adaptations remains vague

there is significant indirect evidence (angle specificity, velocity specificity, cross-over effect) supporting this hypothesis.

The majority of studies have reported significant skeletal muscle hypertrophy (range: 2.0-14.5%) due to an increase in the synthesis of contractile proteins. Increases of up to 30% have been noted in cross-sectional area of both type I and type II fibers. At the cellular and ultrastructural levels, significant increases in maximal force and cross-sectional area of type I and IIa single muscle fibers after 12 weeks of progressive resistance training have been reported.

From a rehabilitation perspective an enhanced functional capacity (walking speed and stair climbing power) has been noted. If the age-associated decline in muscle strength is partially reversed, it may be possible for the elderly to maintain physical independence and perform, once again with sub-maximal efforts, many of the activities of daily living.

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Muscle Pain Syndrome: Evaluation And Treatment

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This presentation will discuss specifically two muscle pain syndromes, Fibromyalgia and Myofascial Pain Syndrome. These syndromes will be compared and contrasted based on a review of the current literature and my experience in treating both syndromes.

The incidence, etiology, and pathophysiology will be presented. Special emphasis will be on the criteria developed to define each syndrome for diagnosis purposes. The clinical laboratory evaluation appropriate to diagnosis these syndromes will be presented. Finally, concepts of treatment as well as specific treatment such as trigger point blocks, spray and stretch technique, appropriate pharmaceuticals and finally therapy and psychosocial intervention will be presented.

In summary, the presentation outcomes in relation to pain management and functional improvement will be addressed.

INVITED LECTURES

Structuring Rehabilitation Project And Program Through The Icf-Cy Conceptual Framework In A Neuropediatric Rehabilitation Hospital

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Background:

The international classification of functioning, in its new adaptation for children and youth (ICF-CY), provides a conceptual framework and a unified language to describe human functioning in the developing age. The (re)habilitation work, especially when dealing with children with complex disabilities, is characterized by globality of functional goal setting, multiprofessional coordination, coherent view in terms of objectives, methods, time, and target verification. ICF-CY may serve both as the structure and as the current language to knit together all these elements. **Methods:** In a referral rehabilitation hospital for children an ad-hoc work group elaborated a model in which ICF-CY structure, coding and wording constituted the framework for the rehabilitation project and program.

The model included a direct reference to the assessment tools used by the various professionals for evaluation and verification of results. The model was tested for 6 months on 13 complex cases of children admitted for complex rehabilitation programs.

Results:

The model was used by all professionals involved in the various projects. The evaluation at the end of the testing period showed a good acceptance of the new format, with greater appreciation of the link between needs, objectives and interventions. There was low compliance with the declared timing of verification, and request for more time needed to complete the form.

The main positive aspects were increased multiprofessional interaction, stronger attention to adherence to set objectives, improved concordance with family members.

Conclusion:

ICF-CY may be used to inform the (re)-habilitation project and program in a hospital setting. The positive consequences need to be weighted against the perceived increase in complexity and the increase in workload.

Use Of Individual Icf Items In The Context Of Early Rehabilitation To Measure Functional Deficits And Rehabilitation Potential

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Background: The WHO International Classification of Functioning, Disability and Health (ICF) framework offers a globally acknowledged basis for the description of health conditions and functional health. Early rehabilitation means the simultaneous acute medical curative care and rehabilitative treatment of patients with an acute health disorder in the acute hospital. The goal is to avoid lasting impairment of body functions and structures and of activities and participation.

Question: Is a random sample of ICF Items out of the Core Set for musculo-skeletal conditions suitable for the description of functional deficits in the field of mobility and ADL and usable as outcome parameters in the clinical routine of early rehabilitation of patients with musculo-skeletal conditions?

Patients and Methods: Within the framework of a prospective, multi-centred, open cohort study, early rehabilitation in-patients in the AKH Vienna were surveyed at two points in time (admission and discharge) in order to evaluate the validity and sensitivity of ICF Core Sets. Patient collective: 29 patients with a musculo-skeletal condition as admission diagnosis 11 women and 18 men average age 57 years (min. 24 years , max. 87 years). Average hospital stay 9.3 days (min. 3 d, max. 53 d). The selected ICF items were d410 (changing basic body position), d420 (transferring oneself), d415 (maintaining a body position), d450 (walking), d510 (washing oneself), d530 (toileting) and d520 (caring for body parts). Result: In the case of three of the selected items there was a significant improvement by time of discharge: for d530 ($p=0.001134$ 17 out of 29 patients indicated there was no longer any impairment at time of discharge) for d410 ($p=0.00001307$ 19 out of 29 patients showed no impairment at time of discharge) and for d420 ($p=0.000007744$ 20 out of 29 patients described no impairment at time of discharge). A positive tendency could be observed for the remaining categories.

Conclusion:

The use of the above-named ICF items to measure basic functional deficits in mobility and ADL appears useful in the context of the clinical daily routine. A controlled study, which would also examine the possibilities for the measurement of rehabilitation potential, is planned.

Measuring Participation

A. Oral

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Participation, which can be viewed as the latest term for community integration, is a rather new concept in rehabilitation medicine. For many years, community integration/participation has not been considered sufficiently in disability/health models.

Now, the concept of community integration is highly reflected in the International Classification of Functioning, Disability and Health (ICF). The ICF takes into account the social aspects of disability and provides a mechanism to document the impact of the social and physical environment on a person's functioning.* 'Community integration' is not part of the terminology used in the ICF for documenting functioning in society. Instead, 'participation' in the 'Activities and Participation' component covers aspects of functioning from a societal perspective.

Participation is defined as 'involvement in a life situation' in the ICF, indicating the social and physical inclusion of people in community life. Although rehabilitation research has focused primarily on the assessment of function or activity, much less effort has been directed toward assessing participation. Measuring the effectiveness of rehabilitation interventions is essential to good practice as well as for the provision of evidence-based practice.

Since 'participation' is the key goal of rehabilitation, much more attention should be paid to documenting participation. The ICF provides a framework to guide the development of rehabilitation outcomes instruments, including those measuring participation.

New measures covering the conceptualization of participation as reflected by the ICF have the potential of being widely and universally used as a common language.

*World Health Organization. International Classification of Functioning, Disability and Health (ICF). Geneva:World Health Organization, 2001.

Definition And Description Of The Field Of Competence Of Physical And Rehabilitation Medicine

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The field of competence is an umbrella term for expertise, skills and aptitudes of PRM specialists as well as the way of cooperation and interaction with other specialties and health professionals. Besides short definitions of the field, a conceptional description and a White Book on the role of PRM specialists in rehabilitation and their skills and aptitudes have been published recently.

PRM-specialists have a wide range of skills and aptitudes including diagnostic methods, team working skills and have to know about a wide range of interventions, including medication, physical therapy and social measures. Additionally PRM-specialists have skills to set-up a medical diagnosis, to perform functional assessments, to set-up a rehabilitation plan, and to coordinate team work. Professional practice of Physical and Rehabilitation medicine include different settings from the acute hospital to community based rehabilitation.

The Professional Practice Committee of the UEMS-PRM-section defined an action plan to develop the given definitions and descriptions and to specify the field of competence of the PRM in different clinical settings and rehabilitation programs for special groups of patients. Examples for this are the role of PRM in acute rehab units (ARU) and peripatetic acute rehab teams (ART), the role of PRM in rehabilitation teamwork, the cooperation with other medical specialties, the role of PRM in community based rehabilitation and others.

Trends And Controversies In The Rehabilitation Programs After Spinal Cord Olfactory Mucosa Autographs Transplants

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Olfactory Mucosa Autographs Transplants (OMA) is a new challenge to Spinal Cord Injured Patients attending to the accessible source of stem-like/progenitor and olfactory ensheathing cells for neural repair, feasibility, safety, spinal cord autograph fulfilling and clinical results. Efficacy is quite dependent on the surgical proceedings in a dynamic dialectic with comprehensive rehabilitation.

Pre-surgery rehabilitation is obliged to achieve a cardiorespiratory and neurologic steady state and to identify later new gains. Diagnosis procedures before and after transplantation are needed to scientifically objectify new gains, firstly in imagiologic and after in functional exams. Objective and subjective scales evaluation are important. Progression in spinal cord fulfilling and in imagiologic data, in the first months, can not be always associated with objective gains (in neurologic, muscular or functional scales) yet to autonomic, cardiorespiratory and effort reconditioning achievements with transitory neurologic pain and increased spasticity or possible disautonomic events in tetraplegics.

Rehabilitation has to regard a previous steady state physiological evolutionary stages in a particular organic system and its relationship with other organic systems episodic disconnection between diagnosis exams and clinical objective gains specific times to set up new goals and techniques necessity of several objective and subjective scales to evaluate patients. Results as progressive lesion site filling in Medullar MRI, activations in Cerebral Functional MIR, sensitive and muscle voluntary activity in neurophysiologic tests, cardiorespiratory-autonomic function improvements, positive sphincters EMG, urodynamics and bowel functional exams evolution have to be related to clinical achievements as early cardiorespiratory improvements, muscular mass and voluntary activity increase, sensibility gains, postural control, spasticity, pain, gait (with orthotics or in weight-bearing systems) and ASIA Scores.

Retrospective OMA Patients Results Safety and Efficacy Issues are presented and allow to relate the best outcomes from different post-operative rehabilitation programs. Controversies in OMA Rehabilitation concerns specially: -what is to achieve and at what time is expected that achievement -which are the first and later goals and how can those goals develop -which is the instant to initiate and the length of time to increase the different rehabilitation stages -the importance and the method to improve autonomic responses and later the recovery in autonomous dependent organic systems -the relationship between new episodes of pain and increased spasticity and posterior functional gains -the more physiological way of muscle recovery attending to the functional goals -patterns of training and functional recovery in hand, trunk control and gait training.

Predicted Factors To Falls And Fractures In Spinal Cord Injury

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Spinal Cord Injury (SCI) is one of the most complex and disorganizing pathologies, owing to spinal cord disconnection and its consequent pathophysiological mechanisms, with motor, sensitive, disautonomic, neuroendocrinous and metabolic systemic disturbances as with their functional limitations.

Fall predisposition after SCI with its side effects, as fracture occurrence, are well-known potential SCI complications, but in clinical practice is often depreciated compared to other complications as: autonomic dysreflexia, neurogenic bladder and bowel, spasticity, pressure ulcers, ventilatory deficits, cardiovascular metabolic syndrome, motor and coordination deficits, muscle atrophy, equilibrium disturbances, loss of mechanical tension in bone, orthostatic limitation, mobility dysfunction, neurovascular disturbances, cardiovascular and respiratory disautonomy, sympathetic dysfunction, parasympathetic hyperreflexia, body mass composition disturbances, collagen structural changes, hypothalamus-hypophysis-target organs disturbances and metabolic syndromes (as hypothyroidism, hypo or hyperparathyroidism, insulin cellular resistance, hyperinsulinism and dyslipidemia), leptin and osteoprotegerin serum levels dysregulation, nutritional deficits and endogenous anabolic hormonal disturbance.

The use of technical aids, body height, femur length, locomotion pattern, familiar or personal history of previous fractures, ambient factors or daily activities performances are quite important as predispositional fall and fracture factors.

Many of these potential and frequent SCI complications (and their associated factors) are necessary and sufficient causes for the occurrence of falls and fractures. SCI presents itself as a bivalent pathology as it predisposes to fall and, simultaneously owing to its pathophysiological specificities, to serious consequences after it, like fractures occurrence.

These predispositional factors are also related or not to a complete or an incomplete SCI, lesion level, gender, previous pathologies to SCI, disuse, exercise, ambient conditions, functional autonomy and “neurogenic osteoporosis”.

The metabolic and biomechanical mechanisms of this early “neurogenic osteoporosis” seem to be important in the understanding and control of the dialectics between SCI, falls and fractures.

The particular physiopathology of SCI, the relationship between organic and ambient factors for fall and fracture predisposition, the existence of an important “neurogenic osteoporosis” can not be depreciated attending to morbidity and mortality of some of the prevalent SCI fractures.

Medical examination and diagnosis procedures are obliged to set up premature physiatrist strategies, using technical, pharmacological and nutritional therapeutics, attending to the exigency of a better comprehensive medical approach.

Evaluation Of People With Gait Abnormalities In Physical And Rehabilitation Medicine Settings

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The first step of the evaluation of people with gait abnormalities in physical and rehabilitation medicine settings is the clinical examination based on the International Classification of Functioning, Disabilities and Health.

Body structure, activities and participation, and environmental factors (materials and humans) must be assessed. Qualitative and quantified assessments of gait are part of activities and participation evaluation. Scales are used to assess gait activities.

The tools for gait assessment can be used in a laboratory environment for kinematic, kinetic, electromyography and energy consumption analysis and other tools like videotape, walkway can be used in clinical practice or tools for ambulatory assessment to analyse activities in real life.

The aims of instrumental gait assessment are: to obtain quantified gait parameters, to evaluate therapeutics, to follow the course of the disease.

Management Of Early Retirement By Improvement Of Wellbeing At Work And By Vocational Rehabilitation In Disability

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Europe is facing major challenges due to globalization and demographic change. In Finland mid-1990s saw the emergency of concern over rising pension costs and the availability and adequacy of labour supply as the baby-boom generation began to approach retirement age. There appeared at the same time to be an ominous increase in the uptake of early retirement. New legislation and different kind of national programmes were started to strengthen the status of especially aging persons in the labour market as well as to improve their possibilities of staying at work and help them to get employed. State sector as the biggest employer covering about 6 % of all Finnish employees started with early rehabilitation measurements already in 1980s, followed in 1990s by workplace health promotion programmes (TYKY and KAIKU) and strengthening of vocational rehabilitation in disability in 1990s. The concrete objectives of the process were well-being at work as part of management and day-to-day work, the ageing involved in working life and activation of vocational rehabilitation in threat of losing working ability due to disability.

The changes taking place in the operating methods of workplace communities and attitudes of individual workers were shown by new operating models and workplace practices and general positive attitude. Changes were shown also by indicators as increasing expected effective age for retirement, increasing percentage of all employees who work until the statutory retirement age and decrease in cases of disability pensions.

Organizations are shown to have a great influence on employees health status and well being. Important health promoting factors were good control of work, good quality of leadership and good organizational climate. Early beginning of vocational rehabilitation, especially work try-out was effective when integrated to other promoting factors at work, especially high psychological job demands and high decision latitude.

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Rehabilitation After Musculoskeletal Trauma

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Since my work consists mainly of musculoskeletal ultrasound, I would like to illustrate how ultrasound gives (new) insights in pathology and thus influences our decision making in treatment. - For tendon pathology after repetitive trauma, the term 'tendinosis' has replaced 'tendonitis'.

The use of colour Doppler has revealed the presence of neovessels. Stretching and excentric exercises are perhaps beneficent because of their effect on these vessels. Ultrasound-guided infiltration of steroids or sclerosing agents and even dry needling of the vessels have been proposed. In our department the presence of calcifications is an argument to choose for shockwave therapy in chronic complaints.

Ultrasound-guided PRP (platelet rich plasma) therapy is another option for the cases resistant to conservative treatment. - For acute muscle trauma, ultrasound helps us to differentiate between strain and rupture from the first or second day. In case of large hematoma, ultrasound-guided puncture can be an option. Since the ultrasound technique is safe and non-invasive, it allows frequent follow-up of healing during the rehabilitation period. Here also, ultrasound-guided PRP therapy is an option for large ruptures and cases resistant to classical treatment.

The localisation of the lesion within the muscle helps us to detect the patients at risk for myositis ossificans. Ultrasound is also the most sensitive exam to detect it in an early phase. It thus determines if we start medication and alter the exercise program. - New machines with better, high frequency probes allow us to evaluate strain injuries. Evaluation of medial collateral ligament of the knee, but also of collateral ligaments of the ankle and the thumb for example is possible.

Ultrasound can thus help in decision making about surgery, immobilisation and rehabilitation.

Sport For Disabled

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Introduction: In spite using exercises and hydrotherapy since ancient times and some individuals practising different sports in the past, the great development of sport for disabled started after the first and the second world wars. Today elite disabled athletes trained equally as able ones.

Significance and aims of sport for disabled Sport can be already part of the complex rehabilitation programmes. During rehabilitation we can use sport to improve functioning of a person and to convince him that he can still be active and perform different recreational activities after discharge. Recreational activities have same physiological, psychological and social beneficial effects for all.

Sports for disabled Disabled persons can participate in sports for able body persons but they may need additional equipment or adaptations. Not all sports are appropriate for all. The American Academy of Orthopaedic Surgeons has developed a 'participation possibility chart' which includes some of the major physical disabilities and major sporting activities (Adams 1991). Sport may be recommended for certain disability, appropriate for some but not appropriate for other with the same disability, adapted when almost all need adaptations of equipment or rules or not recommended at all.

There are also sports developed specially for people with certain disability, for example goalball for blind.

Sport competitions and classification In the past some sportsmen competed at competitions for able bodied. And some have been very successful (world record, Olympic champion), but most were not competitive. That is why in 1984 the Stoke Mandeville Games for the paralysed were founded (Guttmann1976). In 1960 they transformed into Paralympic games. This year on Paralympic games in Beijing, China disabled sportsmen will compete in 20 different sports: archery, athletics, boccia, cycling, equestrian, football 5-a-side, football 7-a-side, goalball, judo, power lifting, rowing, sailing, shooting, swimming, table tennis, sitting volleyball, wheelchair basketball, wheelchair fencing, wheelchair rugby and wheelchair tennis.

Due to different functional abilities of subjects with same kind of disability athletes are divided - classified into several groups with similar functional abilities. Today in several sports they try to combine together also athletes with different disabilities but same functional abilities.

Medicine and sport for disabled Medical doctor working with disabled athletes have to have a good knowledge about disabilities, their peculiarities, classification, sports and sport medicine. Exercise stress testing, prevention, therapy and rehabilitation of sport injuries, nutrition and nutritional supplements became crucial part of sport for disabled. Conclusion People with disabilities may perform sport for recreation or on a competition level. Both have positive effect, whereas competition sport may also have some negative effects. Medical doctors working with these people have to be aware of all these effect and try to prevent negative ones.

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Physical & Rehabilitation Medicine In Sports Injuries.

N. Christodoulou¹

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Physical & Rehabilitation Medicine specialists can offer their services as soon as an injury occurs and continue offering their services even after the athlete's return to competition. The lecture focuses on what is done at the field-side at the time of injury, in the rehabilitation departments and during the athlete's return to the field for training and competition.

To design a rehabilitation plan which would maximize the restorative events, it is important to know the pathophysiology of the tissue-injuries and the three stages of their healing process: the inflammatory stage, the fibroblastic-repair stage, and the maturation-remodelling stage. The basic principles of sports injuries rehabilitation are presented, the stages of a tissue injury and the techniques used in rehabilitation of such problems.

Knowledge of the several physical modalities used during the acute, sub-acute and functional phase of rehabilitation is important as well. Improvement of neuromuscular control, correction of maladaptive behaviours, sport-specific and multi-plane activity, functional retraining, balance & proprioception re-education and athletic psychological approach are essential parts of the whole rehabilitation program.

Examples for mobility exercises, strength exercises and stretching exercises are presented for several muscle groups and the relevant joints.

Rehabilitation Of Muscle Injuries In Sports

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Muscle injuries represent one of the top five types of injuries in sports. Several risk factors have been identified including inadequate training and warm-up, previous injuries followed by inadequate rehabilitation, fatigue, and lack of joint flexibility. The most commonly injured muscles in the human body are the extensor and flexors of the knee, the ankle plantar flexors, and the biceps.

The mechanisms of injury may include direct trauma with contusion, repetitive eccentric muscle actions, stretching of the muscle at rest, and stretching of an active muscle. These injuries are accompanied by clinical symptoms, such as pain of sudden onset and functional loss. Physical signs include swelling, ecchymoses, tumor formation, and palpation defects. Muscle injuries are classified based on the amount of tissue damage into first, second, and third degree injuries. The latter is the most extensive. Treatment and rehabilitation interventions vary according to the degree of injury.

Rehabilitation should begin immediately after the injury, with the use of R (rest), I (ice), C (compression), and E (elevation) therapy. Healing of muscle injuries includes inflammation and degeneration of damaged tissues, regeneration, and fibrosis. More research is needed to identify agents that may limit the fibrotic response to injury. The second phase of the rehabilitation process should include properly prescribed exercises to develop flexibility, muscle strength, and endurance. In the case of strengthening, exercises should activate specifically those muscles that must be strengthened. Exercise prescription should be specific and include the type, intensity, duration, and frequency of the exercise.

Prevention of future injuries require maintenance of a conditioning program, modification of training, and correction of technical errors. Rehabilitation should take into account not only the physical healing of the injury but also psychological recovery.

Brain Plasticity And Recovery Of Function In Cognitive Rehabilitation: The Case Of Spatial Neglect

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Aim:

In this invited lecture I will describe an experimental approach to the study of brain plasticity in relation to recovery of cognitive functions after stroke. Amelioration in the expression of unilateral spatial neglect will serve as an example. I will show how novel algorithms for ERP-based pattern recognition can be used for monitoring treatment-related dynamics in cortical connectivity.

Introduction:

Recent MR-based functional imaging research is starting to unravel the role of brain plasticity in cognitive rehabilitation. The changes in the neural organization of behavior that follow the occurrence of focal cortical damage encompass both perilesional regions of the damaged hemisphere as well as homologous regions in the contralateral hemisphere. In the case of unilateral spatial neglect, fMRI studies demonstrating a specific sequence for the inter-hemispheric dynamics during the recovery phase, underline the importance of online monitoring of the physiological effects of interventions, especially those aimed to alter the state of uneven reciprocal inhibition between the hemispheres, which is thought to contribute to the formation of the ipsilesional bias in spatial attention.

Without such monitoring one cannot actually know if the effect of the intervention targets the correct regions in the correct hemisphere at the proper phase in the recovery process. Indeed, recent meta-analysis of various traditional treatments for spatial neglect failed to show long-term advantage for the great majority of the proposed treatments. This situation is frustrating in view of the extensive research efforts devoted to this syndrome in the last 20 years, and the devastating consequences it has on the patients' functional outcome. The multi-factorial and multi-faceted nature of spatial neglect calls for replacement of the current practice of blind application of therapeutic interventions, by an approach guided by means for online monitoring of the physiological effects of the intervention, which takes into consideration the specific pattern of activity in the damaged attention networks of individual neglect patients. Given the poor temporal resolution, the limited access and the high cost of standard fMRI methodology, another approach, more suitable for online monitoring at the bed side was searched.

Method:

Recently developed algorithms for the analysis of event-related EEG data (Elminda, Israel) are used by us experimentally for monitoring the online effect of different theory-bound neglect therapies, including prism adaptation, ipsilesional eye patching and EEG biofeedback. The current presentation will concentrate on the latter therapeutic mode. The aim of this intervention is to induce an increment in cortical arousal in anatomically spared peri-lesional regions likely to play a role in recovery-related functional reorganization. The selection of the target cortical regions in each patient is guided by computerized analysis of normalized lesion data. The sampling of the EEG is done during the performance of computerized visual search tasks before and immediately after treatment, in repeated daily sessions, during two weeks.

Results:

Preliminary results from a group of neglect patients show distinct activation patterns in distributed neural networks subserving task performance. The different activation patterns were found to be related to different levels of benefit from the intervention, shown by the individual patients. Formation of activation patterns in close proximity to the nodes of spatial attention networks of the right hemisphere was found to correlate with greater benefit from the intervention.

Conclusion:

The results obtained so far encourage us to pursue with this line of research. ERP-based online monitoring of treatment-related dynamics in cortical connectivity is likely to become a practical tool for clinical decision making concerning treatment selection for individual patients. The high temporal resolution of EEG and the suitability for application within the rehab ward in conjunction with a large variety of rehab intervention methods, makes it a promising approach. The overall prospective of the method for other domains of cognitive and sensory-motor rehabilitation will be outlined.

Acknowledgement:

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Work-Related Traumatic Brain Injury In Portugal: Some Implications To Neuropsychological Assessment And Rehabilitation

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According to data from recent observational studies, approximately 17% of all traumatic incidents in Portugal are due to work injuries (Sequeira & Tavares, 2003). In a large national research, 6.4% of 815 individuals involved in work injuries reported traumatic brain injury (TBI) (Oliveira et al., 2006). The authors studied medical and psychosocial variables of these 52 patients with work related TBIs.

Methods:

The assessment covered 6 broad areas using the General Accident Related Questionnaire (demographic and accident characterization, medical issues, professional issues after the accident, involvement of the insurance company, legal process) the CHART-SF scale to access: functional independence, cognitive independence, mobility, occupation, social integration and economic self-sufficiency and the CES-D to study depression levels.

Results:

37% of the patients were unable to return to work after brain injury. Cognitive independence shows significant statistic correlation with functional independence levels. High depression levels were found in patients with cognitive and other kind of impairments. Demographic, social, psychological and general clinical data from this sub sample of patients will be presented, evidencing its relevance to neuropsychological assessment and rehabilitation.

Conclusions:

These 'facts and figures' are expected to be useful either for politicians, program managers or field professionals, namely by helping to decide which practices best fit individual needs among the diverse TBI assessment and rehabilitation programs.

Community Based Rehabilitation As Strategy In Physical And Rehabilitation Medicine

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According to the World Health Organisation (WHO 1994) Community Based Rehabilitation (CBR) is a 'strategy within community development for the re-habilitation, equalization of opportunities, and so-cial integration of all people with disabilities. CBR is implemented through the combined efforts of disabled people themselves, their families and com-munities, and the appropriate health, education, vocational and social services'.

At the community level, CBR is seen as a component of an integrated community development programme' (UN). Therefore CBR is not mainly a health strategy but aims at inte-gration of rehabilitation into the policy of the community. However, medical care should be part of such a strategy. Consequently, in a consensus paper of the WHO and the UN it is stated that 'Primary Health Care (PHC) needs to address the main health problems in the community, providing promotive, preventive, curative and rehabilitative services.' And that 'most basic rehabilitation activities can be carried out in the disabled person's own commu-nity using local resources'. As many people with disabilities need to be referred to specialised re-habilitation services outside their own communities. PHC personnel can facilitate links between people with disabilities and specialised services.

As community based Rehabilitation aims at activi-ties of the community to improve quality of life of people with disabilities, PRM can contribute to the strategy of CBR. Access to health care and reha-bilitation facilities is part of CBR strategies too. PRM in out patient settings can contribute on three levels: giving advice to communities teaching primary care physicians and other medical specialists case management for people with disabilities peripatetic CBR-teams. The payment system in Germany (and in other Euro-pean countries) includes at least some aspects of such a work. In other countries (e.g. France) de-veloped systematic strategies to realize CBR ac-tivities in PRM practice.

Home Based Interventions: Importance In Rehabilitation Network

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INTRODUCTION :

The major objective of Rehabilitation is to empower people with disabilities to maximise their physical and mental abilities to have access to regular services and opportunities and become active and contributing members of their communities and their societies. People with different disabilities from all types of impairments, including difficulty hearing, speaking, moving, learning or behaviouring, and also all age groups: children, youth, adults and older people.

The better explication of these concepts is contained in the recent ICF from WHO.

Thus, Rehabilitation is closely dependent to the medical sciences and to the human rights of people with disabilities through changes within the Community.

Our interest, and our responsibility is to merge these two aspects and to realize concrete developments for both.

MATERIALS:

Human Rights and Evidence Base for practice and public policy.

The International Bill of Human Rights includes many Acts (Universal Declaration of Human Rights, International Covenant on Economic, Social and Cultural Rights, International Covenant on Civil and Political Rights, Convention on Rights of the Child, Convention on the Elimination of All Forms of Discrimination Against Women, and World Programme of Action Concerning Disabled Persons) and forms the basis for the United Nations Standard Rules on the Equalization of Opportunities for People with Disabilities, which states: "The principle of equal rights implies that the needs of each and every individual are of equal importance, that those needs must be made the basis for the planning of societies, and that all resources must be employed in such a way as to ensure that every individual has equal opportunity for participation."

In 2001 was defined a Joint Paper by WHO,ILO,UNESCO,UNICEF on contents and aims for Community Based Rehabilitation .CBR promotes the rights of disabled children, youth, women and men to live within their communities; to enjoy health and well being; and to fully participate in educational, social, cultural, religious, economic and political activities. CBR is also a strategy within general community development for Rehabilitation development against disabilities and lack of participation.

Hence it is a strategy to address human development toward the creation of "Inclusive Community".

The term "inclusive" is now commonly used with reference to education provisions that welcome all children to participate fully in regular community schools or centres of learning, including children with disabilities. The principle of "inclusion" is also being applied to health and vocational services, cultures and communities, and is a "goal" also for Rehabilitation activities.

During the past two decades, in almost all countries, Disabled People's Organizations (DPOs) and organizations of parents with disabled have been established and strengthened. In the same period, in relation also to these evolution in social and cultural fields, there have also been significant changes in the concepts of disability and rehabilitation. Rehabilitation is now viewed as a process in which people with disabilities or their advocates make decisions about

what services (to be assured by the Community in different ways) they need to reduce limitations in their activities.

Enormous scientific and clinical development of PRM contributed very strongly to these changes. Contemporaneously changed role, selfconsciousness and responsibilities for PRM Doctors and other "allied" professionals.

The limited participation in education, work and social activities experienced by disabled people is no longer viewed as a result of their impairments, but primarily as a result of societal barriers to their participation, and a result of a lack of rehabilitation interventions.

Many of these changes are the direct result of the increased activity and influence of people with disabilities, who now have central roles in monitoring the implementation of internationally accepted guidelines, such as the U.N. Standard Rules on Equalization of Opportunities for Persons with Disabilities.

Now it is regarded as essential that programmes related to disability issues are planned and implemented with disabled people and their representatives. DPOs have the right and the responsibility to identify the needs of all people with disabilities, to make their needs known, and to promote appropriate measures to address the needs.

In 2005 the World Health Assembly adopted a Resolution on "Disability, including Prevention, Management and Rehabilitation" (World Health Assembly Resolution 58.23).

Recently (13 December 2007) General UN Assembly have approved a World

Convention with almost the same principles. These Documents says that member states should :

- participate in disability prevention activities;
- promote and strengthen community based rehabilitation programmes linked to primary health care and integrated in the health systems;
- facilitate access to appropriate assistive technology and to promote its development and other means that encourage the inclusion of persons with disabilities in society;
- investigate and put into practice the most effective actions to prevent disabilities;
- ensure provision of adequate and effective medical care for people with special needs and to facilitate their access to such care including prostheses, wheelchairs, driving aids and other devices;
- research and implement the most effective measures to prevent disabilities in collaboration with communities and other sectors.

Additionally it requested to :- intensify collaboration within the Organization towards enhancing quality of life and promoting rights and dignity of persons with disabilities;

- provide support to Member States in strengthening national rehabilitation programmes;
- support member states in collecting more reliable data on all relevant aspects, including cost-effectiveness of interventions for disability prevention, rehabilitation and care;
- further strengthen collaborative work within the United Nations and with Member States, non-governmental organizations (NGOs), including organizations of people with disabilities;
- promote studies of incidence and prevalence of disabilities as a basis for the formulation of strategies for prevention, treatment and rehabilitation.

Following all these concepts and changes, and in deep and coherent relation to our clinical and professional development in recent years all over the World, an Evidence Base for Health Practice and Public Policy is now the main point in the State-of-the-Science on Rehabilitation.

For our development (clinical, scientific, professional and also individual) the goal is to define and support an evidence base for rehabilitation care, including issues related to measurement and research design, access to rehabilitation services, organization of rehabilitation services, individual and community outcomes attained, but side by side also financial sustainability for private and/or for public payers. In many clinical fields, and in many countries, it is yet well started with very good results.

We must try to show it to stakeholders who are involved in policy decisions, to stimulate policy discussions, and to provide an evidence base also for rational policymaking.

Probably, and I believe that, this is also an Ethic role for us.

I believe also that this is the main way to avoid the consequences of what I call : the " PARADOX " for rising Rehabilitation.

On the one hand : In a few years is enormous the improvement of research (for example in neuro-biology, in technology, in pharmacology), the improvement in education of professionals applied, the improvement in accessibility, efficacy and effectiveness for interventions and services in Rehabilitation for very many Health condition (following any illness, traumas or other).

On the other hand : In the same rank is enormous and quick the improvement of the "Market" demand of Rehabilitation due to: A) Medicine power to save (in emergency and in cronic conditions) every sick person (also the serious one as Comas, Cancer...) B) The deep and quick change on social and individual attitude toward disability and impairment in relation to personal autonomy. In fact Quality of Life is now one of the main standard to define wish and hope for everybody, everywhere and in all ages, sex and economical conditions.

The scenary caused by the plaiting of these two "hands" is the continuous rising of rehabilitation activities , costs and of financial needs for Communities and Governments: but this situation will be not sustainable and so we arrive to the Paradox .

Exactly the moment of maximum improvement of Rehabilitation could be also the moment of greatest limitation for Rehabilitation .

To avoid this risk the solution can be only the carrying out Rehabilitation interventions and activities unifying evidence, efficiacy , sustenaibility and accessibility for all Disable People, in the best relation to individual wish and needs in community life.

Our Research activities must be deeply involved towards the solution of this problem: we must be able to move funds , teams and interests focusing more than in the past on Functioning, Participation and Authonomy at Home, in the common life with the family and in the Community : these must be recognised as true evidences for Rehabilitation (scientific and financial).

TeleRehabilitation seems to be a very decisive instrument for the solution as :

- Empowerment for learning, training and autonomous activity in functional recover .
- Overcoming of breaking up in recover between hospital , discharge and home
- Monitoring of quality and contents of treatments , guaranteeing patients and families not only during the stay in hospital .
- Optimizing all quality parameters ,also during all the period of treatment by a sort of individual "Tailoring ".

But expecially realizing a control of expenses in Rehabilitation , improving all the process really based on individual results . For example only one Doctor or Therapist can follow and control many treatments, and many different patients . And many treatments and patients can follow specific scheduled programmes, also without direct presence of health professionals.

As important example we can think to USA experience in long term speech rehabilitation, yet applied and reimbursed by Medicare as Telerehabilitation .

In Europe the Union supports many researches on this field, but we have not yet concrete experiences on services and interventions "distributed" to patients.

Until now too often we have known Telerehabilitation only as Robot-Aided tele-assisted activities :a very interesting field for research and for particular clinical applies , but a field very expensive if it would be enlarged . How we arrived to this point ?

For example, many advances in robotic technology have led to an important crossroad regarding their applications to physical and rehabilitation medicine. One aspect of this crossroad is healthcare providers' and the general public's continuing eagerness to use "robotics" to enhance clinical and patient care. Body-weight support treadmill systems, bionic neurons (BIONs™), Kine Assist™, and the Massachusetts Institute of Technology (MIT)-Manus are visible examples of robots that can help improve many patients' function, mobility, and overall quality of life . The other aspect of this crossroad is clinicians' and researchers' recognition that systematically implementing these promising technologies in treatment and rehabilitation regimens requires a greater scientific base of evidence, and great investments. These technologies can measure, repeat and verify every pattern.

Telemedicine has been defined as the use of telecommunications to exchange medical information and services. In telemedicine at first the standard , and than most diffused practice is to transmit medical documents and images for consultation, for example as teleradiology.

Fortunately, advances in robotics have kept pace with advances in communications and information processing. A robot can now be successfully operated from a remote location, in many other fields.

The span covered by telemedicine and also very quickly by rehabilitation robotics is very broad.

We need to focus on the integration in Telerehabilitation of these two technologies-tele and robotics- for example to the upper limbs, which has been the primary area of application thus far. Telerehabilitation is related to, but distinct from telemedicine, and demands technologies beyond those of voice and visual communication to act true treatments , and not only communicating.

Note that by "tele," we do not mean "telepresence," the term coined to describe virtual reality (VR) technology used to immerse humans in virtual environments. While VR might be a technology employed in telerehabilitation, it does not define it.

Telerehabilitation in this context means remote rehabilitation, the situation in which the Doctor, the Therapist is conducting the evaluation and therapy from a remote location. They both can use robots, involving eventually Virtual Reality, acting on-line by internet or distributing activities in a specific scheduled- programme (for example a week or more) with periodical contacts.

But, as I have yet said, this kind of Telerehabilitation is very important for research, and for improve evidence, but cannot be the solution for the main number of Persons and of individual problems. We have to work to expand a different kind of Telerehabilitation in wich accessibility and facility are merged to financial sustenaibility.

DISCUSSION:

Home-Based Therapy is the Next Frontier ?

Reductions in healthcare reimbursement place constant demands on rehabilitation specialists to reduce the cost of care and improve productivity. Service providers have responded by shortening the length of patient hospitalization. Thus a healthcare delivery system that did not fully understand the best regimens for inpatient rehabilitation therapy is now increasingly promoting outpatient rehabilitation to a sicker population in which there is a more limited ability to prescribe and deliver therapy, monitor patient compliance, and assess outcomes.

This changing environment creates a need for a continuum of care in these discontinuous settings (e.g., rehabilitation hospitals, skilled nursing facilities, outpatient clinics, health maintenance and well spaces, and the home).

Toward the goal of providing a continuum of care, we sought to create a scenario that would allow us to provide not only therapy but also fun activities in a multiplayer game environment. The potential benefits of combining telerehabilitation with multiuser training are extensive, but which aspects of this emerging technology will work best in practice are as yet unclear. Two reasons exist for this optimism. Technology for multiplayer games in which players interact in real time through the Internet has emerged relatively recently to become one of the fastest-growing sectors.

Clearly, many challenges, both technical and economic, still lie ahead if we are to realize home-based (robotic or not) telerehabilitation.

Technical challenges include not only the development of complex multidimensional robots capable of simulating more task-oriented and ADL home therapy. But another question is: can we work only by Robots? And their costs?

And more: The coordination and personalization in exercises are critical to realistic simulation, or the patient will become confused and the virtual environment. In addition, if we will use the Internet to transmit real-time audio and video between the patient and the therapist, is the real-time aspect essential for realizing full bilateral configurations used in cooperative therapy?

Or on the contrary could we prefer the creation of specific programmes (as CD or other video-electronical supports) more easy to use for the Patients (and for the family and surroundings) by which the exercises can be performed?

In addition, the economic challenges should not be underestimated. We believe a strong market exists for home-based rehabilitation, but the reduction of reimbursements is a major milestone that must be conquered, otherwise telerehabilitation will remain aloof.

Only then will commercial off-the-shelf (COTS) therapy devices become a reality and widespread deployment in homes and clinics a possibility. Naturally, the cost of rehabilitation devices currently being tested in clinics (often tens of thousands of dollars or euros) will need to drop by at least an order of magnitude, but mass production of devices alone could reduce these costs significantly.

Software development will also be key. Software applied to supports given, after a specific training, to the patients, or distributed by Internet.

A significant portion of new project cost, sometimes more than half, is related to software development. Therefore, even if the cost of the initial hardware prototype drops, the software cost will not. While the total development cost will get amortized over more units if COTS therapy is realized, it will remain the dominant cost. Therefore, the development of new software tools and perhaps open-source libraries for exercise regimens will also be a key to reducing the cost of home-based therapy.

I believe that home-based telerehabilitation has a bright and broad future. It will be part of the continuum of care, delivering high-quality therapy and care from bedside in the acute facility, to the rehabilitation hospitals or skilled nursing facilities, to the outpatient clinics or health maintenance and wellspaces, and to the home. It is not far to imagine the baby boomers in the driver's seats of multiplayer games everywhere, starting in their retirement communities-the teens will only follow suit! At Home is easy to work on the active recovery of relational, cognitive, behavioural problems for Participation and Autonomy, is possible to manage aspects of integration with environment (physical and not physical), is possible to sustain step by step the motivations to recover.

CONCLUSIONS : Perspectives to development.

- o Modify actual Rehabilitation Guidelines and Protocols, or create some new protocols to apply to Home Based Rehabilitation .
- o Development of new training programmes to give to the patients (and their families) abilities to apply and follow actively these protocols .
- o Development of new software for the remote (place and time) management .
- o Planning of new Technical Aids (easy and light) well integrated to this Home process .
- o Planning for new educational training for rehab-professionals to be able to manage all these(therapeutical and technical) aspects.
- o Development of a working-Net connecting laboratories, rehabilitation facilities and persons in treatment .

Surely this is crucial , applying also many of the results of Robot Rehabilitation , for Rehabilitation future. To avoid financial Paradox, but in the meantime focusing our interventions to the main objective : the real quality of life for the Persons in Care, and side by side for the Community.

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Exercise And Chronic Disease

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Exercise is an effective rehabilitation intervention. Abundant scientific research during the last two decades shows that exercise can also be effective in the prevention or treatment of chronic diseases. Physical inactivity has been identified as one of the most important causes of morbidity and mortality. The programs that promote physical activity should become higher priorities in national health care systems.

The relationship between the level of physical activity and chronic disease was first studied in the context of heart and cardiovascular disease. The level of exercise and physical fitness correlates with all cause mortality. This relationship is independent of the presence of all other risk factors for cardiovascular disease.

The incidence and morbidity associated with several chronic diseases such as obesity, diabetes, hypertension, and cancer have been shown to correlate with the level of physical activity of the population under study. Although the optimal exercise intervention has not been defined, it has been suggested that at least 30 minutes of moderate intensive physical activity on most, preferably all days of the week is a reasonable recommendation.

This level of physical activity is effective in the primary prevention of chronic diseases mentioned above.

Osteoporosis And Rehabilitation

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The importance of osteoporosis in our society is not new. Each year there appears many articles talking about the economic importance from this disease. Pharmacological treatments, fractures and social costs elevate the amount of the bill to millions of euros (17 billion \$ in USA in 2005, more than 800 millions € per year in Spain). Governments, pharmaceutical companies and scientific societies worked in the way to stop this medical and economic problem. But at the same time, some authors began to sustain that it isn't necessary to treat all the women in the postmenopausal period, doubting the cost-benefit relationship of the pharmacological prevention of fractures.

In front of this, everyone who works in osteoporosis will defend the importance of prevention. The main aim is not to prevent bone loss or fractures, the main aim is to obtain an sufficient amount of bone that protects the woman in the postmenopausal period. Talking about osteoporosis, Physical Medicine and Rehabilitation, can be considered as a "prevention speciality" in Medicine. In tertiary prevention, and according to the WHO definition of our speciality (Geneva 1968 "The use of all means aimed at reducing the impact of disabling and handicapping conditions, and at enabling people with disabilities to achieve optimal social integration"),

Rehabilitation tries to minimize the fractures' consequences. But it's also habitual that we receive postmenopausal women with osteopenia, and that we start the pharmacological and non pharmacological treatment from the illness, trying to prevent the appearance of the fractures. Nevertheless the most important part of our work with osteoporosis will be the prevention that we can provide in adolescents, children and young people, and those who attend our consultation with problems such as back pain or scoliosis. In developing a knowledge of self care and prevention, which includes good nutritional patterns, sports culture and right postural daily activities, this will reduce the need for pharmacological treatments later.

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The Role Of Calcium And Vitamin D In The Treatment Of Osteoporosis

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Deficiency of Vitamin D is associated with decreased calcium absorption, increased bone remodeling, increased bone loss and decreased secondary bone mineralisation. Deficiency of Vitamin D causes increased levels of serum Parathyroid Hormone, loss of bone mineral density and increased fracture risk. Lately an association between Vitamin D, muscle function and risk of falling has been established. Muscle tissue contains Vitamin D receptors and stimulation of these receptors stimulate protein synthesis and growth of the muscle cell. In male and females over age 60 with high serum levels of 25(OH)D, parameters like walking speed and sit-to-stand speed have been found to be higher.

Metaanalysis of Randomized Controlled Trials with Vitamin D demonstrated an decreased risk of falling of about 22% by supplementation of Vitamin D. Falls are a major risk factor for fractures in elderly, independent of bone mineral density. Metaanalysis of Randomized Controlled Trials with Vitamin D in elderly patients demonstrated an decreased rate of hip fracture risk of 26% and nonvertebral fracture risk of 23% by supplementation of Vitamin D, either in combination with or without calcium. It is accepted that serum levels of 25(OH)D have to be over 75 - 80 nmol/L in order to decrease fracture risk. In some trials stating that Vitamin D did not significantly lower fracture risk suboptimal low doses of Vitamin D were prescribed and compliance problems were mentioned.

The recommended daily allowance is 400 IU Vitamin D for males and females between ages 51-70, and 600 IU Vitamin D combined with 1200 mg calcium over ages 70. For serum 25(OH)D levels to be over 75 nmol/L about 80 - 1000 IU of daily Vitamin D are required. 1 microgram (40 IU) of orally supplied Vitamin D increases serum 25(OH)D level by 1 nanomol/L. Intake and serum levels of Vitamin D generally have been detected to be low in elderly persons. Intradermal synthesis of Vitamin D is also known to decrease with age. Therefore Vitamin D supplementation is necessary in the elderly population. Supplementation with calcium and vitamin D should be recommended in women at increased risk of osteoporosis, those who are osteopenia and osteoporosis.

In the case of Vitamin D, the dose given should be enough to ensure that circulating levels of 25(OH)D reach a threshold of 50 nmol/l. Combined supplementation should be administered at doses of 800 IU of Vitamin D and 1000-1200 mg of calcium daily, especially targeted to those identified at higher fracture risk. Supplementation with vitamin D and calcium should be done with caution in individuals with renal insufficiency. High dose supplementation carries a risk of hypercalcaemia with subsequent impairment of kidney function. Special caution is also required in the treatment of patients with cardiovascular disease as the effect of cardiac glucosides may be accentuated by supplementation with vitamin D and calcium. The use of calcium supplements rarely gives rise to mild gastro-intestinal disturbances such as constipation, flatulence, nausea, gastric pain, and diarrhoea.

Anti-osteoporotic treatments should be used in combination with calcium and vitamin D supplementation. As a conclusion serum levels of 25(OH)D over 75 - 80 nmol/L decrease fracture risk. In addition Vitamin D has a significant effect on risk of falling, as well as muscle function. Supplementation of Vitamin D, can be expected to be beneficial in postmenopausal, elderly people.

Improvement In Quality Of Life After Treatment With Teriparatide In Patients With Osteoporotic Fractures

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OBJECTIVES:

This study tries to evaluate the clinical and functional improvement in the quality of life that could be obtained after treatment with teriparatide in patients diagnosed from osteoporosis and with previous fractures, using a visual analogical pain scale (VAS) and a quality of life questionnaire (ECOS-16)

PATIENTS AND METHOD:

16 patients (15 postmenopausal women and 1 man) with the diagnosis of osteoporosis were included. They were visited in a rehabilitation consultation and they accepted to receive an 18 months subcutaneous injection of teriparatide. 3 were posteriorly excluded because it was impossible to sustain an adequate monitorization. The data's collection was made during consultation and lately by telephonic monitoring. Clinic data (age, gender, height, weight, previous vertebral and non vertebral fractures), familiar backgrounds, previous treatments with steroids, antiepileptic or antidepressiv drugs, previous treatments for osteoporosis, calcium intake, physical activity) and value of VAS and ECOS-16 before and after the treatment were collected. The appearance of new fractures during treatment was also controlled.

RESULTS:

In spite of the short number of patients, even in the VAS and the ECOS-16 an improvement was obtained, both with statistical significance (p 0,03 and 0,01 respectively). It was not possible to find any relation between these improvements and other clinical factors studied.

CONCLUSION:

teriparatide, an anabolic agent that increases bone quantity and quality in osteoporosis, presents also an beneficial profile for patients for improvement in aspects related to the quality of life.

Aquatic Cardiac Rehabilitation –New Approaches In Physical And Rehabilitation Medicine

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Introduction:

Cardiac Rehabilitation Programs (CRP), according to American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR), preconize individual, quantified, appropriated, safe and independent exercise, allowing patient to achieve a daily optimal physical activity level and fitness, associated to life style chances. Aquatic Cardiac Rehabilitation Programs (ACRP) conceive all these goals. Purposes and Description: Authors present the ACRP Protocol at Department of Physical and Rehabilitation Medicine-Hospital Feira, including demographic data from January 2003 to December 2007, specific heart disease, multiple cardiovascular risk factors (CVRF), functional capacity evolution, cardiac efficiency, symptomatology, motivation, life style changes, complications.

It's based in physical principles and psychological effects of water immersion acute /chronic physiological and subjective responses to aquatic exercise training adaptations aquatic protocols for cardiac patients and subjective dyspnoea, fatigue, pain and effort scales (according to several authors).

ACRP Protocol includes: *Patient Inclusion Criteriae: low and moderate cardiac risk (AACVPR) land CRP (phase II) objectives accomplished 4 to 5 METS daily activities comfortable performance, before setting the ACRP. *Environmental conditions: water temperature-31°C air temperature-34°C. *Program: 2x/week 30'-60'stage II-12 to16 weeks stage III-12 weeks 7-10 patients/session supervised by Cardiologist and Rehabilitation Doctor. Includes (each session): 1. Phase I (10'-15') Phase II (10'-30') Phase III (10'-15') 2. Heart Rate (HR), Blood Pressure (BP), Respiratory Rate (RR) monitorization in land before set up, during water exercise (each 5'), after ending the exercise. 3. Exercises in different immersion water levels, in apnoea or abdominodiaphragmatic breathing with different postures, velocities and kinetic chains. 4. Gait and Step training 5. Relaxing exercises. 6. CVRF control

Results:

As described in literature: *individual adaptations to water exercise mainly depend in partial body water immersion, hydrostatic pressure, density, fluctuation, water temperature, deep inspiration, pulmonary volumes, subjective impressions. *in all patients ss: -decrease in dyspnoea, fatigue, effort and pain perception subjective scales score compared to similar exercise intensities in land CVRF symptomatology BP, HR, RR during and after effort, comparing to CR in land -increase in respiratory and muscleskeletal performance functional capacity -higher motivational and lower depression levels -no complications during or after ACR.

Conclusions:

Physical performance improvement associated to a large patient motivation to accomplish the program and no observed complications, show the importance of ACRP.

Ambulatory Activity Monitoring: Added Value In Medicine

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Most instruments that are used in (rehabilitation) medicine to assess function determine what a patient can do (capacity). Furthermore, most instruments that assess function objectively are executed in a laboratory and are short-term. Ambulatory activity monitoring has the purpose to measure what a patient really does in real life and long-term.

Activity monitoring is of additional value in patient care and research because it is objective and determines what the patient performs in his own environment. Besides many studies on the development and validation of activity monitoring we have used activity monitoring in many clinical studies, including patients with chronic pain, spinal cord injury, amputation of the leg, spina bifida, heart failure, cerebral palsy, knee and hip arthritis, liver transplantation, Guillain Barré Syndrome, stroke and CPRS-I.

In this presentation a selection of the most relevant findings from a clinical perspective will be presented. In most studies we found low to moderate relations between actual objective activity and other measurement tools such as testing in a movement laboratory (capacity) or subjective/perceived activity such as questionnaires and interviews.

Generally studies on patients confirm that testing in a movement laboratory or with questionnaires cannot simply be used to determine what patients actually do when they are not supervised and in their own environment. Adding the results of activity monitoring to measurements of capacity and subjective/perceived performance has given us more insight in how and on what level certain interventions and therapies effect a patients.

Treatment Of The Dysfunction Of The Neuro Muscles Fascial System By Non Inonitation Stimulation Mecchanic-Vibrating.

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The fundamental concept is to treat and correct the dysfunction of the muscolo scheletric system like a structure composed of different part connect each other .Several theory and research are confirmed a dysfunction local push and condition the enter structure a some form of adaptation exist inside the system.(Saharman 2000,Kinetic Control 1998 ,Ingeber 2002). We propose to treat the tissue by stimulating a tissue with use of mechanic wave low frequency 1-15 hrtz they have the capacity to stimulate a tissue a cellular level ,and influence the adaptation triugu the connectin from matrix extracellular and the cells.(Bistolfi 1991). The mechanic vibrational stimulation could have the capacity to stimulate connective tissue by connection between matrix exrtacellular and cells and reverse,bioconnesinal conductive system BSC (Bistolfi 1991 ,Ingeber 2000).

From a physic point of view they are a pressure and vibratory impulse low frequency and short amplitude ,they generate a vibratory mechanic force with the potentily to stimulate a reparative process on the tissue with a antiinflammatory and analgesic effect. In the human body between the macromolecule of the matrix and the cells exist several connction ,mediated by the intregrins ,they have the capacity to influence the movement,form,polarity and the organitation of the cytoskeleton. (Gillespie 2001,Ingeber 2000).

Mechanic point of view the contractile movent of the cells can influence the cells adicent and on consequence the reaction of the MEC ,this force can influence the function of the cells(Stolz 2000).Butler 2000.have dimostrade mechanical stimuli can influence the activity of the cells in vivo and in vitro.

Plateau In Stroke Rehabilitation

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Stroke is the leading cause of disability world wide and there is no universally accepted treatment. The initial grade of paresis is regarded as the most important predictor for motor recovery. The efficacy of traditional stroke motor rehabilitation techniques is heterogeneous. Repeated practice promotes motor skill learning, but managed-care providers usually restrict rehabilitation sessions.

Data about late motor recovery are limited, most of them only until the 6th month poststroke. The brain has a huge capacity to respond to functional need. Brain plasticity related changes in function are accompanied by measurable changes. Plastic changes in brain networks can occur in ways that carry behavioural implications over time.

Termination of motor rehabilitation is recommended as patients become more chronic and/or when they fail to respond positively, termed plateau. Eventually, if the regimen is not varied a performance plateau will occur. In nonclinical populations, such plateaus have been observed and overcome with periodization, consisting of varying regimen by breaking it into smaller phases, during which different skills, durations, and intensities are used. With adaptation, it is necessary to adjust exercise regimen such that positive adaptations continue to occur.

Given that various combinations of therapeutic exercise conditions may go unchanged, what has been termed motor recovery plateau may actually be neuromuscular adaptation to therapeutic regimen. Patients who had plateaued exhibit motor improvements after participation in task-specific, repeated motor practice protocols, characterized by participation in challenging exercises, breaking adaptive patterns. In late rehabilitation, the learning process can be lengthy and small goal attainment over several months is emphasized. The patient is the best therapist and responds best when the environment, the attitudes of the personnel and the rehabilitation programs are based on motivation.

Stroke patients experiencing plateaus may in fact be adapting to their therapeutic motor exercise regimens. The solution for adaptive states in stroke rehabilitation appears to be adjusting the mode of rehabilitation and challenge of exercise. Much is still to be learned about exercise in stroke, including the critical elements of training that will induce further motor improvements to extend the window for meaningful functional gains.

Can Be Useful The Use Of Body Weight Support Treadmill Training In Acute Stroke People? A Multicenter Randomized Control Trial

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INTRODUCTION:

Locomotor training using body weight support and a treadmill (BWSTT) as a therapeutic modality for rehabilitation of walking post-stroke is being adopted into clinical practice. However the most part of paper published was about stroke chronic phase, very few trials are present in International Journal to determine the effectiveness of this intervention in acute rehabilitation. Recently Yagura et Al(2006) presented a RCT study about post acute rehabilitation with BWSTT in a small sample. They don't find significant differences between control group and BWSTT group. The aim of our study was to compare the effect of BWSTT vs Control Group (CG) with traditional treatment at an early stage of rehabilitation in one hundred patients affected by stroke.

PATIENTS AND METHODS:

102 first stroke patients admitted to the rehabilitation clinics were randomized into a experimental group (SG) and a CG. The SG received 20 sessions of BWSTT for 20 minutes and for other 40 minutes they received traditional treatment. The CG received traditional treatment for 60 minutes, both for 5 days a week. Outcome measures: walking velocity for 10 m, Functional Ambulation Classification, Motricity Index, Trunk Control Test, Ashworth Scale, Barthel Index, Six-Minutes Walking Test associated with Borg Scale, Rankin Scale, Walking Handicap Scale blood pressure and heart rate were measured before and after every treadmill session. Assessments were performed before treatment (T0), at the end of the treatment period (T2), at discharge (T3) and at 6-month follow-up (T4).

RESULTS:

There were no statistically significant differences between the groups at every assessment regarding to every outcome measures we used. Patients in both groups improved in these variables from T0 to the 6-month follow-up (T4).

CONCLUSIONS:

Our study confirm the data of Yagura in a more important number of sample: the BWSTT early after stroke is a comparable choice to traditional treatment.

(*) Antenucci R. and Coll. (AUSL of Piacenza), Cisari C. and Coll. (University of Novara), Iannilli M. and Coll. (A.O. of Padova), Magni E. and Coll. (AUSL of Bologna), Malgrati D. and Coll. (San Francesco Rehabilitation Clinic of Bergamo) and Saccavini M. and Coll. (A.O. of Parma)

Post Polio Syndrome - Diagnosis And Rehabilitation

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Polio is still a condition with great relevance for rehabilitation. There may be new cases in some parts of the world, but especially new and late symptoms will appear in a considerable number of persons who have had polio 15-20 years or more earlier (50 to 80 % of all persons). The most characterizing and obligate symptom is new or increased muscle weakness. In addition muscular or general fatigue and pain are common new complains.

As compensation for the initial but also later loss of motor units, there is reinnervation from adjacent motor units leading to large (2 times normal or even larger) territories of the motor units and there may also be a muscle fibre hypertrophy. Mechanisms and implications for the muscle function of these compensatory mechanisms will be discussed.

For the diagnosis of post polio syndrome a clinical history should be taken including that there are no other pathology explaining the new symptoms. EMG should be recorded in relevant muscles to prove the occurrence of initial polio affection and also to evaluate if new denervation - innervation processes are present. Muscle strength should be measured and also analysis of respiratory function. It is important with various measures to reduce pain.

New treatment strategies are developing including treatment of on-going immunological processes. It is important to analyze the activity pattern of the patient and assess whether there may be evidence of overuse or over-activity or contrary if training and increased physical activity should be recommended.

In some patients specific resistance and endurance training may be indicated and individually chosen (guidelines will be presented in the presentation). There is good experience of pool training. Some persons may be active close to their upper limit. Advices should be given concerning activity pattern and mobility aids be given as also orthoses when appropriate. Respiratory fatigue and failure needs special attention including in some cases assisted ventilation by a facemask for part of the day or during night. Coping strategies should be noticed and supported.

As some patients still are in working ages, support and advice concerning the working situation may be indicated. Any late psychological effect from childhood experiences should be noted and taken into consideration. It is important of a good knowledge of the pathophysiological aspects of the new symptoms and also to collaborate with multidisciplinary well-trained rehabilitation team.

Peripheral Nerve Injuries - Etiology And Diagnosis

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Peripheral nerve injuries may occur due to trauma (eg, a blunt or penetrating wound, stretching and traction, injection or thermal trauma), or acute compression. The patient will first have a complete physical exam, along with a detailed history of symptoms, and medical history, including information about traffic accidents, falls or previous surgery. Sophisticated tests help determine the extent of nerve injury.

A detailed neurologic examination will be performed to evaluate motor, sensory and autonomic loss. If the examination indicates signs and symptoms of a nerve injury, the doctor may recommend the following diagnostic tests to determine if a nerve is working normally. Classification of nerve injury has been described by Seddon in 1943 and by Sunderland in 1951. The classification of nerve injury described by Seddon comprised neurapraxia, axonotmesis, and neurotmesis. Sunderland expanded this classification system to 5 degrees of nerve injury. In diagnosis, no specific laboratory studies assist in the diagnosis of peripheral nerve injuries. Imaging studies are appropriate in cases of suspected nerve tumors, although false-negative and false-positive findings are possible in MRI evaluation of nerve tumors. They are appropriate in cases of suspected brachial plexus avulsion injury to evaluate for avulsion of the nerve roots from the spinal cord.

The other imaging method, CT myelogram can be used to investigate for suspected brachial plexus avulsion injury. Additionally, there is no specific histology studies assist in the diagnosis of patients with peripheral nerve injuries. Electrodiagnostic studies are very important because these objective tests are useful in detecting nerve injury and/or nerve compression and in identifying early stages of recovery. It can be divided into two steps: Needle electromyography (EMG) and nerve conduction study (NCV).

Needle Electromyography (EMG) This test measures how the muscles supplied by a specific nerve are working. Needle EMG findings correlate poorly with the degree of axonal loss. A concentric needle electrode is inserted into the muscles that appear to be affected by a nerve injury. An instrument records the electrical activity in the muscle at rest, and as the muscle is slightly moved and maximally contracted. It is performed at any time following nerve injury. But needle EMG testing may yield false-negative findings if it takes before 4 weeks for muscle fibrillations to become apparent.

Evidence of denervation is indicated by the presence of fibrillations in the muscle. Reinnervation is noted by the presence of motor unit potentials. **Nerve Conduction Study** Similar to electromyography, this test measures how well electrical signals are transmitted through the nerves. The nerve is stimulated by electrodes placed at two different points in the affected area. Nerve conduction is measured by dividing the distance between the two points by the difference in time it takes for the impulse to travel between them. This yields a 'meters per second' speed of nerve conduction. In general, sensory responses are affected earlier and more severely than motor responses in peripheral nerve injuries.

A reduction in sensory response amplitude of 50% or more, compared to the other (unaffected) side, is the most sensitive indication of peripheral nerve injury.

A nerve conduction study performed 3-7 days after a peripheral nerve injury may show low-amplitude evoked compound muscle action potential (CMAP) with normal amplitude sensory nerve action potential (SNAP), a pattern usually interpreted as nerve root injury/avulsion. In some instances, the conduction block may be too proximal to be demonstrated reliably by conventional motor nerve conduction studies. In these instances, F-wave responses may be absent despite the presence of more normal distal evoked CMAP responses.

Additionally, somatosensory-evoked potential (SEP) testing and/or nerve root stimulation may be used to demonstrate proximal conduction block even at the nerve root level. As a conclusion, a carefully planned and executed electrodiagnostic study is paramount in the evaluation of nerve injuries. Some types of injuries may necessitate the use of unconventional studies to adequately assess the degree of axon loss to each individual nerve branch or fascicle.

Rehabilitation After Upper Extremity Nerve Repair

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After surgical repair of traumatically injured peripheral nerves of the upper limb, the individual faces a long period of motor and sensory disturbances. The aims of hand rehabilitation after nerve injuries are to try to optimize the results of surgery and increase the patient's physical performance and life quality.

A comprehensive rehabilitation program includes, besides patient education, implementation of physical or medical treatments to alleviate pain, protection against further complications like joint contractures and unintentional accidents due to sensory loss, and evaluation of sensory and motor recovery with various methods.

Of the three peripheral nerves of the hand, median and ulnar nerves provide the sensation of the palmar side and innervate the intrinsic hand muscles that are essential for both dexterity and power. On the other hand, injuries of the radial nerve have a better outcome with almost no sensory loss. Splinting is essential to prevent contractures, to replace the loss of motor power and to encourage early use of the hand. Besides scar massage, electrostimulation and ultrasound are widely used physical modalities.

Due to the numerous factors that influence wound healing and nerve regeneration, further research is needed to find more scientific rather than clinical evidence on the beneficial effects of these two modalities. Home or hospital based hand exercises that aim to restore joint range of motion and neural plasticity, and to condition the uninjured parts of the hand and arm are a part of patient's daily routine.

In the objective evaluation of sensory, motor and functional recovery, a reliable battery of questionnaires, conventional tests and performance tests may be used. 2 point discrimination, sensory recovery according to British Medical Research Council, manual muscle test, grip and pinch strengths, electromyography, Diseases of Arm and Hand questionnaire and Sollerman's performance test are shown to be valid tests for such an evaluation.

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The Effectiveness Of Dexamethasone Iontophoresis In The Conservative Treatment Of Patients With Carpal Tunnel Syndrome

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Objective:

Conservative treatment of patients with mild or moderate CTS has been preferred because of successful consequences of these methods. The aim of this study is to evaluate the effectiveness of dexamethasone iontophoresis (DI) as conservative treatment modality in patients with mild idiopathic CTS and compare the efficacy of DI with placebo iontophoresis (PI).

Materials and Methods:

58 patients with electromyographically confirmed mild CTS are included in the study and randomized into two groups, DI (n=20) and PI (n=18) groups. All patients have been treated five times weekly for 3 weeks (total set number: 15). DI and PI applied at intensity level of 2 mA for 20 minutes by using dexamethasone and normal saline respectively. All patients within two groups received a combined physical therapy program that consisted tendon and nerve gliding exercises, night splint and activity modifications. The outcome measurements comprised health assessment questionnaire (HAQ), pinchmeter (PM), reverse phalen (rPT), compression tests (CT) and. The patients were evaluated before treatment (BT), just after (AT) and 3 months later (3MAT).

Results:

The mean age of patients was 52.12 ± 7.72 years (min: 34, max: 70). When the mean values of PM, CT and rPT results were compared between groups, there was significant differences in the 3MAT measurements (PM: $p=0.038$ rPT: $p=0.019$, CT: $p=0.016$), whereas those weren't in BT and AT measurements. When the mean of HAQ scores compared between DI and PI groups, these differences statistically weren't significant in all BT, AT and 3MAT measurements. As the mean value of HAQ, PM, CT and rPT results in BT, AF and 3MAT measurements compared within DI group there was significant improvement in 3MAT measurement values in HAQ ($p=0.01$), PM ($p<0.001$) and rPT ($p=0.03$), but not in CT results ($p=0.05$) in comparison with BT and AT measurements.

Conclusions:

These results suggest that treatment with DI is effective modalities in patients with mild idiopathic CTS. Findings need to be confirmed with other studies including long term follow up results.

Management Of Bladder Dysfunction

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The management of bladder dysfunction requires a clear understanding of the bladder, sphincter and pelvic floor function. During bladder filling, there is a little change in intravesical pressure, because of the viscoelastic properties of the bladder smooth muscles (detrusor muscle). As filling continues, sympathetic efferent fibres stimulate the α -receptors located in the body of the bladder (causing relaxation) and the α -receptors located near the bladder neck (causing contraction). There is also evidence that the sympathetic stimulation inhibits excitatory parasympathetic ganglionic transmission. As bladder filling progresses, there are increased somatic discharges via the pudendal nerve to increase external urethral sphincter activity.

This has been termed the guardian reflex. Evidence suggests that this pudendal nerve transmission reflexively inhibits the parasympathetic detrusor nucleus. Bladder voiding is initiated by relaxation of the urethral sphincter followed by a bladder contraction. At the onset of bladder contraction, decreased α -adrenergic stimulation of the bladder neck results in the funnel appearance of the bladder neck. The bladder contraction itself can be divided in two phases: the first is a short, rapid rise in intravesical pressure, the second is a more prolonged period of a sustained pressure, during which the bladder empties. Voiding involves coordination of sacral parasympathetic efferent stimulation of the bladder, inhibition of post-ganglionic sympathetic outflow, and inhibition of pudendal somatic outflow to the external striated sphincter.

These events, as with bladder filling, are coordinated by interganglionic parasympathetic and sympathetic modulation at the level of the spinal cord, brain stem, cerebellum, and higher centres. The pontine micturition centre (PMC), located in the rostral brain stem, allows a normal voiding (detrusor contraction, opening of the vesical neck and urethra, relaxation of the striated urethral sphincter, and onset of urine flow). Bladder dysfunction includes neurogenic and non neurogenic disturbances. Neurogenic voiding disorders may cause failure to store (incontinence) or failure to empty (retention).

Neurological lesions above the PMC are usually associated with detrusor overactivity (urinary incontinence, no or low urine post-void residual-PVR): these lesions include cerebrovascular accidents, Parkinson's disease, and multiple sclerosis. Neurogenic detrusor overactivity (NDO) is characterized by the presence of involuntary, uninhibited detrusor contractions. Patients with these disorders do not develop detrusor external sphincter dyssynergia (DESD) but may voluntarily tighten the urethral sphincter in an attempt to keep from voiding (pseudodyssynergia). Medullary lesions (below the pons and above the sacral micturition centre) are characterized by NDO with DESD (urinary incontinence with variable PVR). The most common suprasacral lesion is traumatic spinal cord injury (SCI) however, other suprasacral lesions include transverse myelitis, multiple sclerosis, and primary and metastatic spinal cord tumours.

Finally, infrapontine lesions involving the conus or sacral roots may lead to an absent or diminished detrusor activity (urinary retention) eventually associated with incontinence (urethral incompetence). We must outline urinary retention due to detrusor areflexia during the so-called spinal shock, that has been found to occur after SCI. Bladder management should not be viewed as an isolated event, but rather as an integral part of a patient's overall management program.

The patient is central in this management approach, and the overall medical, psychological, social, and vocational goals must be integrated into the management approach, and this often requires a concerted effort between neuro-urologists and physiatrists. The management approach of the neurogenic bladder and sphincter dysfunction includes behavioural therapy (triggered reflex voiding, bladder expression or Cred and Valsalva maneuvers, toileting assistance), intermittent catheterization, pharmacological modulation (anticholinergics and alpha-adrenergic antagonists), functional electrical stimulation (stimulation pelvic floor muscles and intravesical electrical stimulation or IVES).

In case of unsuccessful bladder retraining, it is advisable to apply to intravesical pharmacotherapy, botulinum toxin detrusor injection, augmentation cystoplasty, external sphincterotomy, indwelling catheter, condoms, pads and external appliances, and sacral neuromodulation. The non neurogenic bladder dysfunction is prevalent in women and in males after radical prostatectomy) and include overactive bladder (OAB), urge incontinence, stress incontinence and mixed incontinence. In these cases the aims of the treatment are mainly strengthening the pelvic floor muscles (PFM), and inhibiting detrusor overactivity. The treatment modalities include behavioural treatment (bladder retraining - BR), biofeedback (BFB), functional electrical stimulation (FES), pelvic floor muscles training (PFMT), and pharmacological treatment.

In incontinent non neurological patients, mainly in females, PFMT may be used alone or in combination with BFB and/or FES. As a general rule, the least invasive and least dangerous procedure for the patient should be the first choice: life style interventions, BR and PFMT nowadays are considered as the first line of therapy for UI. Particularly PFMT play an extremely important role in the conservative treatment of UI and overactive bladder, and many studies have demonstrated their effectiveness.

Neurogenic Bladder Management In A Department Of Intensive Neurorehabilitation: From Indwelling Urinary Catheter To Autonomy

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INTRODUCTION:

The aim of our study is to assess the utility of early removal of indwelling urinary catheter (IUC) in patients with neurological disease hospitalized in a department of intensive neurorehabilitation.

METHODS AND SUBJECTS:

239 out of 351 pts (68%), consecutively admitted in our department in a 15 months period, had a IUC (121 W and 118 M, mean age 66.6 yrs - 16-87). The 51% had an ischemic stroke, 23% hemorrhagic stroke, 17% SCI, 7% brain cancer and 2% TBI. We evaluated leucocyturia, symptomatic and the presence of urinary tract infections before and after IUC removal. We administered the Barthel Index (BI) in order to evaluate the disability related to bladder function (range 0-2).

RESULTS:

The mean time for IUC removal was 9.7 days after admission (1-59). In 26 cases there were necessary more attempts to remove IUC. 94.6% of pts were discharged with balanced autonomous micturition, 3.3% of pts, all with SCI, with clean intermittent catheterization and 2.1% returned to the IUC because of the worsening of medical conditions. The positivity of urinoculture was reduced from 82% pre-removal to 51% post-removal and there was a significant leucocyturia decreases (from 59% to 37%). The BI item related to bladder function improved from 0/2 to 2/2 in 97.9% of patients.

DISCUSSION:

The management of neurogenic bladder dysfunctions is an important part of the rehabilitation project. The first step is the removal of this aid. Its use is appropriate only in the acute phases and should be removed as early as possible.

CONCLUSIONS:

Scientific literature shows that in Italy the 67% of patients hospitalized are discharged with the IUC. A longer use exposes patients to many complications. Our protocol allows the early removal of the IUC with clinical, psychological and economic positive effects.

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Trends Of Technology In The Field Of Functional Electrical Stimulation Of Extremities

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Functional electrical stimulation (FES) is one of the forms of low frequency electrotherapy. It is used for external control of paretic or paralyzed human extremities eliciting functional movements. Systematic use of FES is generally believed to have started by Liberson et al. (1). The condition for application of FES is preserved electrical excitability of lower (peripheral) motor neurons, so the lesions of upper (central) motor neurons are indication for FES (2). Therefore, candidates for FES of extremities are selected patients with cerebral lesions (adult patients with hemiplegia or hemiparesis due to stroke, tumour, injury, inflammation etc., among these causes by far the most common is stroke cerebral palsy children and adults with hemiparesis, diparesis, monoparesis etc.) and patients with lesions of the spinal cord (spastic paraplegia or paresis). The FES therapy is usually initiated once the acute phase of the disease or injury has passed and the state of the patients has been stabilized. Safety measures and contraindications for low frequency electrotherapy must be respected (3).

Before application the practical test of the use of FES should be done and appropriate parameters of electrical impulses need to be selected for each individual patient. Regarding the possibility of eliciting the desired movements and the need to evoke contraction of different muscles and muscle groups, FES can be performed by different number of channels (electrode pairs): single-channel, dual-channel or multi-channel stimulation.

The essential components of a typical electrical stimulation device include electronic circuit generating electrical impulses with commands for setting the desired electrical parameters, an on/off switch and electrodes with connections to the stimulator. Depending on the types of electrodes for FES of the extremities, three kinds of electrical stimulation are possible: transcutaneous stimulation (surface electrodes), percutaneous stimulation (wire electrodes) and subcutaneous stimulation (implanted electrodes).

In clinical practice, transcutaneous stimulation with surface electrodes is nowadays the most widely used (4). An important advantage of transcutaneous stimulation lies in a simple application and relatively low price. It is performed with surface electrodes which are connected by isolated flexible wires to the stimulator with electronics and commands. The electrodes are put on the skin over neuromuscular structures to be stimulated. Transcutaneous stimulation with surface electrodes is definitely the simplest and the cheapest form of FES. In percutaneous electrical stimulation, flexible wire electrodes are conducted aseptically through the skin close to the nerve or to the motor endplate zone. Nowadays, this type of electrical stimulation is rarely used, since percutaneous electrodes present a risk of infection and are also unpleasant for the patient.

Subcutaneous stimulation with implanted electrodes has been making its way as technologically most perfected type of FES. The signals are transferred by radiofrequency transmission via antenna put on the skin over the implanted receiver with the stimulating electrodes. Compared to surface stimulation the goal of stimulation can be achieved with substantially lower electrical current strength in implanted electrodes. On the other hand, an implanted system needs to have high reliability and tissue biocompatibility. Besides, its dimensions need to be relatively small. The disadvantage of implant systems is the possibility for the development of peripheral nerve lesion and breakdown of the implant in the tissue,

which prevents their wider use. It is also associated with a high cost and the functional benefits have not yet been shown to reduce the overall cost of care (5). Therefore, relatively small number of implanted systems for FES of extremities have been developed till now. In the future the use of miniaturized implanted systems is expected to increase in accordance with the advances in electronics and microprocessing and the perfection of the implant itself. However, the expectations should be realistic.

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Hemineglect in Stroke Patients

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ABSTRACT:

A large proportion of right-hemisphere stroke patients exhibit unilateral neglect, a neurological condition characterised by deficits for perceiving, attending, representing, and/or performing actions within their left-sided space.

Unilateral neglect is responsible for many debilitating effects on everyday life, for poor functional recovery, and for decreased ability to benefit from treatment. Prism adaptation (PA) to a right lateral displacement of the visual field (induced by a simple target-pointing task with base-left wedge prisms) is known to directionally bias visuo-motor and sensory-motor correspondences and has recently been found to improve various symptoms of neglect. For example, performance on classical pen-and-pencil visuo-motor tests could be improved for at least two hours after adaptation.

Effects of PA have also been described for non-motor and non-visual tasks, such as for somatosensory extinction, for deficits in mental imagery of geographic maps and in number bisection, and even for visuo-constructive disorders. These cognitive effects suggest this calibration of sensori-motor transformation may influence the high level space representation. Lesion studies and functional imaging data point to a cerebello-cortical network in which each structure plays a specific role, though not necessarily one that is crucial for adaptation.

Prism adaptation could act specifically not only on the ipsilesional bias characteristic of hemineglect but rehabilitates more generally the other spatial cognition deficits due to damage of the right hemisphere.

Effects Of Mirror Therapy On Hand Related Activity Level In Subgroups Of Patients With Stroke

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Introduction:

Previous clinical studies^{1,2} have shown that mirror therapy was more beneficial in a group of stroke patients for both upper and lower extremity motor recovery and activity level than a similar treatment without mirroring. The aim of this study was to define subgroups of stroke patients whom would benefit more from mirror therapy in terms of hand related activity level.

Methods and Subjects: A total of 72 consecutive inpatients with hemiparesis (median age 63 years), all within one year post-stroke (median time since stroke 130 days) were included. Both the mirror group (n=40) and the placebo group (n=32) participated in a conventional stroke rehabilitation program, 5 days a week for 4 weeks. For the same period, the mirror group received an additional 30 minutes of mirror therapy program consisting of non-paretic side wrist and finger extension movements using a mirror². The placebo group performed the same exercises, but using the non-reflecting side of the mirror. Main outcome measure was the gain in the total self-care score of Functional Independence Measure (FIM self-care) (FIM self-care at discharge minus FIM self-care at admission). Subgroups were created (based on age (younger or older than 63 years), gender, time since stroke (more or less than 130 days after stroke), lesion type (ischemic or hemorrhagic), side of paresis, proprioception deficit) and compared in terms of gain in FIM self-care score.

Results and Conclusion: Groups were similar in terms of baseline clinical characteristics. After 4-weeks of mirror therapy, gain in FIM self-care for mirror group (5.2 ± 3.8) was higher than control group (1.1 ± 2.5) and the between-group difference was significant (mean difference \pm SE, 95% CI, p value) (4.1 ± 0.8 , 2.5 - 5.7, $p=0.000$) in favor of mirror group. Subgroup analysis revealed that right-side hemiparetic (5.4 ± 1.3 versus 3.3 ± 0.9), young (6.4 ± 1.1 versus 2.0 ± 1.0), women (4.6 ± 0.9 versus 3.7 ± 1.2) with hemorrhagic (4.6 ± 1.2 versus 3.9 ± 0.9), late (5.7 ± 1.0 versus 2.5 ± 1.2) stroke who had impaired proprioception in the wrist joint (9.5 ± 0.3 versus 3.7 ± 0.8) benefits more from mirror therapy in terms of hand related activity level.

Discussion: Not only clinical studies but also studies with fMRI demonstrated that access to the motor system beyond M1 via dorsal premotor cortex (Pmd) is possible through imagery of movement. Moreover, network analysis determined a connection of Pmd of one hemisphere to M1 of the other hemisphere via callosal fibers and PmD of the other hemisphere. Thus, transhemispheric influence of one M1 is feasible through mirror training of the ipsilateral hand and this change is mediated by premotor cortices. In our stroke patients, mirror therapy in addition to a conventional rehabilitation program was more beneficial in terms of self care activity level than a similar treatment without mirroring for some particular subgroups of patients.

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INV-35

Intrathecal Baclofen For Spasticity In Spinal Cord Injury

A. Nene

Neuropathic Pain Syndromes: Evaluation And Treatment

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This session will address the incidence, education, pathophysiology, evaluation and treatment of Neuropathic Pain Syndrome (NPS) secondary to peripheral nerve injuries and central pain syndrome. Neuropathic Pain Syndrome is more common than realized and with newer modes of treatment becoming more manageable. The pathophysiology of NPS is not known but studies suggest dysfunction of the peripheral nerve resulting in abnormal sensations projected to the central cortex or changes in the central nervous system.

The evaluation of patients with NPS obviously includes a clinic exam including rating the pain with an accepted NPS scale which will be presented. Laboratory tests really confirm the etiology of NPS but not the extent of the disease or the syndrome itself. The treatment approach is usually comprehensive but relies on a pharmaceutical approach including anticonvulsants, antidepressants, analgesics, and topical patches of lidoderm. Therapeutic modalities such as TENS and psychosocial vocational interventions are part of the multidisciplinary treatment approach. An algorithm of appropriate pharmaceutical treatment modalities will be presented for different diagnoses.

Assistive Technology Importance For Functioning

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Introduction:

Assistive Technology (AT) is defined as 'any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities¹. In excellent paper by Andrich and Caracciolo² there are many useful findings for AT future development and availability. Assistive Technology does not save lives, nor does it reduce morbidity or remove impairments. Technology - classified by ICF as a contextual factor - can contribute to reduce disablement.³ It will take time for the general public to become familiar with the ICF concept that 'disablement' is a situation a person may encounter due to the gap between personal limitations and contextual factors, rather than an intrinsic characteristic of the person involved. Functioning as the responsibility of medical doctor was added to health by European medical specialists council in November 2006.

AT outcome analysis instruments The most popular outcome analysis instruments used in AT outcome assessment are reviewed by Wessels et al.⁴ The Quebec User Evaluation of Satisfaction with Technical Aids (QUEST) (20) is a retrospective self-administered questionnaire that asks questions about the user's satisfaction with an AT product (eight items), and the service associated with that product score, ranging from 1 (not satisfied at all) to 5 (very satisfied). QUEST has been translated into different languages, including Swedish⁵, Danish⁶ Dutch, Italian⁷, etc. The Psychosocial Impact of Assistive Devices Scale (PIADS)⁸ is also a retrospective self-administered questionnaire it is filled-in after the user has been using the device for a certain period. Also PIADS has been translated into different languages, e.g., Italian, Chinese, etc.

The Individual Prioritised Problem Assessment (IPPA)¹¹ was developed in Europe within the international study EATS - Efficiency of Assistive Technology and Services. The decision to create a new tool was taken after a deep investigation into whether instruments already available for medical measurement, such as FIM¹², or for overall quality of life measurement, such as the Index of health related Quality of life¹³, the EuroQol¹⁴ and the McMaster Index¹⁵ were sensitive to AT equipment.

The result was negative. The Canadian Occupational Performance Measure (COPM)¹⁶, currently available in over 20 languages, was developed in Canada in the same period and is similar in performance to IPPA. There are also other instruments - although not primarily designed as outcome measures - that may be useful in this domain. For instance, the EUSTAT tool¹⁷ facilitates clinician and client cooperation to define the user's problem in very precise terms. The Matching Persons and Technology (MPT) instrument¹⁸ is probably one of the best known instruments in this field. It is intended to probe a client's predisposition to adopt AT solutions.

Conclusions For improving individual functioning AT selection has to include outcome assessment.

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Prostheses, Orthoses And Driving Assessments

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Helping a disabled person resume driving after an illness or accident is probably the single most important step one can take to enhance their participation in society. While the fit, young, intellectually intact amputee or orthosis user needs only technical guidance from a professional, many users have other, more challenging, additional impairments such as those associated with widespread microvascular complications of diabetes or atherosclerosis they often benefit from a comprehensive driving assessment. This includes consideration of medical, visual, physical and cognitive factors if no contraindications are found from these pre-drive examinations, the person is taken for an in-car assessment in a suitably adapted car with an experienced assessor.

Evidence on the benefits and drawbacks of driving with orthoses are mainly based on the clinical and practical experience of assessors, but there is now a small literature on driving among lower limb amputees. This comprises papers based on cross sectional studies of the experiences reported by convenience samples of amputees attending prosthetic clinics who were mainly established users. I shall describe one study by Marie Denholm from the Scottish Driving Assessment Service (SDAS) in which I participated. This was of 195 amputees (mainly recent) and reviewed their outcome in relation to aetiology and need for different types of adapted controls. Three times as many right leg amputees were seen compared to those with a left leg amputation, since automatic transmission is the obvious solution for the former impairment. Some vascular amputees were unfit to drive because of comorbidities, but over 90% could potentially return to driving.

Ninety four percent needed automatic transmission but 6% (all below-knee amputees with no coexisting medical conditions) showed that they could use manual transmission safely. An equal percentage (again comprising the fittest group of below knee amputees) demonstrated that they could use their prosthetic limb to operate the primary pedal controls of the car. We speculate that this may be possible because their brains can work out where their prosthesis is in space - what Simpson erroneously called 'extended proprioception'. This study also confirmed, and has been able to quantify, the types of adaptations which amputees need to be able to drive. In a related follow-up study, it was found that the accident rate of recent amputees seen at SDAS was not statistically different from the general population, although the vascular patients had more difficulties as would be expected.

These objective studies confirm what many have known for many years, but they do provide licensing authorities with evidence, rather than prejudice, on which to make their decisions.

Evidence- Based Medicine In Treating Low Back Pain-An Update

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Non-specific low back pain is not attributable to a recognizable pathology. Acute low back pain is usually self-limiting (90% of patients recover within 6 weeks), although 2 to 7 % develop chronic low back pain. Low back pain is defined as chronic when it persists for 12 weeks or more.

Effective treatments for acute low back pain

Non-steroidal anti-inflammatory drugs (NSAIDs) and muscle relaxants relieve pain more than placebo does. The various types of NSAIDs and of relaxants are equally effective. Gastrointestinal complications should be considered when using NSAIDs. The efficacy of cox-2 specific inhibitors is similar to that of conventional NSAIDs, with a significantly lower gastrointestinal risk. The advice to stay active expedites the symptomatic recovery and reduces chronic disability.

Effective treatments for chronic low back pain (CLBP)

Various types of NSAIDs are equally effective and relieve pain more than placebo does. Behavioural treatment has a positive effect on pain intensity, general functional status and behavioural outcomes. Currently there is no evidence in favour of any type of behavioural treatment. Intensive multidisciplinary biopsychosocial rehabilitation with functional restoration is effective in treating CLBP. A workplace visit increases the effectiveness of these programs. An intensive back school program in an occupational setting is more effective than no treatment. Little is known about the cost-effectiveness of back schools. Exercises in general are also beneficial in treating CLBP. There is no evidence in favour of one of the exercises due to the contradictory results reported in the literature. Most of the benefit is seen on the short term (3 - 6 months). Massage is beneficial in reducing pain and improving functional performance. The effectiveness of other treatments is unknown because of insufficient or conflicting evidence.

Based on these results the Belgian health insurance system shows a growing tendency not to reimburse the more passive treatments and stimulates a more active approach, and this not only in LBP. Socioeconomic factors play an important role in this respect. Recently a special nomenclature has been implemented for treatment of chronic low back pain related to workhardening.

Some criticism is advised with regard to the methodology and interpretation of some evidence-based results.

Rehabilitation In Rheumatoid Arthritis

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Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease affecting 0.5-1% of the world's population, twice as often in women. RA has extensive consequences both on the patient and on the family, together with a significant medical and social burden to the society. RA is one of the leading causes of functional limitation, and consequent disability. Classically, most of the RA patients experience moderate disability within two years of disease onset, and are moderately to severely disabled after about ten years. However, in recent years, this relatively high disability rate seems to be decreasing with proper patient management. Rehabilitation in RA is an essential part of the treatment, and actually it should not be regarded as a separate procedure or program.

Rehabilitation strategies for RA management should focus on systemic impairments like fatigue, physical deconditioning, depression, together with the work disability in RA patients, and a variety of regional problems associated with local involvement of joints and other structures due to the disease. Among the regions mostly affected in RA include the wrist and hand, knee, cervical spine, hip, and other peripheral synovial joints. The aims of RA management include relieving the symptoms, preventing joint destruction, deformity, disability, and early death, preserving quality of life and achieving clinical remission. Rehabilitative approaches for RA include patient education and joint protection strategies, exercise, and physical therapy including cold or hot application, electrotherapy and hydrotherapy. It is an interdisciplinary care by a team including the physiatrist, physical therapist, occupational therapist, orthotist, nutritionist, psychiatrist and others, taking all the consequences of the disease into account.

Institution of general therapeutic measures, like education, exercise, rest, joint protection, physical therapy is of great importance besides giving the proper medical treatment in RA patients. There is a wide range of opportunities for RA 'patient education' including individual or group education, printed materials and the internet. These education programs are shown to be valuable in improving the patient knowledge and behavior. Classically, range of motion exercises and physical therapy has long been an essential component of RA management however, aerobic and strengthening exercises are recent additions to these programs. Exercises including aerobic exercise and strength training in RA have been studied in various controlled trials for a long time. These studies indicate that most people with RA can safely perform moderate intensity aerobic exercises. But, caution is suggested for RA patients who already have significant joint damage, especially in weight bearing joints. Some case reports and observational studies indicate that patients who participate in rigorous physical activity or occupations with heavy manual work have more aggressive erosive disease. Strength training for RA should be done under the guidance of a professional who had knowledge about RA disease process, joint protection principles and exercise physiology.

Additionally, protection of unstable or malaligned joints is important for long term success of the rehabilitation. As the hand function is a major determinant of disability and work status in RA, splinting of the wrist and hand is important. The aim is to decrease the pain and inflammation and to support the function or minimize deformity by maintaining the alignment. Orthotics is also valuable in the lower extremity together with shoe modifications, such as extra-depth shoes, athletic shoes and shock-absorbing insoles. In conclusion, management of RA requires the use of a wide range of non-pharmacologic interventions, carried out by a team of professionals. Open discussions between the patient and the health professionals will help establishing the priorities. Future research in RA rehabilitation should address the use of controlled randomized designs, together with measuring both short and long term effects of the interdisciplinary management.

An International Call For Rehabilitation Specialists To Join Orthopaedic Surgeons For An Expert Treatment Of Spinal Deformities.

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Purpose:

To look critically at the present reality of AIS (Adolescent Idiopathic Scoliosis) treatment and verify the hypothesis that the current prevalence of a single medical specialty could be creating distortions in patient care and/or cure.

Method:

This is a multifaceted study comprising a review of the evidence on AIS, a bibliometric study of the general and orthopedic literature since Medline start, and two case reports.

Results:

Evidence exists to support the efficacy of exercises, bracing and fusion (grade B, B and C recommendations, respectively), but in clinics exercises are generally ignored; braces are used with criticism, while fusion is considered the only reliable treatment. The literature on AIS treatment prevails in journals of orthopedic surgery, and therapy papers focused on surgery have increased from 34% to 55% over the past two decades. The two clinical cases show how an incorrect psychological approach to the patient and family, as well as inappropriate conservative treatments can have disastrous consequences for patients.

Conclusions:

Our results seem to confirm the initial hypothesis: The interest of the AIS treatment community (composed almost exclusively by orthopedic surgeons) has shifted toward fusion whereas research has increased, while conservative treatment is suffering a decrease in professional interest (and diminished research). AIS requires expert, committed evidence-based care, but other specialists totally devoted to conservative treatment, particularly (but not exclusively) Physical and Rehabilitation Medicine specialists, should enter the field to create better treating teams.

Medical Hydrology: Which Way(S) To The Future?

P. Cantista¹
I. Portual

Balneology or Medical Hydrology has been an important modality in the area of Medicine with a wide scope of interventions which include prevention, treatment and rehabilitation of a large number of health conditions.

Since early times mankind used water, steam or mud as therapeutic agents, first as a purely empiric exercise but in our times with a remarkable progress on its scientific basis. Almost every culture developed these procedures. Within Europe and Mediterranean Region Medical Balneology is historically linked with the best Medicine practice. Great names of our profession were hydrologists in many of our countries.

During the two last centuries we assisted of a growing interest and knowledge of the properties and therapeutic principles of balneology, including physical (hydrostatic, hydrodynamic, thermal), chemical, biologic and psychological factors in their action mechanisms.

In many of the current 27 countries of the European Union, Balneology integrates the field of PRM or is highly related with its daily practice. The use of water as a natural physical agent or as a mean of body immersion to help Kinesytherapy techniques by buoyancy, hydrostatic pressure or hydrodynamic resistance is widely known.

At this stage we must reflect and think about the future developments of this medical field. Topics as education, research, definitions, standards, organization, institutions, international cooperation, legislation and reimbursement are essential to benefit a large number of patients that keep looking for this kind of care.

In this lecture we express our opinion within these topics and about what should be the main goals to achieve in order to get a real scientific progress in Medical Hydrology.

Patellofemoral Pain Rehabilitation

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Patellofemoral pain syndrome (PFPS) is the most common diagnosis in patients with knee pain. Studies have shown PFPS to be the most common single diagnosis among runners and in sports medicine centers. Eleven percent of musculoskeletal complaints in the office setting are caused by anterior knee pain which most commonly results from PFPS. It constitutes 16-25% of all injuries in runners. The diagnosis of PFPS is clinical, and despite the fact that management can be challenging, a well-designed, nonoperative treatment is usually all that is necessary.

Several factors may predispose for PFPS via alterations in patellar tracking, increased patellofemoral joint forces, or combinations of these biomechanical features. Overuse, trauma, and anatomic factors appear to be overwhelming. Generally, a careful history and physical examination suffice to make the diagnosis of PFPS. Overuse, recent changes in activities and any changes in the frequency, duration, and intensity of training should be noted. Other possible causes include inappropriate footwear, and lower extremity resistance training and conditioning activities. Injuries like patellar subluxation or dislocation, trauma, or surgeries, should be noted because they may cause directly injure the articular cartilage or alter the forces across the patellofemoral joint, resulting in anterior knee pain.

The examination should aim to identify features that may alter patellofemoral mechanics. PFPS is primarily a clinical diagnosis and, for many patients, treatment can be initiated without imaging. Radiography is an adjunct to the history and physical examination and should be performed in patients with trauma or surgery, effusion, and resistance to treatment. The management of PFPS entails the implementation of a comprehensive rehabilitation program. Reduction of loading to the patellofemoral joint and surrounding soft tissues is paramount. The rehabilitation program should focus on correcting the findings identified on physical examination. In some patients quadriceps strengthening may be necessary.

Others may have adequate quadriceps strength but tight lateral structures or poor quadriceps flexibility. Soft tissue techniques and flexibility exercises can be beneficial for those patients. Simple analgesics or nonsteroidal anti-inflammatory drugs, glycosaminoglycans, bracing, patellar taping and foot orthoses are the other treatment alternatives in this regard. Surgical consultation for PFPS may be needed for patients whose symptoms persist despite a thorough rehabilitation program of at least six to 12 months, and in whom other causes of anterior knee pain have been excluded. Surgical options include release of the lateral retinaculum, articular cartilage procedures, proximal realignment, and distal realignment, often with anteromedialization of the tibial tubercle.

Oncological Rehabilitation Versus Palliative Care

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With advances in treatment that have occurred during the past two decades, cancer has become a chronic disease for many patients. The price of increased longevity has sometimes been the persistence of mild to severe functional impairment either as a result of the disease or its treatment. Cancer rehabilitation can be defined as a process that assists the cancer patient to obtain maximal physical, social, psychological, and vocational functioning within the limits created by the disease and its resulting treatment. Rehabilitation of the cancer patient should focus on preventive interventions to decrease functional impairment and maximize the quality of the individual patient's life. Nearly 90% of all cancer care is delivered in outpatient settings.

Outpatient care is broadly defined to include home care, rehabilitation units or centers, skilled nursing facilities, nursing homes, and hospice care. Therefore it requires a coordinated approach by the health care system.

Dietz (1981) identified 4 categories of cancer rehabilitation that address the scope and course of the illness a) Preventive interventions, b) Restorative interventions c) Supportive interventions and d) Palliative interventions. Rehabilitation of the cancer patient should focus on preventive interventions to decrease functional impairment and maximize the quality of the individual patient's life.

Rehabilitation efforts should include regular reassessment as they transition into a new phase of illness. Treatment and prevention of disability and its rehabilitation requires comprehensive and multidisciplinary rehabilitation services based on a problem oriented approach. Despite better treatment methods and higher survival rates today, the medical community has not been able to change their attitudes toward cancer rehabilitation and sufficiently differentiate it from palliative care.

The World Health Organization (WHO) defines palliative care as 'an approach that improves the quality of life of patients and their families facing problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.' This is particularly true when patients are in advanced stages and have a very low chance of being cured or when they are facing the terminal phase of the disease. Because of the emotional, spiritual, social and economic consequences of cancer and its management, palliative care services addressing the needs of patients and their families, from the time of diagnosis, can improve quality of life and the ability to cope effectively.

Multiple Sclerosis

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Concept Multiple sclerosis (MS) is an inflammatory, chronic, degenerative disorder that affects nerves in the brain and spinal cord (1).

Environmental factors:

Specific geographic distribution of this disease around the world. Higher incidence of the disease is found in the northernmost latitudes of the northern and the southern hemispheres. Data from migration studies shows that if the exposure to a higher risk environment occurs after the adolescence (older than 15), the migrant assumes the higher risk of the new environment (2).

Genetic factors Caucasian population are at a higher risk. The incidence of MS in first degree relatives is 20 times higher than in general population, suggesting the influence of genetic factors on the disease. Children of parents with MS have a higher rate of incidence (30-50%) (3). Epidemiology Incidence: Incidence 0,1 %. Prevalence 1-30 per 100.000 in northern Europe and continental North America. More frequent in women in a relationship of 2:1. The age of onset peaks between 20 and 30 years. Almost 70% of patients manifest symptoms between ages 21 and 40. Disease rarely occurs prior to 10 or after 60 years of age.

Physiopathology

It is considered to be an autoimmune disorder where the immune response engages a broad range of immune cells that target a limited number of brain antigens (1). The consequence is that the oligodendrocytes and even the axons are damaged. And thus becomes myelin disrupted and action potentials affected. Demyelination slows conduction of nerve impulses which determines neurological symptoms. MS is characterized by intermittent damage to myelin followed by remyelination, that takes place in early phases of the disease, The oligodendrocytes that originally formed a myelin sheath cannot completely rebuild a destroyed one. The newly-formed myelin sheaths are thinner and often not as effective as the original ones. Repeated attacks lead to successively fewer effective remyelination, and this one to the disease progression. As different nerves are affected at different times, MS symptoms often exacerbate, improve, and develop in different areas of the body. Types Multiple sclerosis is classified according to frequency and severity of neurological symptoms, the ability of the central nervous system (NS) to recover, and the accumulation of damage. 1. Relapsing-Remitting MS causes exacerbations that occur with increasing frequency, along with periods of remission. 2. Primary progressive MS causes steady progression of symptoms with few periods of remission. 3. Secondary progressive MS is initially similar to relapsing-remitting MS but eventually follows a progressive course without remissions. 4. Relapsing-Progressive MS causes cumulative damage during exacerbations and remissions. Signs and symptoms Common ones: Balance and equilibrium abnormalities Bladder and bowel dysfunction Behavioral changes Cognitive dysfunction Sensibility abnormalities Motor abnormalities (spasticity/tremor/ataxia) Sexual dysfunction Vision abnormalities Dysphagia Speech disorders

Pain Prognosis Favorable factors: Females Low rate of relapses per year Complete recovery from the first attack Long interval between first and second attack Symptoms predominantly from afferent systems (i.e., sensory symptoms) Younger age of onset Low disability at 2 to 5 years from the disease onset Later cerebellar involvement Involvement of only one CNS system at the time of onset.

Infavorable factors: Males High rate of relapses per year Incomplete recovery from the first attack Short interval between first and second attack Symptoms predominantly from efferent systems (i.e., symptoms of motor tract involvement) Older age of onset Significant disability at 2 to 5 years from the onset acute onset Early cerebellar involvement Involvement of more than one CNS system at the time of onset.

Diagnosis

Complete medical history, NS examination, diagnostic tests, such as magnetic resonance imaging (abnormalities in the brain and spinal cord, particularly in areas rich in myelin), evoked potential tests (measure a delay and weakening of nerve conduction), lumbar puncture for presence of antibodies in cerebrospinal fluid.

Therapy

I. Pharmacological:

1. Disease-modifying therapy: Interferon beta-1a Interferon beta-1b Glatiramer acetate Interferon beta-1a Natalizumab
2. Treating Progressive MS Mitoxantrone is sometimes used to treat people with worsening relapsing-remitting MS secondary-progressive MS progressive-relapsing MS.
3. Therapy for relapses are often treated with steroid-type drugs such as adrenocorticotrophic hormone, prednisone or intravenous methylprednisolone to reduce the severity of an individual attack of MS particularly in the earlier stages of the disease. They are of no value during progressive stages and may even produce harmful side effects. Long-term use should be avoided.
4. Symptomatic therapy depending on the symptomatology.

II. Physiotherapy and Occupational therapy Most different studies of physiotherapy and or occupational therapy applied to MS - systematic reviews and clinical trials - show no clear evidence of impairment reduction, disability and quality of life improvement after different types of therapy (4, 5, 6). However in most of these studies, benefit perception from patients was reported. There is lack of randomized controlled efficacy studies in most intervention categories of physiotherapy and/or occupational therapy for multiple sclerosis.

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ORAL PRESENTATIONS

First Experiences With Practical Using Of Icf (Mhadie)

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In the past 30 years, the limitation experienced by people in connection with disorders of some functions and structures is becoming very important. These “disabled” functions can be compensated by undisturbed functions, i.e. health and environmental factors. The concept of disability has become an umbrella term in an international context in the area of functional disorders, activities and participation.

It is one of the basic pillars of the International Classification of Functioning, Disability and Health WHO (ICF). It has been found that disability is evaluated differently in the individual countries of the world. In November of 2007 at a conference in Milan, in the framework of the EU Measuring Health and Disability in Europe – MHADIE project SP24-CT-2004-513708, the European Commission, the Organization for Economic Cooperation and Development (OECD), representatives of the WHO, the UN, other European organizations of citizens with disabilities agreed that ICF would be used as a basic methodology for evaluating the functional abilities of persons with disabilities.

The rights of disabled persons are increasingly becoming part of the legislation. The aspect of disability connected with the fact that there is a constant increase in life expectancy, which also entails an increasing number of health problems in old age, is becoming especially important. It is expected that a third of Europeans will be more than 60 years of age in 2020. It is necessary that conditions be created for disabled persons leading to their greatest possible independence.

The European Union and the other countries of the world need good-quality, reliable and comparable data. Without this data, it is impossible to understand and evaluate the development of the overall situation of disabled persons. From this point of view, ICF is of great importance, as it forms a conceptual framework permitting further developments in this area. Thanks to ICF, it is possible to better define and evaluate the positive or, on the other hand, negative impacts of various aspects of the environment on the participation of person with disability – how this environment mitigates the consequences of the disability (facilitation) or, on the other hand, how it aggravates the disability through the creation of new obstacles. The easier it is to evaluate these data, the greater the benefit and development of policy, from the local, regional and national level up to the European level.

Interactive Session: Towards The Implementation Of A Minimal Network Of Rehabilitation Services In The Mediterranean Countries.

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During the 6th Mediterranean Congress of PRM, taken place in Vilamoura of Portugal in October 2006, an interactive session was organized concerning the medical rehabilitation services in the several Mediterranean countries and how to find a road map for a harmonized development of these rehabilitation services.

Analysing a questionnaire sent to all the participating Mediterranean countries and listening carefully to the presentations and comments of the several participants to that interactive session we concluded to a minimal network of rehabilitation services (MNRS), derived from the answers to the sent questionnaire and the acceptance by the majority of the participants. This MNRS was sent to all our members coming from 23 Mediterranean countries and suggesting them to use it as a road map for global rehabilitation services development within their own country.

The MNRS includes the following: 1. Phases of rehabilitation intervention: a. Intensive rehabilitation, b. Completion of the recovery process and of the rehabilitation project, c. Maintenance and prevention of progress of disability, 2. Organization levels of Rehabilitation Services in 3 phases: a. hospitalization, b. residential, c. outpatient, 3. Network of rehabilitation services delivery in: a. Long-term hospital settings, b. Outpatient recovery and functional re-education clinics and hospitals, c. Extra-hospital rehabilitation settings, d. Outpatient rehabilitation centres, 4. Intensive rehabilitation interventions delivery: a. Multiple specialty and/or single specialty hospital facilities, b. Extra-hospital rehabilitation settings, 5. Rehabilitation Centres focused on special PRM branches: a. Spinal Cord Injuries, b. Paediatrics, c. Neuropsychological problems, d. Traumatic Brain Injuries (including strokes). During the 7th Mediterranean Congress of PRM in Portorose of Slovenia, a new interactive session will be organized to present the implementation process of the MNRS in the several Mediterranean countries.

A new questionnaire has been circulated and analyzed with the aim to identify the progress and the difficulties in the implementation of some provisions of the MNRS in some of the Mediterranean countries. The presentations of the colleagues from the several Mediterranean countries, as well as their comments and proposals, will help the Mediterranean Forum of PRM to find the best ways to support those countries facing serious problems in the implementation of the MNRS.

Functional Assessment Of Sensorimotor Recovery After Stroke

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Introduction:

There is no consensus concerning which standardized upper-extremity motor-scale is best suited for routinely assessing of motor function in the upper-extremity post-stroke.

Objective:

The aim of this study is improvement of assessment of motor recovery of patients undergoing inpatients rehabilitation after acute stroke by comparing of evaluating scoring sensorimotor recovery of upper-extremity by FMA and ARAT and finding relation in results between these two tests.

Methods and Subjects:

66 patients (30 women and 36 men) were included in testing. Criteria for selection of patients were: stable medical state 2-3 weeks after the stroke, diagnosis was based on patient's clinical history, neurologic stroke examination confirmatory by CT -computed tomography and NMR, and preserved cognitive verbal and nonverbal communication. The following assessments were completed within 72 hours of admission and 24 hours before discharge.

Results:

There were 66 patient n=66. The mean age \pm SD of our patients was 60 ± 13 . There were 36 men and 30 women. The study sample included patients with moderate stroke severity as assessed by their admission neurologic impairment, NIHSS score, 10 ± 5.5 . The 2 upper-limb motor scale (ARAT, FMA motor score) correlated highly with one another, both on admission $p = .50$, $P < .001$ and on discharge $p = .60$, $P < .001$.

Discussion:

These floor and low ceiling effects affected the ability of the responsiveness index to detect change in their scale scores. Both these scales could ideally assess functional motor recovery in moderate- stroke patients but it would be less ideal in mild or severe stroke patients.

Conclusion:

Both the FMA motor score and the ARAT test were equally sensitive to change during inpatient acute rehabilitation and could be routinely used to measure recovery of upper-extremity motor function.

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A Long Term Predictive Capacity Of Fim Scale In Patients With Stroke

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Aims: The aim of the study is to verify the predictive capacity of the FIM Scale related to stroke long term outcomes.

Methods and Subjects:

The study included all patients admitted with diagnosis of acute stroke between May 2000 and April 2001. All patients were evaluated using the FIM Scale at the admission and at the discharge from the hospital, after 6 months and after 4 or 5 years from the stroke. Deaths, cause of deaths and relapsed stroke were recorded during all the 5 years of the study.

Results:

We classified all the patients in 3 groups: 1) death people 2) patients included in this follow-up 3) patients no longer traceables. Comparing the 3 groups average Fim Scores at the admission in the hospital, group 1 shows a statistically significant lower average than the ones of the other 2 groups. Groups 2 and 3 have comparable Fim scores at the admission and at the discharge from the hospital. Almost all the deaths occurred within the first 6 months after the stroke.

Discussion and Conclusions:

After 5 years from the stroke older patients worsen their Fim Scores more than younger ones. In general the best Fim Score turn out to be the one after 6 months from the stroke. After 5 years the Fim Score is generally worse than the one after 6 months but better than the score recorded at the discharge. The subjects admitted in rest homes after the discharge from the hospital show a Fim Score at 5 years worse than the score recorded at the discharge. Patients returned to their homes after the discharge from the hospital point out a significant improvement of the Fim Score within the discharge and the evaluation at 6 months.

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Time-Trend In Ability Level Of Stroke And Multiple Sclerosis Patients Undergoing Complex Rehabilitation In Slovenia

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Introduction:

Functional Independence Measure (FIM) is arguably the main outcome measure in rehabilitation medicine (1) and an important casemix tool (2). Institute for Rehabilitation in Ljubljana (IRSR) provides complex rehabilitation for the territory of Slovenia, admitting ~1300 cases per year. Compulsory FIM assessment at admission and discharge, integrated into the hospital information system, was introduced in 2004. We aimed at verifying the clinical observation that rehabilitation demandingness is increasing over time because of decreasing patient ability at admission.

Methods and Subjects:

FIM scores of stroke (CVI) and multiple sclerosis (MS) patients gathered between Sep/2004 and Sep/2006 were compared to patients with the same diagnosis (N=144 and 74, respectively) from the Sep/1999 Sep/2000 period, whose data were obtained within an international research project. For the recent period, only first admission cases were considered (N=651 for CVI, 151 for MS). Sex structure (~61% men) did not differ between the periods. Because of significant difference in average age between periods (~2 years in favour of the recent period in both groups), ANCOVA was used to test for difference in average FIM score (motor, cognitive and total) between the periods within each diagnostic group while adjusting for patient age.

Results:

In both groups, motor and cognitive FIM scores were ~5 points lower on average the 2004-06 period, thus the average total score was ~10 points lower. However, the average difference between discharge and admission score has increased over time (in total by ~1 in CVI and ~3 in MS).

Discussion and Conclusion:

In general, IRSR is admitting more severe patients than 5-10 years ago. Because of S-shaped nonlinearity of the FIM scale (3), the actual difference is even larger than the FIM scores show. The difference is associated with increasing patient age. It is encouraging that nevertheless, the expected age-adjusted functional independence gain during rehabilitation has slightly increased.

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Validation Of The General Motor Function Assessment Scale – An Instrument For Elderly

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Purpose:

The purpose of this study was to test the General Motor Function assessment scale (GMF) for content and criterion validity in geriatric home-rehabilitation. Furthermore, the GMF was analysed with respect to sensitivity, distribution, and for floor- and ceiling effects.

Method:

Content validity was explored by questionnaires circulated to ten experts in the field of geriatrics. Three assessment instruments were used to test 66 patients in home rehabilitation. In order to evaluate criterion validity GMF results were compared to results from the ADL-taxonomy test, and the Timed “Up and Go” (TUG) test. GMF scores were analysed regarding, sensitivity, distribution and to check for floor or ceiling effects. Comparisons between pre-intervention assessments and post-intervention assessments were also made. Non-parametric statistics were used.

Results:

GMF covered and measured areas of relevance according to content validity. No floor effects in any of the subscales of GMF were seen. Comparison of pre-intervention and post-intervention assessments showed significant ceiling effects for all three subscales. As for criterion validity all subscales of GMF in terms of dependence, pain and insecurity correlated significantly with the activity parameter mobility of the ADL-taxonomy and TUG. GMF was sensitive enough to demonstrate changes between pre-intervention and post-intervention status.

Conclusions:

GMF is a relevant instrument of assessment suitable for physiotherapists rehabilitating elderly in the home environment. For elderly with minor functional limitations the GMF shows ceiling effects.

The Longitudinal Validity Of The Original And Quick Version Of The Dash Questionnaire In Musculoskeletal Out Patients

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Introduction:

Longitudinal validity is the ability of an outcome measure to detect real change over time. The Disability of the Arm, Shoulder & Hand (DASH) questionnaire is a comprehensive self-report measure, well used in rehabilitation. More recently a shortened version - the Quick DASH has been developed. The DASH takes approximately 5 minutes to complete, the Quick DASH 2 minutes.

Aim:

To compare the longitudinal validity of the DASH and Quick DASH in a cohort of musculoskeletal out-patients with hand trauma and degenerative conditions attending out patient occupational therapy (OT).

Methods & Subjects:

Consecutive OT hand out-patients completed the DASH and Q-DASH at the start and finish of treatment. Scores were hypothesised to improve in all cases. Responsiveness was calculated using effect size (ES), standardised response mean (SRM) and paired t tests.

Results:

Twenty two patients (15 women, seven men 58 years SD 16.6) completed sufficient details to permit scoring. They received 12 weeks (SD:7.5) of OT treatment lasting 134(SD:87) mins. Patients had soft tissue or bony trauma n=13 hand surgery n=6 osteoarthritis n=2 arm pain n=1. Intervention included ADL education n=8 soft tissue massage n=11 hand exercises n=22 splints n=13 mobilisations n=8. Mean baseline and discharge scores for DASH: 50.20(SD:22.27) 19.43(SD:15.61) Quick DASH: 50.43(SD:21.22) 19.70(SD:16.01) were comparable, both yielded similar ES and SRM statistics, DASH: ES = 1.38 SRM= 1.93 Quick DASH: ES= 1.51 SRM= 1.77 and t tests DASH: t=9.06 p<0.01 Quick DASH t=8.30 p<0.01.

Discussion:

The Quick DASH and DASH demonstrated similar treatment effect longitudinal validity. The DASH showed a higher SRM, the Quick DASH a higher ES. It is not unusual for different methods to produce different rankings but it should be noted that ES relates to a large clinical effect and it is relatively straightforward to detect a large effect size in a relatively homogenous cohort such as this.

Conclusion:

The Quick DASH is a shorter, more clinically practical self-report measure for upper limb disability than the full DASH and it has similar longitudinal validity as the longer version within this clinical population.

Validity Of The Functional Assessment Scales And Parameters Of Physical Capacity In The Rehabilitation Management Of The Sci Patients

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According to the data of Lithuanian State Patient Fund register 505 traumatic SCI patients (405 men, age - $40,5 \pm 6,38$ 100 women, age $40,58 \pm 7,10$ ratio 4:1) and 210 SCI patients (another causes) - 109 men, age $51,64 \pm 12,64$ and 101 women, age $59,02 \pm 12,32$ were treated in Lithuania in 2003-2006. SCI causes vast social and economical problems. Some authors, studying the quality of life, determined that it depends on patient's functional independence.

The aim of the study was to evaluate validity of functional independence scales and parameters of physical capacity in determination of the effectiveness of comprehensive rehabilitation of SCI patients and the influence of various factors on patient's functional independence.

The retrospective data of 575 traumatic SCI patients who underwent rehabilitation in the Centre of Rehabilitation, Physical and Sport Medicine of Vilnius University Hospitals Santariskiu klinikos in 2000-2006 was analysed. The mean age of rehabilitated patients was $39,82 \pm 6.50$ years. 80,14.8% of them were male and 19,86.2% - female patients. The data of 38 patients were analysed in remote period, at the average after one year. 125 SCI patients who underwent primary rehabilitation in the Centre 2003-2006 were included into the prospective study.

The effectiveness of rehabilitation was valued by the changes of functional independence level (BI, FIM, ADL) and physical capacity parameters during the rehabilitation course. The influence of SCI level, gender, age on rehabilitation effectiveness was analysed. Patients' functional independence was assessed on admission to rehabilitation unit and after the primary rehabilitation course.

The effectiveness of repeated rehabilitation course was assessed comparing functional independence on admission for repeated rehabilitation course one year after primary rehabilitation and after this course completion. Evaluating the influence of different factors on rehabilitation we were using Student's paired samples T test for independent samples. Also, the correlative analysis of patients' status (functional independence) and different factors was performed. P-value was chosen less than $p < 0.05$.

Clinometric Performance Of Common Functional Measures In Patients With Stage Iv Breast Cancer

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Scope of Work:

Cancer-related disability is inconsistently detected, possible because common functional metrics perform poorly in cancer cohorts. This study was undertaken to explore the clinometric properties of common functional metrics when administered to cancer patients.

Methods: A consecutive sample of 163 community-dwelling patients with metastatic breast cancer was administered the Medical Outcomes Study Physical Function Subscale (PF-10), the Older Americans Resource Study (OARS) Activities of Daily Living subscales, and the Functional Independence Measure (FIM). Pain was assessed with the Brief Pain Inventory (BPI) and psychological status with the Mental Health Inventory-17 (MHI-17).

Descriptive statistics and analyses of kurtosis were utilized to characterize ceiling and floor effects. Construct irrelevant variation and sensitivity to discrete impairments (e.g. brachial plexopathy) were estimated with linear and logistic regression analyses, respectively

Results:

Internal consistency was high for all scales with Cronbach's alphas ranging from 0.88 to 0.95. Excepting the PF-10, all metrics displayed pronounced ceiling effects with over 26% of the sample receiving maximal scores. Self-report measures were insensitive to the presence of focal impairments. However, clinician-rated metrics were more sensitive with FIM-mobility subscale scores being significantly lower ($p < 0.04$) in patients with 4 of 5 focal impairments. Pain and psychological status accounted for as much as 10.9% of the variation in the functional metrics.

Conclusion:

Measurement of functional in cancer patients using the PF-10, OARS ADL subscales, and FIM is subject to ceiling effects and construct irrelevant variation. Common self-report metrics are insensitive to focal impairments.

Rehabilitation of oncological amputee patients

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The article presents the functional outcome in 36 oncologic patients with lower limb amputation, admitted for rehabilitation at the Institute for Rehabilitation, Republic of Slovenia, in the period from 2002 to 2007.

Regardless of its cause, lower limb amputation affects the amputee as severe physical and psychological disability. Cancer of the bone or soft tissue leading to lower limb amputation not only impairs the structure of that body part but it affects the entire organism since it results in body scheme disorder.

Early rehabilitation is essential and is carried out already at departments for surgery where it focuses on correct positioning of the stump in bed or on a wheelchair as well as on correct application of compression dressing on the stump aimed at the prevention of swelling and stump formation, a prerequisite for successful prosthetic fitting at a later stage.

In a rehabilitation institution, the methods of medical, psychological, social and vocational rehabilitation are aimed at alleviating the disability and handicap of persons after lower limb amputation to the highest possible level. Team treatment is required with the person after amputation as an equal member of the rehabilitation team.

The final goal of rehabilitation is to enable patients to re-integrate themselves as fully as possible into their previous social life and work.

Rehabilitation outcome depends on the patients' age, their physical condition, the level of amputation, their primary disease and comorbidities and, last but not least, on rehabilitation program and heightened public awareness.

The Future Of Robotics In Rehabilitation

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The progress in modern medicine continuously enhances the diagnostic and therapeutic possibilities. High sophisticated technology appears also as rehabilitation robot in the field of physical and rehabilitation medicine. The increase of publications regarding the field of rehabilitation robotics during the past three years underlines the interest of the scientific community.

The increase of available commercial system reflects the economic relevance. However there is still a lack of demonstration of clinical evidence of such systems. Most of projects are driven by technologists and an involvement of medical professionals is not adequate. Such developments are very often not suitable for clinical use and do not have any impact.

But also projects that have been initiated from clinicians do not show clear results, if using a robot, up to now. In addition to that the costs of commercial systems are very high so that most of them can not gain a widespread use. For the future it can be predicted that robots in rehabilitation will play a significant role since they provide some unique advantages.

For example the frequency and intensity of treatment can be significantly enhanced by robots. However it has to be stated clearly that it should be focused on the acquisition of clinical data instead of the development of a tremendous number of new systems.

The industry is requested to provide systems for reasonable costs instead of enriching systems with new functions, which are sometimes superfluous for clinical routine use.

Universal Haptic Device For E-Rehabilitation

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Introduction:

Rehabilitation robotics is gradually being introduced into clinical rehabilitation [1]. The main advantages of robots are accuracy and repeatability of movement combined with virtual reality tasks. This possibility is very important, because motivation and cognitive involvement of a patient has a great impact on the outcome of rehabilitation process. While the evidence showing that rehabilitation robotics is efficient, the cost of equipment prohibits its use in chronic stage at home. There is a need for a low-cost universal haptic device that could be used independently. The aim of our work was to design, build and test such a device.

Methods and Subjects:

According to the requirements and simulation calculations we designed and constructed two degree of freedom haptic manipulator. Besides haptic manipulator, virtual reality scene for simple computer game was made.

Results:

After testing rehabilitation device on healthy subjects, it was found that developed haptic manipulator can be used to provide haptic interaction with user while performing various tasks such as: reaching and wrist movement.

Discussion:

The main aim of that study was to develop low-cost rehabilitation device that would allow us rehabilitation of upper-extremity. Besides upper limb, it would be also possible to use developed manipulator in many exercises regarding balance rehabilitation. Future work will be directed toward testing rehabilitation device on patients and developing additional virtual reality scenes.

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Achievement Of An Experimental Mechatronic Orthotic Device To Assist / Rehabilitate Orthostatism And Walk In Patients With Complete Paraplegia

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Purpose:

To present an experimental exoskeleton mechatronic orthotic device (MOD), as the first 'step' in building a robotized orthotic suit, fated to render functional autonomy for paraplegics (and not only).

Methods:

Description of the main components and problems to solve The modular portant structure, made of composite materials Compensation of body weight and recovery of the consumed energy, during the antigravitational movements of the MOD components Optimized solutions for actionning and energy supply of MOD .

Optimized solutions for the interactions between the internal face of MOD and the assisted person's skin Solutions to stimulate the venous - lymphatic return circulation, during the assisted orthostatism and walk of the paraplegic Informatic interaction between MOD'S sensoristic equipments, commanders & controlers and the assisted person Command equipment to achieve the main specific locomotor functions

Results:

By covering the exposed research stages, it was built a mechatronic exoskeleton, able to fulfil functions: standing-up, maintaining orthostatic position, sitting, walking on plane surface, climbing and descending stairs.

Conclusion:

Researches will continue, the main problems still to be improved spatial balance and getting out of skids: if/when completely achieved it will result hopefully, in a functional robotized orthotic suit.

Virtual Reality Oriented Task To Improve Motor Control?

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Introduction:

In sport rehabilitation often the isokinetic and isometric dynamometry [1] are applied to identify the muscle strength. In isokinetic conditions a loud vocal stimulation have significant impact on the results. Similar impact can be achieved by virtual environments offering capability for providing real time feedback to the subject during the practice [2]. Subjects can see the effect/consequence of his/her action and change the strategy/strength to achieve the desired goal. Such goal can be presented in virtual reality (VR) environment which is a powerful tool and can efficiently replace tasks from the real life [3]. Besides augmented feedback, the VR can also enable motor learning within environment to the people with disabilities [4]. Practice, which is essential in motor learning, can be facilitated by designing attractive VR environments, rather fun tasks or games.

Methods and Subjects:

The goniogram controlled dynamometer was used to apply movement of the lower extremity and to assess the voluntarily generated joint moment. The joint moment was related to the object in virtual reality (VR) environment. The participating subject was asked to move the object in the VR and complete the task.

Results:

The day-to-day increasing velocity in task performance had minor effects on subject's success. The increasing difficulty level of applied task showed similar performance for the two levels, but worse for the most difficult level.

Discussion:

The results indicate a possible learning of motor control skills as the successfulness of the performed task remained similar in spite of the velocity increase.

Conclusion:

The VR environment widen the possibilities of task parameter control and enhance the number of possible tasks. These advantages may make the VR superior over the real world applications in motor control rehabilitation [3].

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Haptic Device Modified For Mri Environment

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Abstract Magnetic resonance imaging (MRI) is a standard tool in clinical diagnostic and in the research of a human body. Over the past few years a functional magnetic resonance imaging (fMRI) has proved indispensable in a human brain research. Clinical studies have investigated human brain activation during voluntarily arm movements. However a controlled arm movement task could provide new insights on a human motor control.

To perform such a task a magnetic resonance (MR) compatible haptic interface is needed. A device used inside MR environment demand high level of safety and electromagnetic compatibility.

There are three major difficulties imposing limits on the use of a electromechanical device inside MR scanner. High magnetic flux density which in modern MR scanners exceeds 1T makes the use of a ferromagnetic materials impossible.

High level of a radio frequency electromagnetic field and the sensitivity of the scanner receiver coils limits the use of electronic circuits. There is also limited space within the scanner bore. A typical diameter of a scanner bore is sixty centimeters.

These limitations makes a design of a MR compatible device a challenging task. The research in the human motor control lead to the need of a tool capable to dynamically control arm movements inside MR scanner. A few such devices have been developed recently. A hand rehabilitation MR compatible devices are introduced in [1], [2]. More sophisticated haptic devices are described in [3], [4]. A two degree of freedom (DOF) haptic device presented in [3] uses hydraulic actuators to generate force.

Ultrasonic motors are used to power two DOF haptic device presented in [4]. However best to our knowledge no three DOF haptic interface was ever introduced to MR environment. To imitate reality as much as possible while a fMRI research in progress a three dimensional virtual environment is needed. This has motivated us to modify the Phantom Premium 1.5 haptic device to work inside a MR examination room. A mechanical carbon fibre extension with a three DOF joint has been developed and coupled with the Phantom haptic device. This ensures the Phantom haptic device to work in a safe distance outside the high magnetic field of the MR scanner.

A virtual environment which controls haptic and visual feedback has been programmed. This enables us to investigate a human subject brain activation during the execution of different virtual environment tasks. Experiments were carried out on a Siemens Trio 3 T fMRI scanner.

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The Effectiveness Of Locomotor Therapy Using Robot-Driven Gait Orthosis System In Acute Stroke Patients: A Randomized Controlled Trial.

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Background and Purpose:

Locomotor therapy by treadmill with partial body weight support is evolving as a promising new approach to improve gait ability for severely impaired neurological patients. Using a robotic-driven gait orthosis system (Lokomat[TM]) instead of the regular training has several advantages mainly that it enables more repetitive practice of complex gait cycles. In this prospective, randomized controlled pilot study we evaluated the effectiveness of early locomotor treatment using the Lokomat system on the functional motor outcome of acute stroke patients.

Methods:

56 acute stroke patients were enrolled in the study, 29 were treated by the Lokomat and 27 were treated by regular physiotherapy. Lokomat treatment was administered 3 times a week for 30 minutes combined with regular physiotherapy treatment for 6 weeks. Control patients received equivalent additional time of regular physiotherapy treatment. All patients were evaluated at the beginning of the study, and every 3 weeks of the treatment course.

The evaluations included neurological status (National Institutes of Health Stroke Scale, NIHSS), functional motor assessment (Stroke Activity Scale, SAS), gait parameters (Functional Ambulatory Capacity, FAC), .

Results:

Over the course of 6 weeks of training, in comparison with the control group, the Lokomat group showed a significant improvement in a neurological condition according to NIHSS ($p < 0.004$), in its ability to reach independent ambulation as expressed by higher FAC score ($p < 0.01$), and in its motor functions as evaluated by SAS ($p = 0.12$).

Conclusions:

This controlled study showed that 6 weeks combination of locomotor therapy using robotic-driven gait orthosis by the Lokomat and conventional physiotherapy enhances functional walking restoration in severely impaired acute stroke patients.

Lower-Extremities Training In Virtual Reality Augmented By Sound And Sensory Electrical Stimulation

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Introduction:

The use of virtual reality in rehabilitation studies and applications has been increasing steadily over the last decade. It engages the subjects' biofeedback which augments the rehabilitation process and adds to the improvement of the rehabilitation results. The most common modality of the virtual environment is visual however it has been shown that the feeling of presence increases when visual information is complemented by other modalities, such as sound, electrical stimulation, or vibrations. In the present study we propose the setup using visual, auditory, and sensory electrical stimulation.

Methods and Subjects:

The visual feedback was provided by a virtual mirror – a large screen in front of which the subject performs the lower-extremity movements while observing two superimposed figures in a three-dimensional virtual environment: the real time virtual self and the pre-programmed virtual instructor. The subject is instructed to follow the movements of the virtual instructor as accurately as possible.

We used stepping-in-place reference pattern which can be described with the same kinematic and temporal parameters as gait. Short and clear whistle sound signals and sensory electrical stimulation of the soleus muscles were added to provide the exact timing of the heel-off moment. We observed the ability of the subjects to adapt to the reference using different combinations of the employed modalities. The study was performed among 9 healthy adults.

Results:

Results include maximal hip and knee angles, swing-phase and stepping-in-place period durations in each step to enable the analysis of kinematic and temporal adaptation respectively, to the reference movements.

Discussion and Conclusion:

It was found that kinematic adaptation is more accurate when visual feedback is present but error variance is greater however, no significant differences among the modality combinations are observed in temporal adaptation. No significant differences between auditory signal and sensory electrical stimulation are observed but both improve temporal adaptation. The results suggest using the visual biofeedback to improve kinematic adaptation and the addition of sound or electrical stimulation to improve the temporal adaptation in the further studies or medical application with the virtual mirror.

Virtual Physiotherapist Based On A Haptic System For Training Of Reaching And Grasping

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Introduction:

Task-oriented repetitive movements can improve motor recovery in patients with neurological or orthopaedic lesions [1, 2]. HEnRiE (Haptic Environment for Reaching and Grasping Exercise) is a robot based haptic environment for simultaneous training of reaching and grasping movements. It consists of a robot with three active and two passive degrees of freedom and a grasping device with one degree of freedom. A training scenario that includes a virtual physiotherapist is introduced and presented are expected performance values for reaching and grasping movements.

Methods and Subjects:

A patient sits in front of a 3D screen and his hand is attached to the robot end-effector. A computer generated virtual physiotherapist (VPT) is shown on the screen and her hand virtually holds the patient's hand. The robot produces haptic and tactile feedback simulating forces produced by the VPT. Training scenarios resemble real therapy (passive movements, active resistance, disturbances, guidance). The VPT introduces a social component into the robot based rehabilitation, since VPT responds also in visual (gesture and mimics) and acoustic way (commands, encouraging statements).

Discussion:

The expected performance values are expressed as biomechanical and physiological reactions (speed of a movement, range of motion, force direction and magnitude, grasp and arm movement coordination precision of movement), cognitive behavior (coordination and accuracy, planning of movements), and psychological reactions (joy/relaxation when successfully accomplishing the task, annoyance when tasks are too difficult or challenging, enthusiasm when VPT gives praising and encouraging statements, stress/anger when the VPT is ignorant).

Conclusion:

HEnRiE allows training of complex reaching and grasping movements, while the VPT scenario provides a suitable platform for upper limb rehabilitation.

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Grip Force Tracking Method For Hand Training After Stroke

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Introduction:

Experimental studies have shown beneficial effects of visual feedback and virtual reality provided to a patient during the exercises (1, 2). The aim of our preliminary study was to improve the ability of the grip force control, balance and release of the grip of the post-stroke affected hand with the force tracking method, developed by the authors from the faculty of Electrical Engineering, University of Ljubljana (3).

Methods and Subjects:

The tracking system for the assessment and training of grip force control consists of the two force measuring units of different shapes connected to a computer for data acquisition and visual feedback. The tracking task required the patient to track different target signals from the computer screen by applying appropriate grip force to the force measuring-unit.

The method was applied as a supplemental therapy to 10 post-stroke patients. Some function of the affected upper extremity was preserved and the patients had no or mild sensory and cognitive deficits. The patients were trained over a period of 4 weeks 15 minutes daily. Patients either trained the grip force control in lateral grip or cylindrical grip, depending on the functional state of their affected hand.

Results:

Most of the patients in our preliminary study showed visible improvements in the overall accuracy of tracking. Eight out of 10 patients reduced the tracking error, improved the grasp stability and enhanced the release of the grip. The results of the grip strength assessment show that 7 patients improved their grip strength during the training. The tracking results indicate the largest improvements in the patients who had some, yet greatly reduced grip force control.

Conclusion:

The presented tracking method could be used as enrichment to standard rehabilitation exercises. The advantage of the tracking method is also in the quantitative measure provided which could be used to evaluate the progress of the therapy. Further studies are needed to evaluate the effects of the training with the tracking system in comparison to other methods of hand therapy.

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Initiation Of A National Informatic Network For The Dynamic Clustering Of The Patients With Spinal Cord Injury

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Purpose:

Presentation of the final data of a National Excellency Research (CEEX) competition, organized during 2006- 2008 (acronym RISCI), fulfilled in a multidisciplinary consortium.

Methods:

Description of the main steps in the achievement of a virtual database and network structure

Results:

The portal risci.ro (accessed with public, respectively restrictive keys) contains a highly secured cripted network and database of medical-social data, in the legally protected frame. It will serve for the future Romanian National Electronic Register of the sequel after SCI.

The public accesibile component (web page forum, chat., multimedia facilities for regularly tele-conferences, with Jive' participation of specialists and patients, ISCoS and ROSCoS scientific data).

The patient and his doctor may have protected password acces, for strict periodically actualization (^dynamic clustering') of individual socio-economic and medical information.

Conclusions:

The project represents an original solution at national level, with impact upon the improvement of the quality and performance of the services offered by the Romanian medical health and social systems towards the European level of quality. It will ensure periodica! scientific uptates, effective management interventions, adequate supply of human and material resources, allow interpersonal communication between patients and specialists, improve infrastructures, focused on a better SCI prevention, treatment and social reintegration.

A Web Portal For Spinal Cord Injury Patients Management

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Introduction:

A person with SCI needs healthcare support also after discharge from the rehabilitation hospital. Not all clinical problems are manageable by the General Practitioner (GP), and often SCI subjects (SCIs) has difficulties in accessing specialistic services. Information and Communication Technologies became thus a tool for simplifying SCI follow-up[1,2].

The present paper describes the development of an Healthcare Portal for SCIs, aimed at providing SCI people with a connection to both his/her GP and a specialist. Subjects and

Methods Subjects:

12 (3 paraplegic, 9 tetraplegic) of the Friuli Venezia Giulia Region, 11 male and one woman (age: 30-50).

Methods:

Meetings with SCIs, specialists, and a GP to describe project aims and gather requirements system specification web application development (ASP and MySQL) system test in a demo setup deployment of the system in the Regional Healthcare Network. Results All SCIs participated to the study. The Web portal has been developed according to WAI specifications [3]. SCIs acceptance was very good, GPs participation was slightly less positive. At present, the system has been integrated into the Regional Healthcare Network, so that it also complies with Data Protection rules, including authenticated access by means of a smartcard.

Discussion:

The presented Web Portal may provide support to SCIs non urgent clinical and social problems after hospital discharge. GPs, often not practically involved in PLM management, are in this case always involved in patient-specialist communications.

Conclusions:

The portal provides for: a) clinical follow-up, b) legally compliant communications, c) integrated communications among SCI people, GP, and specialist. Further development include extension to SCI caregivers, and public forum capabilities.

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Hemodynamic Responses To Head-Up Tilt After Spinal Cord Injury Support A Role For The Thoracic Spinal Cord In Cardiovascular Regulation

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Introduction:

This study was performed in the Spinal Research Laboratory at Loewenstein Rehabilitation Hospital, to determine whether the thoracic spinal cord (SC) has a role in hemodynamic regulation during head-up tilt (HUT).

Methods and Subjects:

Heart rate (HR), blood pressure (BP), HR spectral components (LF, HF, LF/HF), and cerebral blood flow velocity (CBFV) were measured during supine rest and HUT in thirteen healthy control subjects, 10 individuals with T4-T6 paraplegia and 11 with C4-C7 tetraplegia, and compared between the 3 groups.

Results:

BP response to HUT differed among the groups ($p < 0.02$). During HUT, BP slightly increased in the T4-T6 paraplegia (from a mean value of 96.24 mmHg to 97.86 mmHg) and in the control groups (from 92.89 to 95.44), but decreased markedly in the tetraplegia group (from 81.65 to 67.69). The significant correlation found in the control and tetraplegia groups between increases in HR LF/HF and HR at HUT ($r > 0.7$ $p < 0.01$) was not found in the paraplegia group. HUT effect on HR and mCBFV was significant in all groups ($p < 0.001$), but group effect was non-significant.

Conclusion:

Findings were generally compatible with those of comparable previously published studies, but they also support a role for the mid-thoracic SC in hemodynamic regulation.

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Surgical Treatment Of Pressure Ulcers In Spinal Cord Injury Patients – Case Review From October 2005 To December 2007

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Introduction and Objectives:

The patients with spinal cord injury have a high vulnerability of developing pressure ulcers. This situation originates long periods of bedridden times which, in an acute phase, will delay the beginning of the rehabilitation programme and, during the patient lifetime will have serious repercussions in the familial, social and professional reintegration. The surgery treatment is advised in patients with severe ulcers.

Material and Methods:

The authors present a retrospective study of 63 patients with spinal cord injury that were submitted to plastic surgery because they had severe pressure ulcers. These patients were admitted in department of Lesões Vertebro Medulares of the Centro de Medicina de Reabilitação de Alcoitão between October of 2005 and December of 2007. The authors will analyse the data referring to epidemiologic, physiopathology and clinical aspects, as well as the number of day in admittance and further complications.

Results and Conclusion:

Pressure ulcers in the spinal cord patients imply high emotional, social and economical costs. They interfere with every day life aspect, the rehabilitation program to social and familiar integration, and can worsen the functional prognosis of these patients. It's important to categorize patients by high risk for developing this severe complication. The management of this complication implies a multidisciplinary approach. The main treatment is prevention, which must be started as soon as possible, being the patient education the most important aspect.

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Rehabilitation Of Patients With Sci Due To Spinal Tumors In Upper Cervical Region: Two Cases And General Considerations

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Introduction: Spinal Cord Injury department at our Institute is the only department in Slovenia for rehabilitation of patients with spinal cord injury or lesion. We admit about 80 patients with fresh spinal cord injury per year. About half of them suffer from spinal tumors, spinal stenosis, vascular diseases, inflammations and other diseases. With the progress of medicine, more and more patients with high cervical lesion survive and need comprehensive medical rehabilitation. They need much more attention and medical care in comparison to other patients, whereby some need additional non-stop artificial ventilation, aspirations, inhalations and intensive respiratory physiotherapy.

We present two cases. For both patients, the aims of rehabilitation were achieving the sitting position in a wheelchair and managing it, prolongation of time without ventilator, preparing for life after discharge at home with relatives or in an appropriate institution. For the second patient, additional aim was replacement of an out-of-date ventilator with a new one.

Methods and Subjects: In 2006 and 2007 respectively, we admitted one patient after spinal tumors in upper cervical region with resulting dependence on artificial ventilation. The first patient was a 27-years old female with complete tetraplegia due to a cystic tumor from C2 to C4 region. The second patient was 47-years old male with almost complete tetraplegia after the operation of astrocitoma in C4-C7 region. He had some activity in right upper limb but no action in other three limbs.

Results At the end of the rehabilitation program, the female patient was able to use the electrically powered wheelchair with a chin control for the whole day and stay on the tilt-table up to 30 minutes at the angle of 80 degrees. She could stay without artificial ventilation for up to two hours daily and returned into her family environment. The male patient became user of an electrically powered wheelchair controlled with a joystick. We succeeded to exchange the outdated ventilator with a modern one (Airox Legendair) and prepared the patient for living in an appropriate institution.

Discussion: The admittance of two tetraplegic patients dependent on artificial ventilation was a major step for our institution. After overcoming the initial fear and improving our knowledge, we succeeded in meeting all our goals and improving the quality of live of both patients. With physicians being able to perform more and more complex procedures, the number of patients depending on artificial ventilation is bound to grow. That could present a serious problem for our department because we lack adequate personnel and equipment. Even rehabilitation itself is successful, we still face the problem where to discharge such patients. Only a few can be discharged to the family environment, while the majority will be forced to stay in intensive wards of various hospitals. Unfortunately, we are not able to take care of more than one such patient at a time because of personnel constraints.

Conclusion: In spite of all possible complications, patients of the describe type need comprehensive medical rehabilitation, which can provide them with the only chance to leave intensive wards in hospitals and return home or to specialized nursing institutions. Hospitalization of patients dependent on artificial ventilation requires attention of all personnel, whereby the success depends on each individual member of the rehabilitation team. As elsewhere, the chain is as strong as its weakest link.

Respiratory Function Parameters In Persons After Cervical Spinal Cord Injury Without Clinical Symptoms Of Respiratory Insufficiency

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Although respiratory dysfunction is common in spinal cord injury, characteristics of changes in pulmonary parameters have not been well documented in patients without respiratory symptoms.

Purpose:

In this preliminary study we assess spirometric parameters obtained in patients with cervical spinal cord injury (CSCI) who are breathlessness free in activities of daily living (ADL).

Material:

51 persons who sustained CSCI 31,1 (sd=22,4) months prior to study entry.

Chosen group characteristics:

Complete muscular deficite (CMD): 66,6% level of injury C5 or higher: 68,6% tracheostomy in acute phase of treatment: 54,9%. Outcome measures: vital capacity (VC), forced vital capacity (FVC), inspiratory capacity (IC), forced expiratory volume in 1 second (FEV1), maximal expiratory flow rates (MEF), peak expiratory (PEF) and inspiratory (PIF) flows.

Main Results:

Mean lung capacities were most reduced in CMD subjects (VC=34,5% IC=41,1%, FVC=36% predcited) compared to persons with non-CMD in whom VC=51,7% (p=0,0001), IC=63% (p=0,0004), FVC=50%, (p=0,02). CMD subjects with C5 or high level of injury had significantly lower mean values of VC=1,36 L (27,6%), IC=1,08 L (32,2%), FEV1=1,26 L (30,9%), FVC: 1,32 L (27,3%) in comparison to C6-8 CMD subgroup: VC=2,45 L (47,4%) IC=2 L (56%) FEV1=2,34 L (54,8%) (p=0,00006), FVC: 2,6 L (54,8%) (p=0,00001). No such correlation was found among non-CMD patients.

Mean values of FEV1/FVC rates varied between 90,7-95,8% and did not depend on injury level in CMD. Persons who underwent tracheostomy compared to non-tracheostomized subjects had significant reduction of FEV1 (17,4%), FVC (16,17%), MEF50 (19,07%), PEF (13,08%), PIF (19,1%). FEV1/FVC rate was unrelated to tracheostomy.

Conclusions:

Spirometric evidence of airway caliber reduction was not found among CSCI subjects who do not express dyspnoea on ADL. Pulmonary restiction depends on injury level in CMD CSCI. Relation between flow parameters reduction and tracheostomy is not clear and requires further studies.

Peripheral Nerve Transposition For Upper Limb Function Improvement In Tetraplegia –Report Of A Case With 30 Years Follow-Up

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Peripheral nerve transposition is a surgical procedure designed for upper limb function improvement in patients with tetraplegia. The technique was originally described by Benassy and Robart in 1966. Between 1971 and 2005 we performed 60 operations on tetraplegic patients applying this technique. The paper presents a case of patient with C5 tetraplegia who gained spectacular functional improvement following musculocutaneous on median nerve transposition in his left arm. The case has 30 years of follow-up.

Case Study:

In August, 1976 a 19-year old single right handed farmer with no previous medical history was admitted with diagnosis of tetraplegia following diving injury. On examination C5 tetraplegia following C6-7 luxation was diagnosed. On the 2nd day after admission the patient underwent C6C7 decompression and stabilization. 7 months later no further neurologic improvement was observed. The patient underwent musculocutaneous on median nerve transposition in left arm. 14 months after surgery active flexion of the wrist and fingers in the left upper extremity appeared. The patient was attending in-patient rehabilitation several times. On follow-up in May, 2006 he appeared as independent in transfer, wheelchair driving, dressing, eating, toilet maintenance. Estimation of active movements of the left upper limb revealed the following

Results:

Deltoid 5 biceps 5 brachioradialis 4 wrist extensors 4 wrist flexors 4 triceps 0 thumb flexors 4 finger flexors 4, finger extensors 0. Strength of right upper limb remained unchanged.

Conclusions:

Transposition of musculocutaneous on median nerve may significantly improve hand function in a patient with C5 tetraplegia. The therapeutic effect is permanent.

Shape Analysis Of Postural Sway Area

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Introduction:

Measurement of the human body centre of pressure (COP) movement with a force platform (stabilometry) is a standard procedure for the assessment of postural stability. Recently we proposed a method where the outline of the sway region is expressed in terms of Fourier coefficients [1] that are determined by asymmetric fitting and minimal outline bending [2,3].

Methods:

Stabilometric data were recorded for 41 healthy community dwelling elderly (60 to 80 years) and 36 young (20 to 25 years) subjects using force platform (Kistler 9286AA) and analysed by our specially developed software. The influence of different sensory inputs was studied by performing the experiments with the subjects standing for 60 s on a hard and on a compliant surface with their eyes open and closed. From the COP trajectories the outlines and sway areas were calculated using the Fourier analysis of the outline (FAO) considering 10 coefficients with the asymmetry parameter 20 and bending constant 10⁻³ [2,3]. These results were compared to the areas as calculated by the principal component analysis (PCA)[4] and the area ratios FAO/PCA were determined.

Results:

For young subjects the FAO/PCA area ratio increased from 1.74 to 2.10 when vision was eliminated and proprioception hindered. The differences between the area ratios while standing on a solid surface with open eyes and those determined with closed eyes on solid or compliant surface were statistically significant while for elderly subjects no differences were determined. Comparison between young and elderly subjects showed significant differences for all cases except for closed eyes on compliant surface.

Discussion:

It was shown that FAO/PCA area ratio is sensitive to the actual shape of the measured COP region. It increases if there is a small number of large excursions of the COP outside the central region, which are mostly missed by the conventional analysis.

Acknowledgement:

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Low Vision And Stabilometry

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Background:

The control of human balance during upright standing depends upon the integration of afferent information from the vestibular, somatosensory and visual systems. The importance of vision in the maintenance of postural control has been well documented, for example in static condition the visual afferences reduce the self-generated body sway by 50%. About 80% of our perception is gathered by the visual system. The aim of this preliminary study is to evaluate the influence of pathologic visual dysfunction on the postural system.

Aim of the study:

The aim of this experimental study is to evaluate how an altered visual perception in low vision patients can influence their keeping of the equilibrium while standing in erect position with eyes open and then closed.

Methodology:

Nineteen patients affected by different degrees of low vision have been examined in the rehabilitation department of Tor Vergata General Hospital. These patients have been examined through the use of static stabilometry, with an exposure period of 57.2s for each test. All data have been recorded in bipodalic support, first letting the patients keep their eyes open and then with their eyes closed. We have been examined the statokinesigram, the analysis of the oscillations of the center of pressure with the corresponding length and width parameters. From the analyzed data, it appears crystal clear that there is a trend of diminution of the parameters of the statokinesigram, in the phase in which patients keep their eyes closed.

Conclusion:

This preliminary study shows a disturb in the visual afference, even if in not statistically meaningful way, in the keeping of the condition of equilibrium in bipodalic support. This result, suggests that the lower vision condition does not produce any striking effect on the postural control system, even if there has been a trend of greater score in both parameter evaluated with the eyes closed so that the patients result more stable in upright standing position.

Postural Sway During Load Carrying In A Backpack

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Introduction:

Recreational backpackers, soldiers, fire-fighters carry a range of loads from 8-40 kg on their backs. Little is known about the extent to which carrying an external load on the body affects postural sway parameters. The purpose of the present study was to investigate the effects of increasing load in a backpack upon postural sway.

Methods:

31 subjects (age 21.7 ± 1.9 8 male and 22 female) participated in the study. Their mass was 67.4 ± 10.2 kg and height 172.3 ± 8.3 cm. Subjects carried weight in a backpack with the loads of 12, 21 and 30 kg. Stabilometry was used to assess the amount of postural sway. Data were collected by a force platform (Kistler 9286 AA) with 50 Hz sampling rate using BioWare program. Raw data were uploaded to Linux server and analysed by specially developed software. The outlines of the measured data were determined by Fourier coefficients, sway area and total path length of the centre of pressure (CoP), medio-lateral and antero-posterior total path length (1,2).

Results:

Compared with no load, the 12 kg, 21 kg and 30 kg loads increased total path length by 27.1%, 55.9% 70.9% respectively, whereas medio-lateral sway increased by 26.4%, 54.2%, 66.3% and the antero-posterior sway by 30%, 60.8% and 80.4%. Sway area increased even more with load: 84.5% at 12 kg, 154.6% at 21 kg, and 66.5% when the load was 30kg. Linear regression showed that total path length increased by 1.6 cm per kg ($R^2 = 0.99$), medio-lateral sway by 0.9 cm ($R^2 = 0.97$) antero-posterior sway by 0.94 cm ($R^2 = 0.99$). Sway area increased even more with increasing load by 0.3 cm² per kg of load ($R^2 = 0.99$).

Discussion:

Our results indicate that the participants' abilities to maintain their balance while standing were altered by the external load carried on the body. The sway measures showed significant linear increases in the length of CoP excursions in the antero-posterior and medio-lateral directions as well as sway area.

Conclusion:

Carrying weight in a backpack increases postural sway parameters with increasing weight. Further studies are needed to investigate the influence of the weight distribution on the postural sway and balance maintenance.

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Dynamic Computerized Posturography In The Assesement Of Balance In Transtibial Amputees

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Introduction:

Postural stability depends on interaction between sensorial system, motor reactions and the nervous system. Computerized Dynamic Posturography assesses sensory impairments to balance control and functional limitations of patients. Amputation is a cause of balance impairment.

Aims:

To study the balance impairment in transtibial amputees.

Methods and Subjects:

Ten transtibial amputees were assessed for balance impairments using Computerized Posturography with Neurocom Balance Master System. The patients were tested for Limits of stability (LOS) and weight bearing/ squat (WBS).

Results:

All tested patients showed a greater load on the remaining limb. Limits of stability revealed a shorter range towards the amputated side.

Discussion/Conclusions:

Amputation brings about major motor and stability problems which are not easy to measure. The quantitative study of balance impairments in amputees may play an important role in importance in prosthesis prescription decision and prosthetic training.

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Comparison Of Three Different Balance Scales Used In A Rehabilitation Inpatient Setting: A Rasch Analysis Study

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Introduction:

Achievement of an adequate balance is an important rehabilitation goal, either in Neurological and Orthopedic pathological conditions, as balance is a fundamental prerequisite for independence in ADL and mobility. There are several clinical scales assessing balance, such as the Berg Balance Scale (BBS), the Tinetti mobility and balance scale (TMB) and the Fullerton Advanced Balance Scale (FABS).

Aim:

To compare the psychometric profiles of BBS, TMB and FABS in order to establish which instrument is the most appropriate for clinical use with orthopedic and neurological rehabilitation inpatients.

Methods and Subjects:

In this single-cohort longitudinal observational study, 104 inpatients were enrolled. Study methods were compliant with Helsinki Declaration. An adequate sitting trunk control was the main inclusion criteria. BBS, TMB and FABS were administered to all patients and an administration protocol was devised in order to avoid too many postural changes for patients. Each scale was analysed separately for its internal construct validity (ICV) using Rasch Analysis (RA).

Results:

RA clearly demonstrated the lack of ICV for each scale in its original form. BBS showed 13 out of 16 items with disorder thresholds, whereas 2 items lacked invariance reliability was excellent with a Person Separation Index (PSI: 0.977) targeting was satisfactory with no appreciable floor effect. No TMB item showed disordered thresholds, with 1 item lacking invariance reliability was excellent (PSI: 0.971) although there was a significant floor effect (>25%). All 10 FABS items had disordered thresholds, although none of them showed misfit to the model and the scale showed excellent reliability as well (PSI: 0.968). Targeting was rather inadequate, with a massive floor effect (75%).

Discussion:

These results suggest that none of the studied scales holds adequate measurement properties when used with a sample of neurological and orthopedic rehabilitation inpatients. In order to achieve adequate ICV each scale should be modified to correct major biases that hamper their validity. The implications of these findings for rehabilitation are discussed. It is envisaged that a new scale, constructed by merging selected items from these three instruments may represent a solution to overcome the limitation of the three original instruments.

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Functioning Balance In Patients After A Menisci Surgery: Meniscectomy Vs Meniscal Repair A Prospective Study.

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Background:

Traumatic meniscal tear is a common injury in active young people, causing temporary disability due to loss of mobility. The most significant factor in motor disability is loss of balance control. To our knowledge the effect of the surgical treatment of torn meniscus on static and dynamic balance control, as well as the correlation with site and types of meniscal tear, and type of surgery, has not been studied.

Objective:

The purpose of this study is to determine whether menisci surgery have any effects on relatively new postural control measures, in correlation with functional balance assessment. The second purpose is to establish the affect of different types of menisci surgery on balance impairment, in correlation with a long-term functional outcome. Cohort, prospective study

Setting: Hadassah Medical Organization, Orthopedic&Rehabilitation Departmens Patients: 80 healthy participants, 18-40 years old, after a traumatic event in a single knee.

Exclusion criteria included: previous knee surgery, any other orthopaedic or neurological problem of lower limbs. Intervention: Arthroscopic Meniscectomy or Meniscal Repair where indicated. Main Outcome Measurements: Balance Master® testing for computerized static and dynamic balance measurements, International Knee Documentation Committee Questionnaire (IKDC) for subjective and objective assessment, and SF-36 for quality of life evaluation. Pre-surgery, 6 weeks and 6 month post surgery evaluations were done.

Results:

Preliminary results of 72 patients showed significant balance impairment of the proprioceptive sensory component, 6 weeks after meniscectomy. This balance impairment reduced towards 6 months follow-up. Strong correlation was found between balance impairment and functional assessment after meniscectomy.

Conclusions:

Meniscectomy surgery resulted in a significantly balance impairment according to Balance Master® measurements. Further intervention studies are required.

The Prediction Of Falls In Elderly Nursing Home Residents With »Fall Risk Assessment Questionnaire«

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Introduction:

With ageing falls incidence rise. We need simple, time non-consuming, cheap, user friendly instrument with good psychometric characteristics to find out fall risk by elderly people. One of them is »Fall risk assessment« questionnaire (FRAQ) (Hollinger and Patterson, 1992), which can be used in nursing homes (NH). Objectives: The purpose of this research was to assess sensitivity and specificity of FRAQ.

Methods:

In research 83 (68 women and 15 man) NH residents from Kamnik (Slovenia) was included. The average age was 80.6 ± 6.7 years. The data were assembled by asking and fulfilling the FRAQ. On the basis of FRAQ residents were divided in two groups: fall risk (R) group (15 and more points) and non-fall risk (NR) group (less than 15 points). Observational study lasted three months. The data were presented by descriptive statistics and for the differences between those two groups were used Students test-t in \diamond test ($p \leq 0.05$). To find out sensibility and specificity 2 x 2 contingency table was used.

Results:

49 (59.1%) resident didn't need any walking aid, and 34 (40.9%) of them were using some kind of aid. In the R group there were 32 subjects (38.6%), in the NR group 51 (61.4%). Both groups weren't statistically significant different according to gender, education, reside duration in the NH, body mass index and waist to hip circumference ratio. The main statistical difference was discovered only in experiences wit falls.

During three months research the patient were divided in two groups, fallers (F) and non-fallers. (NF). F group counts 18 (21.6%) residents who failed (15 women in three men two NR and 16 R). NF group counts 65 (78.4%) residents (53 women and 12 men 16 R and 49 NR). Most falls occurred in a room after lunch. Three months incidence was 21.7%, prevalence was 4.1%. FRAQ sensitivity was 0.89 (CI=0.67-0.98) and specificity 0.46 (CI=0.40-0.49). The average positive predictive value was 0.31 (CI=0.24-0.35), negative 0.94 (CI=0.81-0.99). Relative risk for falls appearance in R group was 5.02 (CI=1.26-31.09).

Conclusion:

The results showed that FRAQ in comparison with other questionnaires and tests is acceptable for predicting and with that also for preventing falls in NH.

Factors Influencing Return To Work After Stroke In The Northern Israel Population

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Background:

No study has reported the trend of return to work after stroke in Israel. Our aim in this study was to evaluate the proportion of patients who return to work after stroke and further to determine the predictors of return to work while taking follow-up periods into consideration.

Patients and Methods:

We performed a retrospective cohort study on the association between socio-demographic, medical and functional characteristics of 130 stroke patients who have been discharged from our department during January 1998-December 2001 and returned to work after stroke. All patients were younger than 60 years old and were employed at time of their stroke.

The group consisted of 97 (74.6%) men with mean age 53.0 years (SD, 7.28) and 33 (24.4%) women with mean age 52.7 years (SD, 7.66), 53.8% were born in Israel, 32.3% were old immigrants (> 10 years) and 13.8% were new immigrants (< 10 years). Return to work was evaluated by a follow-up questionnaire. Data were analyzed using forward logistic regression analysis.

Results:

Work definition included competitive employment (managing, clerk, services and technical) and miscellaneous (blue collar occupations, agriculture, and full-time university-level study). We found that 36 patients (27.7%) of the patients reported returning to work, 18 patients (13.8%) returned to same job, 14 patients (10.8%) to the same job with reduced number of hours per day, and 4 patients (3.1%) to a different job.

Conclusion:

There was no significant relationship between return to work and age, gender, origin, side of stroke presence of ataxia or aphasia. There was strong association between return to work and level of education, satisfaction from work. Persons that returned to work have significantly higher level of education than those who did not return, ($p < 0.001$). There was a significant relationship between vocation before stroke, satisfaction from work and tendency to return to work, ($p < 0.004$).

Return to work has been influenced by better cognitive (Mini-Mental Test, maximum 30) recovery and better functional ability (FIM 126 independent) and return to work ($p < 0.001$). We have observed shorter length of stay in rehabilitation department and return to work, without statistical significance, ($p = 0.097$).

Professional Reintegration After Severe Traumatic Brain Injury

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Introduction:

The interest concerning the level of professional reintegration and functional outcome of patients with traumatic brain injury (TBI) has increased during the last years. The aim of the study was to evaluate the level of professional reintegration of patients with severe traumatic brain injury (STBI) after 12 and 24 months.

Methods and Subjects: A total of 51 STBI patients (Glasgow Coma Scale GCS \leq 8 points for at least 24 hours) underwent a multidisciplinary early rehabilitation treatment until they were discharged from hospital and local ambulatory care was deemed sufficient. Follow-up examination took place 12 and 24 months after STBI.

Results: Data revealed a high level of independence in activities of daily living (mean Barthel Index after one year 92.7 points, after two years 93.7 points). After one and two years, 74.5% and 80.4% of the patients, respectively, were completely independent of need for care. Nevertheless, more than half of the patients had sensorimotor, behavioural, speech, visual and/or auditory disturbances. Return to work rates improved between one and two years after trauma, as evidenced by the rate of patients being back to full time work at one year (n= 14, 28%) and two years (n=20, 40%) post-STBI, although, none of these changes reached statistical significance. In those subjects who were not or only very restrictedly able to work, behavioural and speech deficits were significantly more frequent.

Discussion: In summary, there are still changes in both impairment and disability related areas between one and two years post-STBI, but the degree of improvement is variable depending on the area being considered. Clinicians should remain aware of the fact that modulation of impairment and disability appear to continue well beyond one year post-STBI which may impact on decisions regarding the provision and intensity of further rehabilitation efforts.

Conclusion: Behavioural and speech deficits seem to represent the major cause that hinders professional reintegration. Rehabilitation therapy therefore should be specifically directed to improve these deficits.

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Long-Term Sick-Leavers With Difficulty In Resuming Work: Comparisons Between Psychiatric-Somatic Co-Morbidity And Monodiagnosis

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The number of patients with difficulty in resuming work after long-term sick-leave has increased in several European countries including Sweden.

The general aim of this study was a comprehensive description - based on multidisciplinary diagnostics and assessments - of patients with marked difficulty in resuming working life after a long absence.

A particular aim was to elucidate the possible effect of co-morbidity on pain descriptors, disability, quality of life, assessed working ability and rehabilitation needs. Long-term sick-leavers, N=635, referred from National Insurance Offices were consecutively investigated.

All patients were examined by three board-certified specialist physicians in psychiatry, orthopaedic surgery and rehabilitation medicine. Psychiatric-somatic co-morbidity was noted in 55 % of the patients. The most frequent combinations of diagnoses in the co-morbidity group were fibromyalgia/myalgia plus depressive episode, while the most frequent diagnosis in those with only psychiatric diagnosis was depressive episode.

In the group of somatic diagnoses only, the most frequent diagnose was fibromyalgia/myalgia. Pain was present in 91-97% of the patients. All had lower health-related quality of life than references. One-sixth had no assessed working capacity and only about 3 % were assessed as able to resume work without rehabilitation.

About 80% were assessed as needing rehabilitation.

Conclusion:

Patients with psychiatric diagnoses, with or without concomitant somatic diagnoses, are in greater need of medical rehabilitation or medical/vocational rehabilitation than patients with somatic diagnoses only. This implies that medical rehabilitation programmes ought to adapt increasingly to the needs of patients with psychiatric-somatic co-morbidity.

Work Disability In Ankylosing Spondylitis

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Introduction:

Clinical manifestations of ankylosing spondylitis (AS) usually begin in late adolescence or early adulthood. One-third of patients with AS give up work before normal retirement age and another %15 reduce or change their work because of AS. The knowledge about the burden of AS to the patient and society is not well established yet. The objective of this study is to investigate work disability among people with AS at security forces and to identify potential factors in relation to withdrawal from the labour force. Work disability was defined as “the loss or change of paid employment at security forces due to AS”.

Methods and Subjects:

A total of 75 male AS patients who met the modified New York criteria were included in this study. Patient demographics, duration of disease were noted, employment status and disability was questioned. Measures of functionality (BASFI), axial mobility (BASMI), health related quality of life (SF 36) and depression (Beck depression inventory [BDI]) were used.

Results:

All of the patients were men, the mean age was 33 ± 13.1 years (range 22-66), and the mean disease duration was 11.3 ± 10.1 years (range 1-32). The % 14.6 (11 patients) of the patients were unable to work and had premature retirement. The % 34.7 (26 patients) had to change their work because of the disability due to AS. Thus, the % 49.3 of the AS patients at security forces had work disability. The mean retirement age of the 11 patients was 36 ± 4.2 years. The mean BASFI, BASMI and BDI scores were statistically worse at the disabled AS patients ($p < 0.05$). The physical functioning, role limitations due to physical problems, vitality/energy/fatigue and general health perception subscale scores of SF 36 were statistically worse in the premature retired group ($p < 0.05$).

Discussion and Conclusion:

Compared with non disabled AS patients, work disability was associated with greater functional impairment and more severe axial involvement. Furthermore, the level of depressed mood was seen higher in the disabled patients and health related quality of life of premature retired patients was seen worse than the others.

Mean retirement age due to disability was too early according to general population. The physical and mental healths of the persons at security forces are especially important for the individuals and also for the community, because of the social responsibility of them. The impact of AS on the individual's life, career, family and the society needs more attention.

A Comparison Of Perceived Health And Attitudes Among Unemployed And Employed People In A Rural Area Of Sweden

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Introduction:

Unemployment is a substantial problem in Sweden, just as it is in many other developed nations. Traditionally, unemployment has always been a major problem in the sparsely populated counties of northern Sweden. Few studies have been implemented that investigate attitudes to work, leisure time and the social security system among unemployed people living in sparsely populated areas. The objective with this study was therefore to compare perceived health and attitudes to personal capability among employed and unemployed people in a sparsely populated area in northern Sweden, in order to learn what aspects an employment officer at the Employment Office needs to be aware of in her/his work of supporting and helping unemployed people to regain a place in the labour force.

Methods and Subjects:

In September 2003 a questionnaire was posted to 500 randomly chosen people, aged from 20 to 64, living in three sparsely populated counties in northern Sweden.

Results:

The outcome showed that unemployed people perceived their mental health as being poorer than those who were employed (OR=3.66 95% CI 2.02-6.61). Unemployed people also experienced their physical health (OR=2.40 95% CI 1.27-4.54), general wellbeing (OR=3.46 95% CI 1.81-6.60) and general capability (OR=2.21 95% CI 1.05-4.76) as being poorer than those who were employed. There was a higher risk that unemployed people were negative in their expectations for the future, less satisfied with their life and also more prone to feeling a sense of insecurity in their current relationships/circumstances, than those with employment.

Discussion:

The unemployed were more negative in their outlook and expectations for the future, were less satisfied with their life and were of the opinion that their professional experiences and skills would no longer be attractive or valuable in five years time. A deterioration of physical and mental health can impair chances of finding a new job.

The results mentioned above must be taken into serious consideration by job counsellors, who need to apply strong pressure to motivate an increased self-confidence and self-esteem in unemployed people.

Conclusion:

It is of the utmost importance that officials at the Employment Office are fully aware of how unemployed people perceive their health and future if we are to succeed in reducing the number of people who become excluded from the Labour Market.

Comparative Study Between The Severity Of 'Classical' Clinical Signs And Ultrasound Data For Recent Ankle Collateral Ligament Sprains

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Objective:

We compared the severity of the classical clinical signs with the ultrasound examination (US) results.

Materials and Methods:

42 patients were included in the study after ankle inversion trauma. 8 of them were excluded after the US exam, due to other injuries than a simple collateral lateral ligament (CLL) tear. Clinical evaluation and ultrasound assessment were performed by two independent investigators. Correlations between clinical signs and ligament lesion type were assessed.

Results:

No single clinical sign is statistically correlated with the presence of a total tear of one or more ligament. A tear of the Anterior Talo-Fibular Ligament (ATFL) actually existed in only 75% of the patients showing all clinical signs. 20% of the patients reporting no severity sign did suffer from a total disruption of at least one ligament.

Conclusion:

Comparison to the US exam findings shows that no clinical sign is reliably predicting the presence or absence of ligament tear. Considering all of the clinical signs seems to allow a more precise appreciation of the presence or absence of ligament tearing, but conclusions are still false in about 20%.

Arthroscopic Treatment Of Anterior Ankle Impingement As A Prevention Of Ankle Osteoarthritis In Footballers

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BACKGROUND:

Anterior ankle joint impingement is a clinical pain syndrome, very often found in football players, over 30 years of age. It is caused by minor trauma due to repetitive hyperflexion of ankle joint. Pain syndrome can progress into osteoarthritis.

OBJECTIVE:

Can we prevent early ankle joint osteoarthritis in patients with anterior ankle joint impingement, with arthroscopic surgery?

DESIGN:

Prospective, randomised, clinical study

SETTING:

Clinical study, performed in hospital, with football players (1st, 2nd and regional Slovenian football league), 1999-2007

PATIENTS:

All patients were active football players, all men, with established diagnosis-anterior impingement of ankle joint. Patients were randomly selected in 2 groups. In group 1 all players were treated with arthroscopic surgery and in group 2 with conservative measurements only. Mean age was 32.2 years in group 1 and 33.3 years in group 2. In group 1-17 patients started and 16 finished study. In group 2-18 patients started and 14 finished study.

INTERVENTIONS:

Patients were evaluated clinically (American Orthopaedic Foot and Ankle Society score-AOFAS) and radiologically. We grouped patients according to the extent of osteoarthritis in 3 levels. Grade 0-no radiographic findings, grade I-osteophytic impingement, grade II-osteophytes and joint space narrowing. We repeated all examinations after 1, 3 and 5 years.

MAIN OUTCOME MEASUREMENTS AND RESULTS:

Group 1: Before treatment main AOFAS was 72.3. Radiologically 3 patients (18.75%) had grade 2 osteoarthritis. After 3 years main AOFAS was 82.3 and 4 patients (25%) had grade 2 osteoarthritis. Group 2: Before treatment main AOFAS was 74.2. Radiologically 2 patients (14.3%) had grade 2 osteoarthritis. After 5 years main AOFAS was 62.4 and 5 (35.7) patients developed grade 2 osteoarthritis.

CONCLUSIONS:

With arthroscopic surgery we can prevent early osteoarthritis in football players with anterior ankle impingement.

Low Back Pain In The Young Athlet - Critical Review Of The Literature - 2000-2008: The Portuguese Reality

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Low back pain has diagnostic and therapeutic specificities in young athletes (1). Incidence rates are estimated to be between 1 and more than 30% according to gender, intensity and frequency of effort and type/requirement of gesture (2). A previous history of low back pain is a predictive factor of pain in the adult (3,4).

The age at the beginning of the physical activity is considered also a risk factor (1). Most common diagnosis are discal disorders - discal degeneration/discal hernia, spondilolysis/spondilolisthesis, Scheuermann disease, facet syndrome and muscular disorders(3,5,6).

The authors present a critical analysis of 50 medical papers published between 2000 and 2008, about low back pain in children and adolescents with regular physical activity. Characteristics of the sample (gender, age, type of sport, duration of sport activity), geographic distribution, methodology issues of the studies, most frequent diagnosis, functional impact outcomes and prognostic features are considered in this meta-analysis. Some considerations will be made about the papers focusing on methodological issues which should be taken into account for future studies (instruments of assessment, sample to be studied and type of sport).

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Early Osteoarthritis-Like Simptomatology In Young Adults After Giving Up Sports

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Osteoarthritis represents a chronic degenerative condition, which may affect in various degrees all the articular sites. Initially this pathological process attacks the articular cartilage, which is progressively destroyed.

Consequently the patient experiences pain and alteration of normal range of motion. In general, osteoarthritis becomes clinically manifest after the 3-4th decade of life. However, during the last 3 years we noticed that young adults (less than 30 years old) complain of osteoarthritis-like simptomatology mainly in the knee: crunches when moving the joint, mild and discontinuous pain mainly along with the first movement of the joint but also at rest when the weather is cold or rainy.

They also experience meteosensibility. The simptomatology appears and disappears spontaneously and, although it isn't intense, it troubles this group of young people who doesn't expect to experience any joint discomfort without any known and/or recent local trauma and in absence of any inflammatory disease. It is important to underline that the laboratory findings and the conventional radiology are normal, the ecography of small parts and the magnetic resonance show eventually a very slight hidarthrosis. The only risk factor that this group of individuals have in common is represented by a form of systematic sport training performed for many years as children and/or teenagers, followed by giving up sports after the age of 18-20.

In this context, our observations lead towards the hypothesis that this kind of simptomatology is due to microscopical lesions of the articular cartilage. Those were determined by repeated micro-trauma produced during many years of intensive sport performed by individuals whose skeleton wasn't completely developed, so that the joint cartilage was easily damaged. As a therapeutical proof we noticed the beneficial effect of symptomatic slow-acting drugs for osteoarthritis, that improved significantly the simptomatology from the patient's point of view.

These clinical and therapeutical observations need to be developed in a long term study.

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Management And Rehabilitation Of Stress Fractures

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Introduction:

Bone undergoes a normal remodeling process in physically active persons and repeated application of stress reaction in bone leads to an acceleration of this remodeling process. Maladaptation to stress causes osteoclastic activity to supersede osteoblastic activity which leads to subsequent bone weakening and a higher susceptibility to stress fracture. Stress fractures happen most commonly in athletes. The frequently reported sites are in the tibia and metatarsals, but vertebral arch, upper limbs, ribs, and even the scapula have also been described. The areas of the skeletal system of this injury seem to have a degree of sport specificity. Diagnosis requires clinical evaluation with a high index of suspicion. History must focus on examining the athletes training regimen. Imaging studies can help the physician to confirm the suspected clinical diagnosis. Initial plain radiological evaluation may be normal, especially early in the course of a stress fracture. Further radiological evaluation may be necessary to make a definitive diagnosis. If a stress fracture is suspected, appropriate treatment of the injury should begin immediately. Effective management included a period of relative rest followed by a structured rehabilitation maintaining physical condition.

Purpose:

This study aims to present a diagnosis and rehabilitation protocol of stress fractures.

Methodology:

Research was oriented to articles published in the medline/pubmed database and the portuguese index of medical publications. Several internet sites were also consulted.

Discussion/Conclusion:

The diagnosis and treatment of stress fractures is a challenge for the physician caring for the athlete. It requires a high index of suspicion combined with a strong knowledge of the at-risk stress fractures and their complications. Accurate and timely diagnosis is required to prevent possible costly and disabling complications. Prevention or early intervention is the preferable treatment

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Rehabilitation After Autologous Chondrocyte Implantation In The Knee

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Objectives:

Our goal was to describe functional outcome of standardised rehabilitation protocol after autologous chondrocyte implantation (ACI) of the knee, or after ACI with some associated procedures, like anterior crucial ligament reconstruction, partial meniscectomy, tibia osteotomy, synovectomy on femoral condyle or patella, measured by seven clinical tests describing joint effusion, muscle strength, muscle mass and ROM.

Patients (materials) & Methods:

113 patients (94 male and 19 female), average age 31 years (14 to 49 years) were included in the study. The following parameters were recorded: PROM and AROM, thigh circumference, circumference of knee joint, maximal isometric force of the quadriceps muscle assessed by biofeedback method (n 19), intraarticular effusion described by Ballotement or Kellgren test, pain, stiffness, limping, catching, crutches, capsular fibrosis and poor mobility of patella and the time passed from operation to begin of rehabilitation. Results were statistically analysed by SAS System, version 8.1 (SAS Institute, Cary, North Carolina, SAD). Descriptive statistics, 2-test and Fisher's exact test were calculated. Univariate procedure was used for computing descriptive statistics.

Results:

Time elapsed between the operation and begin of rehabilitation ranged from 19 to 114 days (average 42,5 days) depending on surgeon - orthopaedics patients 6 to 8 weeks, traumatologists 10-14 days. 81 patients underwent ACI, 15 had ACI and LCA-R, 16 other associated procedures, only one had patellar ACI. The therapeutic program was equal regarding procedures but differed regarding the time of operation procedure. Statistically significant changes in all seven parameters measured on the operated leg. is seen: PROM and AROM, thigh circumference, circumference of knee joint, maximal isometric force of the quadriceps muscle ($p < 0,0001$).

Discussion and Conclusions: Statistically significant change in parameters measured, before begin and at the end of rehabilitation, suggests improvement in function of the treated knee as well as in functional capability of the patient. Measured data show effectiveness of rehabilitation approach used, confirming the quantity, distribution and intensity of interventions used. Described rehabilitation outcomes confirm safety of open kinetic chain exercises in water used early in rehabilitation and stresses the importance of strengthening the thigh muscles, considering the reflexive inhibition of joint effusion on quadriceps muscle. Same amount of attention is dedicated to improving mobility and balancing strength of knee stabilizers where biofeedback data can be helpful especially in planning further treatment.

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Scuba Diving - A Leisure Activity For Handicaped People

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After development of safer equipment, SCUBA diving is attainable to handicapped divers. Handicaps which permit diving are: asthma, amputation, DM, CP, spinal cord injuries etc. International Association for Handicapped Divers Adriatic connects handicapped divers from Slovenia, Croatia, and Bosnia and Herzegovina.

Aim is to exchange experience and knowledge about diving for people with different handicaps. We deal more with divers after spinal cord injuries colleagues from Croatia with diabetics and colleagues from BIH with amputees. We attribute observed positive effects (during training and diving) to hydrotherapy, regular physical activity (water exercise, swimming) and to psychosocial factors (better self esteem, better, wider social interactions etc). In June 2007 diving camp with researchers from the University of Split School of Medicine was organized to answering questions about advantages and disadvantages of diving for divers after spinal cord injury (sensitive group of handicapped divers) and specific details in planning safe diving for handicapped.

7 divers after spinal cord injury 24 to 47 years old participated. The physical fitness was assessed (spirometry, hand cycloergometry) before and after the camp. Tiredness and well-being before and after dive was measured with ten point scale. The comparison of quantity of nitrogen gas bubbles in venous blood (15, 60 min after dive) in the groups of handicapped divers and divers without handicap was made by Doppler. Together they made 37 dives in 3 days. Divers had strict life regime with good hydration, suitable meals, no alcohol, enough sleep etc.

Mean estimation of tiredness was 7,7 before and 7,5 after dive and of well being 7,6 before and 7,8 after dive. After dive, just 11% of divers assessed their well being with lower score and in 24% of dives they were moderately more tired. The bubbles measurement on scale from 0 (no bubbles) to 4 (continuous bubbles) showed that in only 21% of dive we detected occasional bubbles (grade 1) after 15 min (8% after 60 min). In the control group in 40 % of dives the bubbles were detected. We didn't notice any medical complications. On the basis of data experts from DAN prepared optimal dive profile for divers with handicaps.

For individuals after spinal cord injury diving is suitable, interesting and not straining recreational activity. For making reliable conclusions and planning safer dives for handicapped people in future more data is needed.

References:

1. Personal contact: Duić Ž, PhD. University of Split, Denoble P, DSc., Duke University

Tears Of The Anterior Cruciate Ligament. Bone-Patella-Bone Autografts Or Reconstruction With Hamstring Grafts

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PURPOSE:

The purpose of this study was to evaluate the clinical results of anterior cruciate ligament reconstruction with two diferents tecniques that uses the surgeons in our hospital: bone-patella-bone autografts or hamstring grafts. Type of Study: Retrospective case series

INTRODUCTION:

There is considerable debate about which form of restoration is best overall, and investigations comparing the techniques have been published.

METHODS:

50 cases (42 males, 8 females), mean 32,66 years (17-53), were reconstructed, 18 with bone-patella- bone and 32 with hamstring grafts. Patients with bone-patella-bone reconstruction began the physical therapy in our service with the therapist in the thrid day of surgery, while patients with hamstrig grafts began exercises in their homes and began physical therapy in our service one month after surgery. Range of mobility (ROM) was measures with goniometer, and pain with analogic visual scale.Strenght was measures with manual muscular balance (0-5) and dynamometer measure.

RESULTS:

Two patients suffered reintervention: one from B-PT-B (stiffness) and one from hamstring grafts(infection). Seven patients suffered discomfort in the knee(six B-PT-B ,one hamstrings), two of them pain. 68% of patients can returned their sportive activity or job without any problem. Of 8 females , 5 suffered problems (one reintervention, two pain and two important discomfort). None suffered rupture of the graft. Three patients (two B-PT-B and one hamstrings) don't hit de complet extension in grades less than 10°.

DISCUSSION:

B-PT-B is considered like “gold standard” of the ACL reconstruction. In our cases no differences in two different tecniques. Hamstring graft don't suffered more laxity in comparission with B-PT-B. Discomfort in knee was more frecuent in B-PT-B similar in the literature. In our experience both tecniques were as good as other.

Monitoring Of Rehabilitative Training After Acl Reconstruction. Patellar Versus Hamstring Graft.

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BACKGROUND AND PURPOSE:

The purpose of this study was to determine the effect of an accelerated neuromuscular training program after Anterior Cruciate Ligament (LCA) reconstruction, monitoring the isokinetic performance of the knee flexor and extensor muscles. The results of patellar tendon were compared to hamstring graft in a group of athletes.

SUBJECTS:

127 athletes (30 female and 97 male age 30,30±9,14 years) patellar graft (69,3%), hamstring graft (30,7%).

METHODS:

All the athletes performed the same program of physical therapy after ACL reconstruction with the same rehabilitative équipe and at all we prescribed an home exercise program based on the performance results obtained. Standardized isokinetic testing (Lido Multi Joint II) and a clinical evaluation were done monitoring the parameters obtained at 3, 6, 9 and 12 month, completing the follow up at 2 years. The parameters of peak torque, power and total work were compared with that of the healthy leg. The difference between patellar and hamstring graft were analyzed (T test). We verified the correlation between quadriceps strength and 1) pain 2) age 3) sex 4) BMI 5) sport.

RESULTS:

The performance at the injured leg was reduced for the knee extensor muscles, when patellar tendon was compared to hamstring graft (peak torque/body weight at 90 degrees/second and ratio with healthy side, $p < 0.05$ at 3, 6, 9 and 12 month). At the opposite, for the flexor muscles we registered no differences between patellar and hamstring graft ($p > 0.05$) at 3, 6, 9 and 12 month. Unexpectedly we verified a deficit of the knee flexor muscles at 2 years for the hamstring graft ($p < 0.05$) and no differences between injured and healthy leg for the patellar graft. We verified no correlation between quadriceps strength and pain, age, sex, BMI, sport.

DISCUSSION AND CONCLUSION:

We believe that a regular program of isokinetic evaluation of the knee after surgery can be used to quantify the muscular deficit and direct the exercise rehabilitation. In particular we think that the monitoring of the training could be important to determine timing of returning to play, reducing the injury risk.

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Use Of Force And Angle Tracking Tests For A Detailed Analysis Of Sensory-Motor Function Of The Knee

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Athletes with an injured knee suffer from sensory-motor deficit of this functional segment which can have negative influence on further participation in sports. Among others, sensory-motor function includes the ability to detect force and angle and to control them according to the movement goal. For that reason rehabilitation regimes should use strength training and functional stabilization training to develop these abilities. The aim of our study was to prove repeatability and give some guidelines for application of force and angle tracking methods in rehabilitation of sports injured knee.

Twenty-one subjects 23.7 ± 1.7 years of age (8 women, 13 men) participated in our study. Three different protocols were carried out on three different days. On the first and the second visit subjects performed force and angle tracking, while during the third visit they repeated three repetitions of force and angle tracking in order to test intra-session repeatability. ICC for intrasession repeatability was .89 for force and .89 for angle tracking, intersession repeatability for force .47 and angle .34. Different cycle duration (1s, 2s, 4s, 8s, 16s) of angle tracking signal (frequencies) were correlated ($p < 0.05$), but only 2s and 4s cycle duration for force tracking.

No correlations were found between angle and force tracking results. Important improvements were found in all angle tracking tasks due to learning effect, which was observed not only between different repetitions but also in one repetition. Greatest improvements in one repetition were observed for cycle of 1 s duration (50% improvement from 18s to 28s) and was absent in 8s and 16s duration of the cycle.

Our results show that the developed method aimed to test sensory-motor functions of the knee can be applied to the rehabilitation routine in order to follow the effects of the interventions we use. However, we need to optimize the test protocol to improve intra-session repeatability. We will present our proposals for the implementation of the new testing protocols into daily rehabilitation routine. Preliminary results showing sensitivity of the method and its use in knee rehabilitation will be presented.

Rehabilitation Outcomes In Skiers With Knee Injuries

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Introduction:

Knee injuries in skiers are usually complex and severe. High number of functional scores are used for evaluating rehabilitation outcomes.

Aim: Retrospective analysis of functional outcomes in skiers that were treated operatively in UMC Maribor from January 2004 to April 2006.

Patients and Methods:

There were 43 skiers (20 men and 23 women) with 46 operated knees included. The median age was 38 y (range, 14 – 60 y). Functional evaluation was done in median 22 m (range, 6 – 32 m) after surgery with Lysholm and Tegner score, and grade of working and sporting activity (in %), and person's satisfaction (numerical scale, 0 – 10). Non-parametric statistics was used.

Results:

The most frequent combination of lesions were rupture of anterior cruciate (ACL) and medial collateral ligament, and medial meniscus and/or cartilage lesions. ACL was reconstructed in 36 skiers, three were reoperated. Rehabilitation restrictions (limited range-of-motion exercising in the first six weeks after the operation with some kind of immobilization and limited weight-bearing) were given for 38 subjects. The median duration of treatment was 30 days (range, 10 – 88 days). Median Tegner Score was 4 (range, 3 – 7), median Lysholm Score was 85 (range, 57 – 100), median work was 100% (range, 50 – 100%), sport/recreation 70% (range, 25 – 100%), and median patient satisfaction was 9 (range, 5 – 10).

There were statistical significant differences between immobilized and non-immobilized subjects in number of sessions ($P=0.002$) and Tegner score ($P=0.031$), and between men and women in Lysholm score ($P=0.002$). Lysholm score was in statistical significant correlation with work ($P=0.003$) and recreation activity ($P=0.011$), and patient satisfaction ($P=0.031$).

Discussion and Conclusion:

The evaluation of rehabilitation success is demanding because of high number of impact factors. Different scores seem to be related to different aspects of patients' quality of life and satisfaction. Our results suggest use of different functional scores in confront to the tendency to reduce the package of scores to only one.

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Activity, Participation And Quality Of Life Relationship In Patients After Sport Knee Injury

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Introduction:

There are numerous methods to assess body structure and function. However in rehabilitation process activity and participation and their influence on quality of life are important. Different tools have been designed to measure activity and participation after knee injuries. Inability to perform usual activity such as running could decrease sportsmen quality of life. Self-administrated scales seem to show the most important determinants of patient's self-efficacy and his quality of life expectations are often different from the physician's opinion. The study was designated to find out relations between activity and participation level tested with OKS (Oxford Knee Status) and health related quality of life estimated with SF-36 (Short Form health survey of the Medical Outcome Study).

Methods and Subjects:

Patients were referred to the outpatient rehabilitation unit after surgical treatment of soft tissue unilateral knee injury. The study was approved by the Research Committee in the same Institute as a part of a two years evaluation study. All sportsmen who fulfil inclusion criteria were consecutively included and agreed to participate. They were engaged in standard rehabilitation program. SF-36 and OKS were administered at the end of the rehabilitation process. Patient's characteristics were assessed by descriptive statistics. Relations of OKS scores with SF-36 scores or with its parts were calculated using Spearman's rank correlation. Significance was considered at the level of $p < 0.05$.

Results and Discussion:

This investigation is performed with 101 participants (51 men) who answered questionnaires on their own. It took them about 10 minutes. They are 39.5 (13.8 SD) years old. An anterior cruciate ligament deficiency is a prevalent impairment (50%) and 64 of patients underwent surgery. Correlations between OKS and SF-36 are significant and high ($r = 0.79$) because of high correlations between OKS and the Physical Functioning ($r = 0.83$) or Pain subscale ($r = 0.78$) of SF-36 respectively.

On the other hand there is weak significant correlation between OKS and the general or mental health subscale ($r = 0.49$, $r = 0.50$ respectively). The Slovene translation of SF-36 is determined as a reliable and valuable tool for patients. It is simple and short. It saves expert's time at collecting useful data.

Conclusion:

Quality of life is multidimensional and patient specific category. That's why we can expect poor relations between clinical objective findings and patient's health related quality of life.

Rehabilitation After Severe Traumatic Brain Injury And Polytrauma.

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Introduction:

Brain injury, whether isolated or accompanied by polytrauma, is one of the most common forms of injury sustained in road accidents, accidents at work or during leisure time. About 70% of polytrauma patients have also sustained some form of brain injury. Immediate and systematic application of an adequate rehabilitation programme is the most important factor in the restitution of functions impaired by severe trauma.

The aim of the study was to evaluate influence of additional presence of polytrauma for the independence in the activities of daily living, need of care and social outcome of patients with severe brain injury after inpatient rehabilitation.

Methods and Subjects:

62 survivors (age 34. 8, range 16-65 years, m: f= 4:1) of severe brain injury (GCS \leq 8 for at least 24 hours) with or without polytrauma were investigated. The outcome after 6 and 12 months with essentially similar therapies, and draws a comparison between 38 patients with isolated severe brain injury and 24 patients with severe brain injury and additional polytrauma.

Results:

After six months the majority of both groups independent in ADL (Barthel-index > 80 points, FIM-Score > 110 points). There were also no significant differences between the groups in need of care. Clear differences could be found in the return to work. After six months, 22.9 % of the patients with isolated severe brain injury were able to return to their jobs and only 15 % of patients with additional polytrauma. After 12 months, this difference has disappeared.

Discussion:

These results suggest that - contrary to what is frequently asserted in the relevant literature - one year after the accident the presence of additional polytrauma no longer exerts any significant influence on the outcome of the severe-brain-injury patients discussed in this paper. If the patients survive the acute phase and are given continuous rehabilitative care from as early a period as the acute phase of the illness up to their professional reintegration, then their prospects are no worse than those of patients with an isolated form of severe brain damage.

Conclusion:

For the outcome of patients with polytrauma is an early continuous rehabilitation crucial important.

Comparison Of Concepts Contained In The Most Frequent Scales Used In Traumatic Brain Injury And The Icf Checklist

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Objective:

To identify within an evidence based perspective which are the most frequent scales reported in published studies focusing on Traumatic Brain Injury (TBI) and compare which items are not covered by the ICF extended checklist.

Methods:

A systematic literature review was conducted after developing an electronic electronic search strategy between 2002 and 2007 (Medline, Embase and Psycinfo). Outcome measures were extracted and concepts were identified and linked to the ICF. Duplicates and four level categories were excluded.

Results:

We came up with 1089 abstracts that met our initial criteria. 200 abstracts that fulfilled the eligibility criteria were extracted. The frequency analysis showed that FIM, DRS, CIQ, TMTa/b, GOS and WECHSLER were the most frequent scales reported in studies dealing with TBI. We identified 212 concepts based on the ICF from whom 16 were not included in the ICF Checklist.

Conclusions:

This study shows that ICF provides a useful tool for identifying concepts contained in outcome measures for TBI, many of these refer to a variety of different concepts. The ICF checklist is a practical tool but is missing some concepts of particular interest in TBI patients. This study is a minor part of a big project in order to develop the ICF Core Sets for TBI. The ICF based content description may also help in further development of the ICF by identifying concepts that are not yet covered by ICF.

Executive Functioning, Awareness And Participation In Daily Life After Mild Traumatic Brain Injury

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Aims:

To investigate executive functioning, awareness and participation in daily life of individuals post Mild Traumatic Brain Injury (MTBI) referred to rehabilitation in the post acute phase. These higher cognitive components are hypothesized to have major impact on daily life outcomes.

Method:

Participants included 13 individuals who sustained MTBI (6 men and 7 women), mean age 43.4 years SD=13.07 average time since injury = 4.79 months SD=1.8 and the Glasgow Coma Scale (GCS) range was between 13 to 15 (mean = 14.53, SD = 0.66). The average years of education were 14.76 (SD = 3.19) and most of the subjects (85%) were married and living with their spouses. The study was approved by the Human Rights (Helsinki) committee of the hospital and all participants signed informed consent.

Measures included are: for executive functions, the Behavioral Assessment of the Dysexecutive syndrome (BADS) and the Dysexecutive Questionnaire (DEX) (Wilson et al, 1998) the Self Awareness of Deficit Interview (Fleming et al, 1996) and the Participation Index (PI) from the Mayo Portland Adaptability Inventory (Malec & Lezak, 2003).

Results:

Analysis revealed high frequencies of deficits in executive functions such as planning and shifting. However, self-awareness to the executive deficits was intact. A significant percent (62-85%) of the participants experienced restrictions in everyday life activities and the Participation Index scores were significantly correlated with measures of executive functioning.

Discussion:

This preliminary study suggests that individuals after MTBI may be at significant risk for persistent executive deficits that may impact on participation. Further data collection is needed however it is clear that this population requires monitoring in the community in order to enable their complete reintegration into their previous life roles.

The full results and their implications will be presented and discussed.

Conclusion:

high percentage of participants had executive functions deficits and major restrictions in daily life and these variables seem to relate significantly.

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Long Term Rehabilitation Of Tbi Patients In Day Treatment Programme

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People with TBI (Traumatic Brain Injury) suffer from different problems (somatic, cognitive, neurobehavioral etc.).

Their rehabilitation must be provided by team of specialists in several branches of medicine (physicians, physiotherapists, occupational therapists, neuropsychologists, speech therapists, special teachers etc.).

We have Day Center for TBI patients on our Department. We try to prepare individual programme for each patient according to the assessment of all members of the team. We provide physiotherapy, occupational therapy, speech therapy, neuropsychology, dance and movement therapy, muzicotherapy, artetherapy and others.

The duration of the programme is 4-6 weeks. After finishing therapy we continue in out patient programme.

We use various tests for evaluation of rehabilitation process to follow up the results of rehabilitation. We will present the results of long term follow up (2 years and more) of 20 patients from several points of view (FIM, GOS, ICF and other parametres).

Art-Therapy And Dance And Movement Therapy With Patients After Brain Injury

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Art-therapy and dance and movement therapy (DMT) are basically forms of psychotherapy. The aim of art-therapy or DMT is to use the body movement and art expression as a psychoterapeutic process for improving the emotional, cognitive, social and physical integration of the organism.

When we work with the patients after brain injury, we have to consider all those elements. As we see a direct relationship between body and emotional statement, we can use those nonverbal therapies to improve the quality of movement as well as the emotional statement, group interactions and social integration.

Basic principles of art-therapy and DMT as well as concrete diagnostic and therapeutic procedures with patient after brain injury will be presented.

Use Of Affolter Model In The Czech Republic

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This Model is quite new for the Czech Republic. The Charles University in Prague, Department of Rehabilitation Medicine, is the first place which has completed this course of Sussanne Stratthoff and Dr. rer. nat. Volker Peschke from Rehabilitationzentrum Burgau. Affolter method was introduced 25 years ago.

It was developed by Felicie Affolter. She has worked as a psychologist, special teacher and therapist. It was based on the theory of Jean Piaget. Affolter model is meant especially for people with brain damage.

Affolter model assumes that this kind of patients have limitation of perception and process of information from environment. So when we use this method, we give the person the maximum amount of resistance - tactual information and events of surrounding.

So person with brain damage can improve her/his perception, search and deficit of cognition. By this model we try to help people with special needs and with physical disability to improve problem solving in their daily living.

The video will document our work with patients.

O-057

Meet The Editor

H. Ring

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The Influence Of Exercise On Muscle Quadriceps Strength Among Different Decade In The Elderly With Knee Osteoarthritis

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Introduction:

This article evaluates the effects of exercise on the muscle quadriceps strength by elderly people with knee osteoarthritis (OA). The main aim of this study was to analyze relationship between results among different decade of life in older adults. **Method and Subjects:** In this longitudinal study we have observed 28 patients older than 61 year with clinical signs of knee OA. They were classified into two age-groups: first (1st) until 61-70 years (N=14) and second (2nd) from 71-80 years (N=14).

The both group of patients completed program of medicine gymnastics and hydrokinesitherapy in pool with termomineral water, during 10 days, half an hour per day each of other, under supervision of physiotherapist. We have assessed muscle quadriceps isometric strength at baseline and endpoint of the training program and the initial and final values of the both groups are compared by T-test.

Results:

Of 28 patients there are 9 (32%) male and 19 (68%) female. Mean muscle quadriceps isometric strength was in the age group patinets until 61-70 years initial 89 (± 8.1) kg/cm²/ final 103 (± 7.8) kg/cm² (t 3.004 p 0.006) and in the group until 71-80 years old was initial 80 (± 6.3) kg/cm²/ final 91 (± 7.1) kg/cm² (t 3.25 p 0.003). Decrease in muscle strength was attributed to a higher decade life-age (2nd) .

Conclusion:

In the present study we found that programmed exercises have produced significant increase muscle strength among older adults with knee OA in both of them groups. Age was associated with a change muscle strength - it was noted significant different between two groups of examinees depend on decade life-age as initial so final. Higher strength was measured in group whose included one decade younger participans (1st).

The Effects Of Walking Speed Specific Training On Spatio-Temporal Gait Parameters In Elderly: A Feasibility Study

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Introduction:

Functional changes of neurological and musculoskeletal systems in aging affect walking speed and balance of elderly. The aim of this study was to establish whether the walking speed specific training influences the walking speed, cadence, step length and width, and walking endurance as well as whether balance changes accordingly.

Methods and Subjects:

38 elderly home residents participated in the study (age: 79.4 ± 6.3 years). On the basis of their willingness to train, subjects were divided into the training ($n = 18$) and control group ($n = 20$). In a period of four weeks, both groups were tested twice, using 10 m walk test (fast and comfortable walking), 6-min walk test and 4-square step test. Step length and width were measured from marks on the floor obtained using markers fixed on the subject's shoe. Cadence was calculated. The training group received one hour of the walking speed specific training (10 defined exercises) daily, for a period of four weeks. Data was analyzed using paired t-test or t-test for groups of unequal variances.

Results:

At the first measurement, there was no statistically significant difference for any measure between the two groups. Between the two measurements, there was no statistically significant difference for any of the tested variables in the control group. But in the training group, statistically significantly greater walking speed (fast and comfortable walking), cadence, and walking endurance, longer step length, shorter step width (all $p < 0.01$) and time of 4-square step test performance ($p < 0.05$) were demonstrated after training in comparison to pre-training measurement. Although the only statistically significant difference between the training and control group at the second measurement was found for the comfortable walking speed ($p < 0.05$), there were statistically significantly greater differences in all measures when the differences between the first and the second measurements were compared between the two groups (all $p < 0.01$).

Conclusion:

These positive effects that the walking speed specific training had in a group of elderly home residents suggest that it might be useful to use this kind of training among elderly. Greater endurance and balance might have other important consequences, such as reduced risk of falling.

Occupational Therapy For The Elderly With Severe Health Problems - An Intervention Study

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Aim:

What is the efficacy of the Occupational Therapy home intervention on elderly clients with severe health problems?

Methods and Subjects:

Eighty subjects mean age of 72 yrs filled in the questionnaire on activities of daily living consisting of 17 activities graded on an 8-level scale (A-H). Only 14 subjects average age 79.4 ± 4.6 yrs who answered mostly with C and D were included in the study. They were capable of cooperating for more then one hour and a half, which was the minimum required time needed to provide an occupational therapy intervention. As a main outcome measure the Assessment of Motor and Process Skills (AMPS) instrument was used by an independent rater. Treatment was performed for 15 weeks by ten 3rd year occupational therapist students. They visited the clients' homes twice a week to provide occupational therapy intervention.

Results:

The difference after intervention of AMPS scores was 0.91 logits for the group on motor part and 0.55 logits on the process part. This difference in score represents statistically and clinically relevant change (Fisher, 2005). The t-test showed a statistically significant difference before and after intervention in the motor ($p < 0.001$) and in the process ($p < 0.001$) part of the skills.

Discussion:

The AMPS is an objective assessment that would enable occupational therapy practitioners to simultaneously assess motor and process skills in the context of a person performing a familiar task of his/her choice (Fisher, 2005). The first assessment of AMPS indicated that the group was in a very poor physical state (-0,05 logits) the process state was higher (0,09 logits). The second assessment of AMPS indicates great improvement in motor and process part of the skills. The results are in agreement with (Alstrom and Bernspang, 2003) who conducted occupational therapy intervention study among post stroke clients. The progress was 0,51 logits (average for motor and process part).

Conclusion:

The study showed that home OT intervention increases the level of independence.

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The Peer Mentoring Program In Canada: Support For Persons With Limb Loss

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Rehabilitation professionals have long been aware of the positive impact of a visit between a client with recent limb loss and one who has returned to a full and productive lifestyle. The motivation and inspiration this can provide is seen as an adjunct to all other rehabilitation interventions, however a visit by an individual not properly prepared or ready to play this role can just as easily become detrimental.

The Peer Mentoring Program (PMP), developed by the Amputee Coalition of America (ACA), involves a formal, standardised one day training program, which upon successful completion certifies the amputee to become a peer visitor to a new amputee.

A partnership was formed between the Association québécoise des intervenants auprès des personnes amputées (AQIPA) and the ACA to implement this unique program in Canada.

The program has been received enthusiastically across Canada and there are currently 131 certified peer visitors nationwide.

This presentation will address the benefits of this program in providing support to new amputees, as well as the evolution of this project and its future development.

Findings On The Role Of Physical Exercise In Osteoporosis

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Introduction:

Early diagnosis of osteoporosis represents a major public health concern, requiring a complex approach starting with the prevention of risk factors and continuing with a complex prophylactic and curative therapy, avoiding fractures and their severe social-economic consequences.

Bone response to physical activity in osteoporosis (OP) varies according to age, sex hormone production, the type and length of physical exercise, aiming at increasing bone mineral density (BMD) and, implicitly, at reducing the number of osteoporotic fractures.

Material and Methods:

The study was carried out on 285 patients admitted in the Department of Balneophysiotherapy, Rheumatology and Rehabilitation between 2000-20004.

According to the gender, profession, background, type and associated diseases of each patient, the standard osteoporosis chart with biochemical markers of bone formation was applied (urine hydroxyprolin, screening bone densitometry, DEXA).

The special OP follow-up chart was also used, consisting of Tinetti mobility tests (applied monthly), gait training, active kinetotherapy for upper and lower limbs (hip, knees, ankles) in order to strengthen muscles. The Tinetti test consists of: 5s balance test, maintaining balance in various positions (sitting, standing and rotation), stability of trunk in standing position and gait training (height, length/asymmetry of step, deviation from pre-established direction, sustained walking).

Pain reducing and remineralizing physiotherapy was associated.

Conclusions:

Manifest OP occurs at a rate of 34.4% between the ages of 40-60 and of 46.6% between the ages of 60-80, predominantly in females (74%). Post-menopause OP occurs around the age of 50 it was induced 4-10 years after the onset of menopause with immobilizing OP or OP secondary to rheumatoid arthritis.

Senile OP equally affects men and women and is associated with degenerative rheumatic disorders, fractures (femur, fibula, radiocarpals) and cardiovascular diseases. Immobilizing OP is recommended in 7.3% of the cases, and cortisone OP in 29% of the cases, mainly in rheumatoid arthritis and ankylosing spondilitis.

The physical exercise programme applied in OP lead to achieving a correct posture, increasing mobility and muscle strength, increasing gait velocity, decreasing the rate of falling down and resulting fractures.

Why Is Important To Emphasize The Risk Factors For Osteoporosis- Observational Study

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Background and Purpose:

Osteoporosis is a skeletal disease characterized by compromised bone strength predisposing a person to an increased risk of fracture (1) The National Osteoporosis Risk Assessment (NORA) study cohort of almost 150,000 postmenopausal white women showed that 82% of those with fractures had T-scores greater than -2.5 at peripheral skeletal sites (2). There are a lot of risk factors for osteoporosis in rheumatoid arthritis (RA). In our observational study we tried to evidence the importance of risk factors for development and evolution of osteoporosis in patients with rheumatoid arthritis.

Subjects and Methods:

We studied 92 patients aged between 32 - 68 years (88% women, 12% men) with established RA 51 patients presented generalized osteoporosis (defined as T score \leq -2.5 SD) the corresponding percentages for osteoporosis were 13.5% at femoral neck and 45% at lumbar spine and all of them had local osteoporosis. 39 patients were treated with antiresorptive drugs, 43 with calcium, vitamin-D or both and 10 patients got no treatment. We followed the correlations between osteoporosis and different parameters: DAS28, corticosteroids treatment, immobilization, rehabilitation program, smoking.

Results and Discussion:

We found a significant correlations between generalized and local osteoporosis and the following parameters: the stage of disease (R 0.735), the functional Steinbrocker class (R 0.721) and immobilization (R 0.697) no important correlations were found between osteoporosis and smoking or the activity of disease (DAS28) the values of correlation and predictivity were significant to a long disease duration parameter to the postmenopausal women and for the patients with corticosteroids therapy.

Conclusions:

The bone mineral density loss in RA occurs early in the evolution of RA, emphasizing that osteoporosis management should be considered early in the disease. The individual RA patient with osteoporosis could be identified by either a case findings strategy based on risk factor assessment for osteoporosis or screening of all patients with RA.

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The Importance Of Micro Ct In Osteoporosis

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Osteoporosis can be defined as a metabolic disorder characterized by a loss of bone mineral and characterized by the occurrence of atraumatic fractures of the vertebrae, fall- related hip fractures, and Colles fractures of the distal radius.

Based on this definition bone mineral density (BMD) as assessed by dual energy x-ray absorptometry and based on T-scores provide the operational definition of osteoporosis as a gold standard. But, as BMD is assessed as a key component of osteoporosis diagnosis and assessment, it is being realized that BMD alone has a poor sensitivity.

There are numerous methods of noninvasive and/or nondestructive techniques that can provide structural information about bone, beyond simple bone densitometry. Assessment of macro- and microstructural features quantitatively may improve our ability to estimate bone strength.

Micro-Computed tomography(Micro CT) is one of the methods for assessing microstructure of trabecular bone noninvasively and/or nondestructively. It is generally applicable in in-vitro experimentation and in pre-clinical animal models of bone fragility. Micro CT is an essential means used to diagnose structural features. It is generally used for assessing other features of osteoporosis and other metabolic disorders that standard BMD does not capture.

Most of Micro CT is purely research. It helps researchers explore in 3-dimensional detail structural factors related to fragility of the bone, including osteoporosis while traditional techniques such as optical microscopy cannot penetrate deeply into bone specimens, thus requiring 2-D analyses of thinly sectioned bone samples.

The wavelength and permeability of X-rays are sufficient to reach micrometer-scale resolution through micro CT. Micro CT was developed to perform in-vitro imaging of small bone samples with isotropic resolution in the range of 10-100µm.

It requires higher doses of radiation. Individual trabeculae can be clearly visualized, allowing visualization of the trabecular network, and of the endosteal and periosteal cortical surfaces.

Body Composition In Male Patients With Multiple Sclerosis

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Background:

Patients with multiple sclerosis (MS) have muscle weakness and fatigue that result in an impaired ability to ambulate. A potential manifestation of this impairment is reduced physical activity.

Aim:

To evaluate bone mineral density, total fat and total lean mass in male patients with multiple sclerosis.

Materials and Methods:

26 male patients (mean age 47,4 years) with multiple sclerosis were included in this study and underwent body composition measurements by DXA. The patients group compared with able-bodied subjects of similar sex, age, height and weight. The mean height of the patients was 171 cm and the mean weight 82,4 kgr. All patients were diagnosed with MS for at least 3 years before measurements and non of them was non-ambulatory, although the majority of them had some degree of motor impairment.

Results:

The use of Student t test determined the statistically significant differences, when p values <0,05. There was statistically significant reduction of BMD and total lean mass whereas there was increase of total fat, but not statistically significant, in multiple sclerosis male patients compared to controls.

	MS*	Controls*	P values
Total BMD	1,014	1,183	Reduction, p<0,05
Total Lean mass 50880,9	59007,6	Reduction, p<0,05	
Total Fat mass	24464,4	23147,5	increase

Conclusion:

Our data suggest that there is lower BMD, lower total lean mass and increased total fat in patients with MS. The alteration of body composition seems to be multifactorial and diminished physical activity could play a role to this effect.

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Importance Of Exercise Training Of Patients With Myocardial Infarction

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Introduction:

Exercise training (ET) is the most effective method in the complex rehabilitation of patients with myocardial infarction (MI). Aim of the study was to examine the effects of ET in patients with MI by determining parameters of exercise test.

Method: A group of 100 patients with MI without any complications in acute phase underwent posthospital rehabilitation (PHR) at the Institute for cardiovascular diseases.

Control group consisted of 40 patients with MI who did not have PHR. After the clinical examinations submaximal or symptom-limited exercise test was performed in all the patients. Intensity of ET was recommended to be 70% of maximal heart rate obtained at the maximal or symptom-limited exercise test. ET was performed daily. It consisted of morning gymnastics, walking and bicycle ergometer training and lasted 21 - 30 days (average $24 \pm 5,6$). At the end of ET exercise test was performed in all the patients.

Results:

ET significantly increased the level of endurance in patients with PHR from $61,3 \pm 10,2$ W to $96,7 \pm 13,4$ W after ET ($p < 0,01$) and that increase was significantly higher compared with control group ($79,4 \pm 13,2$ Watts) ($p < 0,05$). The duration of physical endurance was significantly higher in patients with ET ($11,1 \pm 1,8$ minutes) than in control group ($9,4 \pm 1,3$ min) ($p < 0,05$). ET significantly increased the value of double product in physical stress in patients with PHR ($228,1 \pm 21,4$) compared with control group ($176,1 \pm 26,7$) ($p < 0,05$).

Discussion:

Exercise capacity consistently improves after cardiac rehabilitation. Physiologic adaptations to aerobic conditioning in patients with MI include central (cardiac) and peripheral (skeletal-muscle and vascular) adaptations resulting in a widened difference in oxygen content between arterial and venous blood during maximal exercise and an increased capacity to deliver substrate to skeletal and cardiac muscle. Cardiac adaptations include increases in cardiac dimensions, stroke work, cardiac output, and afterload-corrected indexes of left ventricular function. Skeletal-muscle adaptations include an increase in fiber area and in oxidative-enzyme activity.

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Modern Procedures Of Physical Medicine In The Treatment Of Peripheral Artery Disease

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Stenosis of arteries of the lower extremities leads to a diminished nutrition of muscles and nerves and thereby limits the functional ability. The presence of subjective complaints (pain, intermittent claudication, feeling of cold, paresthesias) influences the quality of life of these patients.

The lymphoedema is a consequence of a disturbed ratio between the load and the drainage capacity of the lymph system. It is not only a cosmetic defect, because it is often accompanied by a feeling of weight, discomfort and pain in the lower extremities and can also be complicated by inflammation and, in rare cases, malignant alteration. In the treatment of these conditions, intermittent hypobaric therapy has an important role.

The device „Greensac“ manufactured by „Iskra-Medical“ from Slovenija is a therapeutic massage system which, by the use of a suction process, creates an underpressure in a sac specially designed for it which completely enwraps the lower extremities. Its usage improves circulation, cell nutrition and tissue regeneration in the treated area. The aim of this paper is to show our experiences in work with this device.

There were 91 patients with arterial stenosis and lymphoedema of the lower extremities that were included in the study. Ten treatments in the sac were applied, three times a week, each twenty minutes in duration. The following parameters were evaluated: the circumference of the extremity, the range of movement, muscular strength, skin temperature, blood pressure, pain and claudication. The results showed that the circumference of the extremities had decreased in most patients, more in patients with lymphoedema (3-5cm) and in others up to 2cm (total 92%).

The pain had reduced in 95% of patients. The claudications had decreased in 55% of patients. The temperature of the skin had increased by 4 degrees Celsius. The values of blood pressure, the range of movement and muscular strength had not changed significantly.

We conclude that the treatment with intermittent negative pressure leads to a decrease in the circumference of the extremities and the increase of temperature which contributes to pain reduction and quality of life.

The Therapeutic Possibilities Of Intermittent Hypobaric Pressure In Diabetics

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One of the most serious consequences of diabetes is a generalized damage of microcirculation.

With the application of intermittent negative pressure treatment on the lower extremities of patients who suffer from diabetes (type IIb) for more than 15 years, we tried to improve their microcirculation. We used the Greensac® device manufactured by Iskra-Medical (Slovenia)- a total of 10 treatments, each lasting 20 minutes, three times a week.

We treated 75 patients (25 men and 50 women), average age being 57,8 years and with the average illness duration of 17,3 years.

Both the objective, easily accesible indirect parameters of the peripheral circulation quality (circumference of the extremities, skin temperature, puls, blood pressure, glycemia) and the subjective parameters (pain, intermittent claudication) were assesed.

We conclude that the application of the Greensac® device had a positive impact on the microcirculation of the patients, which manifested through a clear, statistically significant subjective reduction of pain and a statistically non-significant, but evident improvement of practicaly all of the measured indirect parameters of peripheral circulation.

We especialy emphasize a decrease in the difference between the acquired results for the two extremities at the beginning and the end of the treatment, which is most obvious concerning the skin temperature. We therefore consider that this is the biggest success and advantage of this treatment, since it leads to leveling of microcirculation in extremities which are differently affected by diabetes.

Manual Lymphatic Drainage State of The Art

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An epidemiological and patho-physiological update of lymphoedema is presented, along with a review of the literature of the treatment modalities with focus on lymphoedema after breast cancer interventions.

Our own experience is compared with results presented in the international literature.

We also present a possible method and a new device for lymphatic drainage: a robotized device creating a circular pressure around the upper limb using water or other mixture of fluids. Although there are many techniques and devices for drainage and massage (manual massage, intermittent pneumatic compression, under water massage), the advantages of our device consists on the uniform and concomitant control of the fluid jets over the whole circumference of the treated limb. The parameters of the treatment (pressure, temperature, the movement direction and speed, gas-water proportion of the fluid jet) can be controlled and adapted depending on the health conditions.

At the beginnings, this device was conceived for vascular pathology (venous, lymphatic and arterial disorders), but the applications area can be extended in the musculoskeletal conditions associated with neurologic, orthopedic and traumatic diseases (muscular atrophy/hypotrophy due to immobility and denervation, flaccidity in upper motor neuron disorders, etc.).

A short movie of the working principles of device will be presented.

Cooperation Of Rehabilitation And Internal Medicine In Care Of Inpatients With 3rd Degree Obesity

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In European and American population the increasing number of persons with overweight, obesity, and their complications represent one of the most frequent health problem and it is considered to be an epidemics of the 21st century.

Department of Rehabilitation Medicine cooperates with the 3rd Department of Internal Medicine in the care of obesity patients. The specialized centre of Internal Medicine takes care of patients from all regions of the Czech Republic, especially of patient with obesity of the 3rd degree, that means also persons with body mass index (BMI) over 50.

Those patients need special care, because they are very often immobile, they are not able to stand and walk, they have great problems with changing position, with basic activities of daily living (ADL). They are hospitalized in order to reduce they weigh and to start their improving of basic mobility skills.

During the six week hospitalization their approach to body activity must be changed, their skills of basic movements – changing position on the bed, sitting, standing with support aids and eventually walking must be improved. The physical training should be gradual, parallel to their metabolic, cardiac and pulmonary status.

Several problems are also in the field of nursing-care and in supporting facilities (majority of them has only limited carrying capacity under 120kg). Special prototype of walker is used at our department, as well as special training devices and so on. It is also necessary to resolve their movement problems at their home environment by training them to use supporting aids – walkers or crutches and toilet facilities. Every patient leaves the hospital with a plan for the future activity training.

Role Of Respiratory Rehabilitation On Blood Gases Values In Children With Corrected Congenital Heart Defects

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Introduction and Aim:

Patients with congenital heart defects (CHD) present with various degree of cyanosis due to presence of shunt. Aim of our study was to determine what are the exact effects of respiratory rehabilitation on blood gases values in children after correction of CHD in intensive care units (ICU).

Methods and Subjects:

We evaluated 40 children that were treated at University children's hospital (UCH) in Belgrade during 6 months. We monitored oxygen saturation of blood and bicarbonate ions in blood at first day of pulmonary rehabilitation and at discharge from ICU. Minimal period for evaluation was 7 days.

Results:

We had 25 patients with right to left shunted CHD and 16 children with left to right shunted CHD. Average age at correction was 18 months. Therapy protocol lasted from 7 to 40 days with median value of 14 days. Oxygen saturation values were in range between 80% to 100% before beginning of rehabilitation program with median value of 96.9% and at discharge from ICU between 85% to 100% with median value of 95.6%. Bicarbonate ions from blood were in range between 15.9 mmol/l to 39.5 mmol/l with median value of 28.3 mmol/l at the beginning of rehabilitation and at discharge from ICU between 22.4 mmol/l to 52.8 mmol/l with median value of 35.8 mmol/l.

Discussion:

Lower frequency of children with left to right shunted CHD in our study was due to shorter stay in ICU that was less than 7 days. Oxygen saturation values oscillated at not statistically significant range during evaluation period. We had increase in bicarbonate ions values, mainly due to ventilatory improvement and metabolism acceleration after correction of cyanosis.

Conclusion:

Pulmonary rehabilitation is of benefit in prevention of respiratory complications and plays significant role in bringing adequate oxygen supply to the body.

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Application Of Isokinetic Diagnostic And Exercises In Patient With Knee Osteoarthritis

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Abstract:

Isotonic movement has constant resistance but different speed and isokinetic movement speed is constant with resistance being adaptable and changeable through the whole range of motion(ROM).

Muscle group is maximally engaged and muscular work, which is extremely high, is dispersed through whole ROM where forces affecting the joint are lower. Machine given resistance to the examinee is proportional with force that examinee applies and because of that possibility of injury is low.

We use Cybex and Con-trex machines in our hospital for diagnostic and exercises. For the purpose of this paper we have measured knee flexor and extensor muscle groups torque, power and work in patients with knee osteoarthritis. First measurement was at the beginning of rehabilitation and second at the end of it.

One patient group was doing classic rehabilitation programme with isotonic exercise for knee muscles strengthening. Another group had isotonic exercises as the first one plus isokinetic training.

Results show increase of all measured end values in both groups with significantly higher values in isokinetic group.

Reliability Of Knee Flexor And Extensor Muscle Isokinetic Strength Measurement In Prone Position. Preliminary Study.

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Introduction:

The aim of the study is to evaluate the test-retest reliability of isokinetic strength measures of knee flexors and extensors in prone position.

Methods and Subjects: Eleven male volunteers were evaluated. Isokinetic evaluation protocol was carried out with Cybex Norm (TM) (Rokonkoma NY) in prone position for concentric and eccentric contraction modes at 20°/s, 80°/s and 120°/s angular velocities, respectively through a 40° range of movement.

Peak torques and knee agonist and antagonist ratios were evaluated for each velocity and modality. Quadriceps concentric and hamstring eccentric ratio (i.e. dynamic control ratios) was also evaluated for each velocity. Test-retest reliability of peak torques and ratios was evaluated using intraclass correlation coefficients (ICC).

Results:

All peak torque registers ICC values (ranging between 0.6930 and 0.9675) were statistically significant and indicated that peak torque measurement was reliable. Nevertheless, only agonist-antagonist ratios in concentric modality at 20°/s ICC and agonist-antagonist ratio eccentric modality at 80°/s and 120°/s ICC values were statistically significant indicating reliability.

Conclusions:

Knee flexor and extensor muscle isokinetic strength evaluation in prone position is a highly reliable test. Ratio reliability could not be demonstrated in this sample. Probably, the inclusion of more subjects will correct this last finding.

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Shoulder External Rotator Muscle Maximality Of Isokinetic Effort Assessment In Injured Shoulder Workers

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Introduction:

The difference between the isokinetic eccentric to concentric strength ratios at high and low velocities (DEC) is a powerful tool for identifying submaximal shoulder external rotation effort in healthy individuals. The aim of the present study is to show the results of DEC application in evaluation of injured workers.

Methods and Subjects:

36 shoulder injury patients were assessed. Shoulder external rotator isokinetic test (30°/s and 120°/s in concentric and eccentric contraction modality) were performed in the affected and unaffected sides. Peak torque (PT), coefficient of variation (CV), eccentric-concentric ratios (ECR), DEC (high and low velocity ECR difference), strength deficits (in %) and, in order to assess deficits incongruence, the differences between concentric and eccentric deficits (DCED) were calculated.

Results were compared between sides in all patients, and then groups were defined regarding DEC results and compared.

Results:

Unaffected side PT measurements were significantly higher in all cases. Three groups of patients could be differentiated following the DEC parameter value. Thirteen patients (group I) registered a DEC lower than 0.81 (indicating maximal effort), in twelve patients (group II) DEC was above 0.81 (thus, indicating submaximal effort), finally eleven patients (group III) scored negative values. Group III results can not be interpreted with current evidence. Force-velocity curves comparison between the three groups showed statistically significant differences. DCED was higher in group II (38.35SD33,16) than in group I (4.51SD25.8) when tested at 120°/s. DEC-CV correlation could not be demonstrated.

Discussion:

DEC calculation differentiated three groups applying the current evidence. The DEC defines different force-velocity curve behaviors previously related in literature to submaximal efforts, especially regarding group I and II. The presence of a much higher DCED in group II (i.e. conspicuously, patients in group II show no deficits in eccentric mode contractions whilst in concentric mode moderate deficits are registered) reinforces the clinical value of the DEC. Thus, in patients whose DEC is indicative of maximality, the deficits registered can be considered real.

Finally, the lack of correlation between CV and DEC refutes the usefulness of CV. Conclusion The DEC is effective in assessing injured shoulder external rotator muscle maximality of effort in an occupational rehabilitation setting.

Forearm Muscle Strength In Lateral Epicondylitis Patients

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Introduction:

Forearm muscle strength and fatigability in lateral epicondylitis patients has not been well established. The aim of the present study is to analyze the relationship between forearm muscle strength and fatigability and lateral epicondylitis.

Methods and Subjects:

Eight volunteer former epicondylitis patients of our setting free of symptoms at the beginning of the study (group I) were compared to eight healthy volunteer age, body-mass index and gender matched group (II). Isokinetic strength (30°/s and 90°/s concentric modality and 60°/s eccentric modality) and fatigue (60°/s concentric modality repetitive contractions to register descending performance of maximal test) were performed at the affected and dominant sides of both groups. Peak torques (PT), dorsal flexor muscles (DFM)-palmar flexor muscles (PFM) ratio, work, slope of the fatigue test and time to begin the slope (cycle of slope initiation) were analyzed and compared between groups.

Results:

In both groups PFM PT were significantly higher than DFM PT. Isokinetic tests results showed significant differences between groups: Group I registered higher concentric ($p<.001$) and eccentric ($p<.002$) PFM PT and work than group II. For DFM no significant differences were found. On the other hand, concentric and eccentric DFM PT/ PFM PT ratio was lower in group I. Regarding fatigue parameters, whilst group II shows a sharper slope (i.e. higher rate of PT decrease with time), it starts significantly later than the group I one.

Conclusion:

Epicondylitis group had no differences in PT values of DFM compared with control group. They showed higher PT values of PFM and lower fatigue slope than the healthy volunteer group. Whereas the healthy volunteer group showed a significantly higher DFM/PFM ratio and plateau before the fatigue slope starting.

The last findings may indicate a muscle strength imbalance and, in some aspects, a higher fatigability in the patient group.

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Constraint-Induced Therapy: A Method For The Hand Function Improvement In Children With Hemiplegic Cerebral Palsy

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Introduction:

Constraint - induced therapy (CIT) is a method used in a habilitation program to improve the function of the affected hand in children with cerebral palsy (CP).

Aim:

The aim of the study was to evaluate the effect of constraint - induced therapy on affected hand function in children with CP.

Patients and Methods:

Thirteen children with CP were included in the study after evaluation of the hand function with Assisting Hand Assessment (AHA). Inclusion criteria were: one-sided or marked asymmetric hand function impairment, age of 18 months to 14 years, ability of a child to understand simple instructions and motivation of child and parents to continue with the program at home.

Children had an occupational therapy program for 45 minutes twice a day, 10 days in a row at the hospital setting. Non involved arm was immobilized by an individually made plastic orthosis for the time of therapy. Children were engaged in activities, which stimulated the use of the affected arm. Parents were instructed how to continue the work with their child until the period of 4 months was completed. Children were followed-up with AHA at 2, 4 (at the end of CIT) and 6 months after the first assessment.

Analysis of AHA was done by 4 team members, who all finished the AHA educational course. The consensus scores were used for statistical analysis.

Results:

Eight children concluded the whole program. Clinical examination and AHA testing after 4 months of program showed significant improvement in affected hand function. A case of 8 years old boy will be presented in details. He gained 11 points at AHA assessment (statistically significant change). We observed better movement of upper arm and forearm, stabilization with a grip, readjustment of grip, finger movement, coordination of arms and hands, orientation of objects and flow in bimanual task performance.

Conclusion:

Results of a study are confirming our hypothesis that children who regularly use CIT in guided activities achieve better spontaneous function of the affected hand.

Application Of The Modified Constraint-Induced Movement Therapy Modified On The Spine Paradismorphismis In The Growth Age

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Introduction:

The Constraint-induced movement therapy (CIMT) is an innovative methodic of neurorehabilitation that in the last 15 years has accumulated a lot of scientific evidences on the rehabilitation of the paretic arm in the patients with recent stroke.

This therapy compels patient with outcomes of recent stroke to use paretic limb, immobilizing the healthy limb and effecting intense rehabilitation on the paretic limb. With the present study we would like to try to adapt principles of CIMT to patient in age of growth with scoliosis.

Materials and Methods:

We have started from the analysis of the different postural features of patients subjected under the Physiatrist visit. 181 patients in growth age have been analysed, 164 of them were right-handed and 17 left-handed.

Results and Discussion:

From the retrospective analysis of the evaluations effected to all the patients taken under examination, different postural features have been noticed on the basis of the different use of the dominant limb.

The incidence of bend dorsal right seems to be more frequent in patients right-handed affected by scoliosis (10.95% versus 2.94% bend dorsal right while in patients affected by scoliotic attitude we find in the 36.36% of the cases bend dorsal left in the 9.09% of the cases bend dorsal right and bisacromial line different in height on the right side in the 72.72% of the cases.

We propose the use of the non dominant limb (forgotten during the normal activities of daily life) in patients affected by axial skeleton diseases. Patients, previous physiatrist visit, have been randomly divided in two groups, one submitted to CIMT and one to traditional therapy. At the end of the treatment we will value the presence or the absence of improvement on the postural features of the examined patients.

Inhibitory Casting- Does It Work?

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Background and Aims:

Inhibitory casting has been an acceptable method for improving joint range of motion in central nervous system motor disorders. While theoretical rationales suggest casting should be effective, there is insufficient high-quality evidence regarding impact to either support or abandon this practice. Our goal was to examine the effect of casting on joint range of motion in upper and in lower limbs in different neurological disorders.

Methods:

Data was collected from 108 cases suffering from different neurological disorders: cerebral vascular accident (CVA) 44% , traumatic brain injury (TBI) 37% , Anoxic brain damage 10.5% , spinal cord injury (SCI) 2% , other 6.5%. Mean age was 34 (SD=19) years. All subjects underwent serial casting . We compared pre and post range of motion and examined the effect of diagnosis, age, type of joint, and time since the injury on the outcome of casting using multivariate analysis.

Results:

A significant improvement in joint range of motion was observed after casting from -16.09° (SD= 28.7) to 0.95° (SD= 20.8) $p<0.000$). The average percent improvement in joint range of motion was 47.8% (SD=31.7). The mean number of casts was 2.0 (SD=1.3), each cast lasting one week. The cast was performed in average 5.75 (SD=4.9) months post injury. According to multivariate analysis it seems that the percent improvement of the ankle was lower compared to the other joints. It also appears that time since the injury doesn't influence the outcome.

Discussion and Conclusions:

Serial casting has a positive short term effect on joint range of motion in patients suffering from central nervous system motor disorders. The results support the use of this treatment method.

On the basis of this it should be considered introducing it in earlier stages, for example in acute care. This study should be continued in order to examine long term effects and impact on functional outcome.

Wearable, Active Wrist And Hand Orthosis

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Background:

The prevention and treatment of contractures is an essential issue in the field of neurorehabilitation. A common method, beside manual therapy, is the use of casts for redressment. The cast, modeled by the therapist, holds a joint of an extremity at a position and applies tension on the tendons and muscles. This tension is static and can be uncomfortable for the patient if applied over a long period and with an inadequate intensity. Pressure ulceration is possible if the cushion of the cast is not carefully fitted to the extremity.

Methods:

To enable the prevention of contractures by application of a dynamic extension of the wrist and the fingers the use of an active orthosis appears to be suitable. Such systems are already being successfully used for the treatment of patients after stroke or traumatic brain injury with the scope of relearning of motor function. An active orthosis can mimic a similar behavior like in physical therapy, with the advantage that a higher number of repetitions is possible. Other advantages are the high repeatability of movements and the measurement capabilities, which allow a diagnostic use of the device.

Based on the design of a whole upper extremity active and programmable orthosis and common strategies of physical therapy a system for a controlled wrist and finger extension was designed. The device is not only able to extend the joints with a programmable trajectory and force but it is also able to give intention driven support. The last mentioned feature is therefore useful for motor relearning purposes.

Results:

First trials have shown that it is possible to apply the orthosis directly at the patients bed. Therefore the amount of therapy can be increased significantly. For the treatment of contractures the programmable force and the dynamic extension appear to be beneficial.

Discussion:

The first observations point out the clinical potential of such systems and lead to further investigations in this field. Such developments are valuable to support therapists in their work and give them also a novel and objective measurement tool to quantify the therapy progress. Of course the benefit for the patient is also high since a higher number of repetitions is possible and the combination with audiovisual feedback enhanced the efficiency.

Musclefun Test: Ms Functional Evaluation By Whole Body Vibration

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Introduction:

A vibratory stimulus is perceived in skeletal muscles by muscle spindles, specialized receptors involved in the stretching reflex (miotatic reflex) and functionally connected with Ia group myelinated fibers. Previous studies showed that mechanical vibrations (10-200 Hz) administered to the muscle belly or tendon can powerfully stimulate muscle spindle primary endings and evoke afferent discharge along Ia fibers, leading to an enhancement of the stretching reflex. This particular response has been named "the tonic vibration reflex" (TVR). The aim of this study was to evaluate the neuromuscular effects of Whole Body Vibration (WBV) in subjects with MS, by analyzing surface electromyography (sEMG) responses of vastus lateralis and vastus medialis muscles (Mu.Scle.Fun Test).

Methods and Subjects:

Two groups of randomly selected subjects were recruited: a group of 21 patients with Relapsing Remitting Multiple Sclerosis (RR-MS group) (8 males and 13 females), and a group of 14 healthy subjects (control group). Vibration treatment was administered on a vibrating platform (Nemes Bosco System ®) using an isometric half-squat position. The sEMG activity by target muscles was recorded while maintaining this position for 30 s: the initial 10 s without WBV, the subsequent 10 s with WBV at 25 Hz, and the final 10 s without WBV again.

Results:

This study demonstrated that WBV increases sEMG activity in both groups of recruited subjects. Statistical analysis showed a greater increase in the MS group than in the control group (Student t-test: $p < 0.002$).

Discussion:

The muscle spindles of patients with MS responds to the vibrations with a greater afferent discharge along Ia fibers in comparison to healthy subjects, likely as a result of increase in -tone, which occurs in MS as a consequence of pyramidal tract damage.

Conclusion:

These preliminary results need to be confirmed, in order to show that WBV could represent a new diagnostic resource in PRM (Mu.Scle.Fun Test) to optimize MS motor programme and follow-up.

Comorbidity In Patients With Stroke: Impact On Functional Outcome

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Objective:

To evaluate incidence of comorbid diseases and their impact on the functional outcome in patients with stroke.

Subjects and Methods:

One hundred forty patients after first-ever stroke participated in the study. All patients were seen within one week after stroke during the inpatient period at the neurology service. An appropriate home-based exercise program was given to each patient for four weeks. Patients who completed the exercise program were then invited for a control visit. The comorbidities were assessed with the Liu comorbidity index. Functional independence was evaluated using the Functional Independence Measure (FIM), and functional gain was recorded.

The associations between comorbidities and functional outcomes were investigated using Spearman correlation analysis. Multiple regression analysis was used to examine the impact of comorbidities on the functional outcome.

Results:

94 (67%) of 140 patients completed the study. The most frequent comorbid condition was hypertension at the initial visit. The weighted comorbidity index (w-CI) at the baseline was negatively correlated with the FIM at the control visit (c-FIM) ($r = -0.180$, $p = 0.001$) and functional gain ($r = -0.173$, $p = 0.001$). Multiple regression analysis revealed that c-FIM could be best explained by FIM at admission [$\beta = 0.378$ (95% CI 0.104 – 0.652)] and the contribution of the w-CI to functional outcome was 3.1%.

Conclusion:

The results of our study showed that comorbid diseases have a significant negative impact on functional outcome of stroke.

Effect Of Shoulder Problems On Functional Status, Quality Of Life And The Prognosis Of Rehabilitation Among Stroke Patients

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Purpose:

To determine the differences between the functional capacity, quality of life and psychological status of stroke patients with shoulder problems and the other stroke patients of the same neurophysiologic stage and to evaluate the effect of shoulder problems on the amount of improvement offered by rehabilitation.

Method and Subjects:

Study included stroke patients that were between the 3rd and 6th month after stroke who did not receive any rehabilitation. First group involved twenty patients with painful shoulder joint without contracture, and second group involved same number of patients without any shoulder problem. For both groups, neurophysiologic improvement was evaluated by Brunnstrom staging, functional status was evaluated by Functional Independence Measurement (FIM), Rivermead (Riv) and Functional Ambulation Score (FAS), quality of life was evaluated by Short Form-36 (SF-36), and psychological status was evaluated by Back Depression Scale (BDS) both before and after the rehabilitation program. Modified Ashworth scale was used to evaluate the level of spasticity.

Results:

There was no significant difference between the arm and lower extremity Brunnstrom stages of two groups before treatment ($p>0.05$). Groups had similar mean levels of spasticity. Rivermead-arm score of first group was (1.89 ± 2.78) which was significantly lower than the second group (6.28 ± 2.09) ($p<0.05$). FIM-Mobility scores (1st Group: 49.00 ± 12.21 , 2nd Group: 61.57 ± 17.58 , $p<0.05$) and FAS (1st Group: 1.63 ± 1.25 , 2nd Group: 2.57 ± 1.15 , $p<0.05$) were also lower in the 1st group. Rivermead leg-trunk scores, Back Depression Scale and SF-36 scores did not show significant difference before treatment. Analysis of the amount of improvement after treatment revealed that no parameter showed significant difference between the groups ($p>0.05$).

Conclusion:

Hemiplegic patients with painful shoulder without contracture have lower functional levels compared to hemiplegic patients of same neurophysiologic stage but this does not impede the amount improvement offered during rehabilitation.

Evaluation Of Clinical Effects Of Acupuncture And Exercise Therapy In The Treatment Of Frozen Shoulder 6 Months After Therapy At Stroke Patients

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Introduction:

One of the usual consequences after stroke is prolonged immobility of the arm. Together with shoulder pain and muscle imbalance, they are predisposing factor for frozen shoulder.

Aim of the study: To examine the long time effects of acupuncture and exercise therapy on motor function and spasticity of the hands of stroke patients.

Material nad Methods:

Prospective, randomized, single blind clinical study of 20 patients, age 60-70 years, in the chronic phase of stroke, 6 months after onset. Subjects were divided into two groups: Group A. which were treated with acupuncture and exercise therapy (AP-ET) and Group B with exercise therapy (ET). Therapies were provided in the sub-acute phase after stroke. Assessment included a comprehensive interview and administration of the Brunnstrom's stages,

Functional Independence Measure (FIM), Modified Ashworth Scale (MAS), Upper Extremity Function Test (UEFT), Motor Activity Log (MAL), active and passive Range of Motion (aROM, pROM), Fugl-Meyer test of upper extremity function (FMA), Croft Shoulder Disability Questionnaire (CSDQ) and Visual Analogue Scale (VAS) of pain. The Gosset t-Test was used for the statistical analysis.

Results:

Analyses showed statistically significant greater mean values for almost all examined parameters ($p < 0.01$) except for CSDQ which was significantly lower, in both groups. Only in AP-ET group we found statistically significant lower mean value for MAS ($p < 0.05$).

Conclusion:

The results confirm the hypothesis that acupuncture with the exercise therapy could be useful in the prevention of frozen shoulder in stroke patients and that their effects are still present after 6 months of therapy.

References:

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Use Of Sf-36 In Stroke Patients In A Day Hospital Rehabilitation Retting

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Hypothesis:

The SF-36 will show significant improvement over the duration of therapy (minimum 3 months) in a Day Rehabilitation Program.

Methods:

All stroke patients attending the Rehabilitation Day Hospital at Braeside Hospital in Southwest Sydney were asked to complete an SF-36 form on enrolment to the Program. The Day Rehabilitation Hospital is a multi-disciplinary co-ordinated therapy program for patients residing in the Liverpool and Fairfield local government areas.

On each attendance patients were seen by at least two therapy disciplines, and were treated in the usual manner by the therapists. On completion of the Day Rehabilitation Hospital Program, or on discharge to a single discipline Outpatients service, the SF-36 was repeated. Using SPSS the scores were analysed for significant change with the Wilcoxon Signed Ranks test. The results of the first 121 stroke patients are presented.

Results:

121 patients were eligible based on paired admission and discharge SF-36 questionnaires. On review of their medical records 10 patients had a very large deterioration in their score due to other medical diagnoses being made. (Seizures 1, Psychosis 2, new CVA 1, Major Depression 4, other progressive conditions that contributed caused deterioration).

These patients were excluded from further analysis. Subscale and total SF 36 scores were calculated for all SF-36 domains. Highly significant changes occurred in the physical function, role physical and role emotional subscales, with significant changes taking place in general health subscale of the SF 36.

Conclusion:

The SF-36 appears to be sensitive to measuring improvements in a Stroke Day Rehabilitation Program Population. It is most sensitive in the domains of physical functioning and the physical role, where most of the therapy is concentrated.

The general health of the patients in the Day Rehabilitation Program is fluid and a number of people (9%) deteriorated due to other medical diagnoses. A larger sample size may give significant results in other domains.

Post-Stroke Quality Of Life Assessment One Month After Discharge

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Introduction:

Stroke Specific Quality of Life Scale (SS-QOL) measures quality of survival after stroke. It is a disease specific questionnaire for assessment HQOL, what is thus far not utilize with our rehabilitation practice. Our aim was to research how patients are functioning in their domestic environment after discharge from the Hospital where they have got the rehabilitation treatment.

Methods and Subjects:

We chose by random 30 patents who had one month of discharged after post stroke rehabilitation treatment and who had admitted the interview by SS-QOL Questionnaire that we translated in Serbs language. Answers are pointed by the direction given by the author of the Scale.

Results:

There were 14 males (46,2%) and 16 females (53,8%), average age of 66 for men and 77 for women, 50% with right paresis and 34,6 % with left side paresis, and 15,4% without clear clinical paresis. Average Total Score of SS-QOL Scale was 170(of 249 maximum). Average score of Domain of Energy was 8(of 15 max.), Family Roles 7(15), Language 22(25), Mobility 20(30), Mood 18(25), Personality 12(15), Self Care 18(25), Social Roles score 13(25), Thinking 12(15), Upper Extremity Function 18(25), Vision 13(15) and Work/Productivity 7(15). We didn't get any statistical variation of average total score of SS-QOL in comparing groups concerned with gender, age and site of paresis or duration of rehabilitation treatment.

Discussion:

Even they had family and social support and high scores in Physical functioning domains we got a low scores in domains: Energy, Family Roles, Social Roles and Work/Productivity.

Conclusion:

We should enhance psychological and occupational rehabilitations treatments for the patients after stroke. Good physical revival after stroke is not enough for well functioning in domestic environment.

References:

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Fatigue Of Polio Survivors In Slovenia

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Introduction:

There are a few hundred polio survivors in Slovenia and many of them complain about new problems known as post-polio syndrome (PPS). One among them is also fatigue which may affect up to 90% of subjects with PPS. Fatigue affects the ability to work and to perform the activities of daily living. In Slovenia approximately 69% of polio survivors has symptoms of PPS, but up to now there is no study on how severe problem is fatigue.

Aim:

The aim of the present study was to find out how severe problem is fatigue for polio survivors in Slovenia.

Patients and Methods: A questionnaire about main demographic and clinical questions, Fatigue Severity Scale (FSS) and Visual analogue scale for fatigue (VAS) was sent to all (n = 196) polio survivors who are visiting Institute for Rehabilitation in Ljubljana. Descriptive statistics and correlations were performed with SPSS 14.0.

Results:

We received 144 answers of which 136 (69.4%) were validly filled in. 88 of them are women and 48 men (mean age 61.43, sd 11.1), aged 3.95 (sd 5.17) at acute poliomyelitis. 66.9% of subjects have impairments of lower limbs, 22.7% impairments of upper limbs and 61.0% had also impairment of spinal muscles. 8.8% of them did not have new symptoms, 8.8% had one new symptom, 22.8% two, 22.1% three and 37.5% had four new symptoms. 85.3% of polio survivors stated fatigue as a problem. More new symptoms subjects have more severe was their experience of fatigue (Pearson's correlation between number of new symptoms and FSS is $r=0.545$, $p=0.000$ and with VAS $r=0.448$, $p=0.000$).

Discussion:

Our results are comparable with those of other studies done in western countries thus suggesting the need of developing specific rehabilitation programs for polio survivors in Slovenia. Validation of used scales should be performed.

Conclusion:

Fatigue is a severe problem affecting a vast majority of Slovene polio survivors and would need further assessment.

References:

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Vasconcelos OM et al. A comparison of fatigue scales in postpoliomyelitis syndrome. *Arch Phys Med Rehabil*. 200687(9):1213-7.

Thermal Imaging As A Diagnostic Tool In Carpal Tunnel Syndrome

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INTRODUCTION:

Thermography is a type of infrared imaging, capable of detecting radiation in the infrared range of the electromagnetic spectrum (0.9–14μm) and producing images of that radiation. In carpal tunnel syndrome at earlier stages of syndrome vasoconstriction is common, while at later vasodilatation. Consequently, unexpected skin temperatures can be measured at different parts of affected hand.

AIM:

The aim of present study was to use a software-based intelligent system for diagnosis of carpal tunnel syndrome. Artificial neural networks, known as a well established data mining technique, were used for thermal image analysis.

METHODS:

28 patients and volunteers participated in creating our image database, resulting in 44 images of hands. There were 23 images of hands belonging to patients with the carpal tunnel syndrome of different severities and 21 images of healthy hands. Images were taken with the Avio's Neo Thermo TVS-700 camera with resolution of 320x240 pixels. The software application we developed for the purposes of this study consists of two modules. First module takes care of image segmentation and extraction of temperature readings while the second one performs the image analysis and tries to diagnose the carpal tunnel syndrome.

RESULTS AND DISCUSSION:

Classification success rates exceed 80% in most cases. However, it should be noted that only 44 images were at our disposal, which is a very small number, taking into consideration the importance a learning process plays in artificial neural networks development. When operating with such small sets of objects the classification results can be misleadingly good (or bad). Only when our image database will grow considerably a real assessment of results will be possible.

CONCLUSION:

The development of thermal imaging technology and involvement of intelligent systems enabled new possibilities which were previously unavailable. It is our goal to research these possibilities and determine whether thermal imaging can be used as a diagnostic tool in nerve entrapment syndromes.

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Familial Amyloidotic Polyneuropathy: Rehabilitation Treatment

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Introduction:

Familial Amyloidotic Polyneuropathy (FAP) is a rare neurodegenerative disease described for the first time, in Portugal, by Corino de Andrade, in 1952. Later, other focus of FAP became known, particularly in Japan and Sweden. In 1972 it was created in Oporto (Portugal), the Amyloid Research Centre.

This is a specific Centre for treatment and study of this particular disease. FAP is an autosomal dominant disorder related to the systemic deposition of mutated transthyretin (TTR) amyloid fibrils, produced in the liver. This deposition can occur in different systemic organs, particularly in the peripheral nervous system (PNS), affecting its function in many ways.

Clinically, FAP is characterized as a severe progressive sensory-motor and autonomic neuropathy, eventually causing premature death. The cardiovascular, gastrointestinal, vesico-sphincterian, renal and ocular involvement is very common and contributes to the severe and progressive deterioration of the patient. Liver transplantation is the only treatment known to refrain the disease progression, but it doesn't solve all the related problems and sequelae.

The treatment involves a multidisciplinary team. Rehabilitation treatment improves motor and functional abilities on each stage of the disease gives the patient more independence and allows the prevention and treatment of associated conditions in order to give the patient a better quality of life. Aim Introduce and discuss FAP, which is a rare and severe disorder, with higher prevalence in Portugal. Present rehabilitation goals and its treatment options.

Patients and Methods:

Literature review. Results although there are few studies described, the rehabilitation treatment is involved in all the different stages of this disease. It prevents injuries, keeps the patient in better conditions pre and pos-transplant, improves patients' functional skills and plays a very important role in their integration in the society.

Conclusion:

Familial Amyloidotic Polyneuropathy is a rare disease with few geographic focus of prevalence. Rehabilitation, in its many options is an important part of these patients treatment. In order to reach a more consensual strategy of treatment, it is necessary to implement more studies concerning this specific disease.

Neurogenic Detrusor Overactivity: Comparison Between Complete And Incomplete Spinal Cord Injury Patients

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Aims:

To compare intravesical pressure and cystometric capacity in complete and incomplete SCI (spinal cord injury) patients with NDO (neurogenic detrusor overactivity).

Methods:

Filling cystometry at non-physiological filling rate was performed in 80 SCI patients at rehabilitation or annual check-up using Dantec Etude urodynamic machine.

Results:

50 neurologically complete (ASIA (American Spinal Injury Association) A) and 30 incomplete (ASIA B-E) were diagnosed with neurogenic detrusor overactivity, all with suprasacral level of injury. Mean Pves at cystometric capacity for ASIA A group was 79 ± 30 cmH₂O (range 26-140) and mean Pves for ASIA B-E group was 70 ± 29 cmH₂O (range 25-130). There was no significant difference between groups ($p=0.234$). Mean CC (cystometric capacity) for ASIA A group was 239 ± 107 ml (range 47-526) and mean CC for ASIA B-E group was 227 ± 125 ml (range 42-500). Again, no significant difference was found ($p=0.655$).

Conclusions:

No difference in cystometric capacity and intravesical leak point pressure at terminal detrusor overactivity was shown between complete and incomplete spinal cord injury patients in our survey i.e. represented findings are equally unfavourable for both groups. Incomplete SCI patients with NDO should be tested with cystometry and observed with same caution as we proceed in complete SCI patients.

Uroflowmetry Parameters Correlate With The Treatment Outcome In Children With Dysfunctional Voiding

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Introduction:

Dysfunctional voiding is a functional voiding disorder in childhood and one of the main causes of urinary incontinence, recurrent urinary tract infections (UTIs) and vesicoureteral reflux. An interrupted or staccato uroflowmetry curve with positive electromyographic activity during micturition is typical. Aim of the study was to investigate the correlation between treatment outcome in urinary incontinence, nocturnal enuresis and urinary tract infections and uroflowmetry parameters in children with dysfunctional voiding.

Method:

prospective clinical controlled study enrolled 75 children who were submitted to urotherapy over a 12-month period. Urotherapy consisted of timed voiding, hydration, optimal posture during voiding, pelvic floor exercises, constipation treatment and recurrent UTIs management (antibiotic prophylaxis). Uroflowmetry with EMG of the pelvic floor and ultrasound residual urine (RU) volumes were obtained before and at the end of the treatment period. Uroflowmetry findings were stratified into two groups based on response to urotherapy: „cured“ (group of children in whom urinary incontinence, nocturnal enuresis and urinary tract infections were cured) and „no change“. Uroflowmetry findings were compared between groups at the beginning and the end of the investigation.

Results:

Uroflowmetry parameters (VV, AFR, PFR, RU) were significantly better in group of children with cured urinary incontinence and nocturnal enuresis compared with „no change“ group. Significant decrease of RU was noted in children with cured UTIs.

Discussion:

Correlation found in this study could indicate that in majority of children objective results follow patients' subjective improvement which is in contrast to previous studies (1). Our results suggest that the correction of voiding phase is necessary for achievement of urinary continence and resolution of UTIs.

Conclusion:

Posttreatment improvement in clinical symptoms correlate with improvement in uroflowmetry parameters.

References:

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Intensive Pelvic Floor Rehabilitation In Female Urinary Incontinence: 10 Years Later

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Aim of study:

Although the effectiveness of intensive pelvic floor rehabilitation (PFR) for the treatment of urinary incontinence (UI) has been demonstrated, no agreeing data about its long-term effectiveness are present in medical literature. The aim of this follow-up study is to assess PFR results 10 years after an intensive PFR program.

Methods and Subjects: 202 women affected by UI and with no major diseases have been involved in the study. They received intensive PFR treatment as out-patients in 1996 and 1997, including pelvic floor exercises, biofeedback and functional electrical stimulation variously associated.

Domiciliary self training was recommended too. For the aims of this study, the patients have been contacted by telephone and required to answer a questionnaire intentionally built up to investigate the symptom changes immediately after the PFR, the self training prosecution and the actual symptoms. They have also filled in the ICIQ-UI Short Form (Italian version). The data collected have been worked out by the variance analysis, the Kruskal Wallis test, the Mann-Whitney U and the Wilcoxon test.

Results:

153 (75.74%) out of the 202 women treated 10 years ago have taken part to the follow-up study. As far as the symptom changes after the therapy are concerned, 128 patients (84.20%) have reported an improvement immediately after the PFR. 94 patients (63.10%) continued the self training at the end of PFR and only 20 (13.07%) continue nowadays. The comparison between the data conveyed by a symptomatologic questionnaire answered both before the PFR (mean 4.47 range 2-6) and 10 years later (mean 4.01 range 2-6) is not statistically significant.

Discussion:

PFR provides short term significant improvements of UI 10 years later such improvements are not preserved this fact is closely related to the small amount of patients that have regularly continued the self training.

Conclusions:

Long term effects after intensive PFR in women with UI are not maintained because of the little number of patients that carried on the self training.

References:

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Level Of Sexual Dysfunction In Male Patients With Spinal Cord Injury

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Introduction:

Sexual problems have an important place among the problems encountered in patients with spinal cord injury. The objective of this study was to determine frequency and level of sexual dysfunction in male patients presenting to special outpatient clinic of spinal cord injury.

Methods and Subjects:

Twenty-nine patients followed by specialized outpatient clinic of spinal cord injury were enrolled to the study. In addition to demographic and clinic data of patients, International Index of Erectile Function form which queries sexual conditions was filled by a peer-to-peer inquiry method. In this index, higher scores show poor functional status.

Results:

For the patients enrolled in the study, mean age was $49 \pm 7,9$ years and median time of spinal cord injury was 7 years (max:27, min:1). 11 patients were consistent with class ASIA A, 4 patients with ASIA B, 1 patient with ASIA C and 13 patients with ASIA D. Mean ASIA-M scores of the patients was about $60 \pm 16,2$. In patients enrolled to the study, when subparameters of international index of erectile function form are considered, erectile function (EF) was $13,7 \pm 4,5$ (total=30), orgasmic function (OF) was $3,5 \pm 1,7$ (total=10), sexual desire (SD) was $6,6 \pm 1$ (total=10), satisfaction of sexual intercourse (SS) was $4,7 \pm 1,7$ (total=15), overall satisfaction (OS) was $7,5 \pm 2,2$ (total=10).

A significant negative correlation was detected between SD and OS parameters and the level of lesion ($r = -0.486$, $r = -0.424$). When ASIA A+B groups and ASIA C+D groups were compared with each other, EF, OF, SS parameters were significantly better in ASIA A+B groups, while SD and OS parameters were significantly better in ASIA C+D groups ($p < 0,01$). All of the patients participating to the study stated that they wished to have training on this subject.

Discussion and Conclusion:

In all of the patients participating to the study, parameters of international index of erectile function are low. Sexual desire and overall satisfaction parameters were found to be better in patients with a spinal cord injury classified as ASIA C and D. However, interestingly, for subparameters that evaluate sexual functions, ASIA A and B groups showed better results of questionnaire. This out-of-expected result can be attributed to higher patient expectancy in ASIA C and D groups.

Sexual Dysfunction Among Patients With Multiple Sclerosis

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Introduction:

Sexual dysfunction (SD) is a very important, often overlooked symptom of multiple sclerosis (MS). The aim of this study is to investigate the type and frequency of sexual complaints in MS patients (pts). We also evaluated the relationship between SD symptoms and lower urinary tract symptoms (LUTS), patients' and disease characteristics, disability and neurological impairment.

Subjects and Methods:

The study included 20 MS pts (9 ♂ and 11 ♀) with regular sexual activity. A structured face-to-face interview regarding sexual function, and LUTS was administered to all pts. They also filled out Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19), which includes items for primary (direct physical), secondary (indirect physical), and tertiary (psychosocial) causes of SD.

Results:

The patient's average age was 42,6 years: 8 pts had relapsing-remitting (RR), 9 secondary progressive and 3 primary progressive MS. Mean duration of disease was 14,5 years. Voiding dysfunction were present in 19 pts (95%): 7 reported urgency with or without urge incontinence, 4 had voiding and post micturition symptoms, 8 revealed both the symptoms. SD was present in 14 cases (70%): 8 pts, 4 ♀ and 4 ♂, reported primary SD secondary SD was found in 3 pts, 1 ♂ and 2 ♀ 3 ♂ had a tertiary SD.

Sexual symptoms more commonly reported were anorgasmia or hyporgasmia (11 pts), decreased vaginal lubrication in ♀ or erectile dysfunction in ♂ (7 pts), and decreased genital sensitivity (6 pts). Total MSISQ-19 scores were significantly correlated with age (Spearman rho=0.48, P<0.05). No correlation was found between SD and others variables.

Discussion and Conclusions:

SD are commonly observed in pts with MS. A substantial part of our sample of pts with MS reported SD symptoms and LUTS. Prevalence of SD in our study was 70%. Similar results were found also in other studies (1,2). Physicians' awareness of this problem may help to plan appropriate treatment and management, improving the quality of life for these pts.

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Actigait®, A Four-Channel Implantable Peroneal Stimulator

A. Hahn¹

I. Otto Bock Healthcare Products GmbH, Austria

Otto Bock is a leading supplier of innovative products for humans with restricted mobility. We are a global leader of technologically advanced prosthetic and orthotic products. Realizing the special needs of stroke survivors, we developed a line of products designed specifically for mobility and rehabilitation of such patients.

Drop foot is a common condition after stroke. Conventional treatments reach from therapeutic approaches to standard or customized orthotics. Peroneal surface stimulation has recently regained considerable attention. Implantable peroneal stimulators are an option for patients that can not be sufficiently treated conventionally.

ActiGait® is a 4 channel implantable neuroprosthesis which activates the common peroneal nerve proximal to the knee, acting on m. tibialis anterior and the peroneal group and thus allowing to reach balanced dorsiflexion. Recently published evidence show that ActiGait is safe, offers significant orthotic benefit (walking speed, endurance) and is very well accepted by patients.

Application Of Functional Electrical Stimulation As Orthotic Device For Correcting Foot Drop As A Result Of Lumbar Spinal Roots Damage

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Introduction:

Functional electrical stimulation is a well known rehabilitation method in functional movement production by electrical stimulation of muscles and nerves applied as permanent orthotic aids or for therapeutic purposes. FES of extremities is applicable in patients with paralysis due to central motor neuron lesions. Lower motor neuron disease is generally not treated with FES.

Methods and Subjects:

Our clinical experiences of FES application as an orthotic device in two patients for correcting foot drop, as a result of spinal root LIV, LV damage, due to herniated disc, are presented. Patients had disc surgery because of disc herniation but foot drop remained present after surgery. One channel peroneal stimulator was applied to two patients. The third one with paraparesis was treated with FES of quadriceps muscles by double channel stimulator and it was combined with a corrective peroneal braces.

Results:

According to our clinical experiences, FES application as an electrical orthotic device in 2 patients were very successful for correcting foot drop, as result of spinal root LIV, LV damage, due to herniated disc, as were presented by video tape. A fine correction of equinovarus was achieved, as well, positive effects on the pattern of gait. In third case patient with paraparesis, due to syndrome caudae equine as result of herniated disc LIV-SI. FES of m. quadriceps was combined with a corrective peroneal brace to ensure a correct position of the foot. FES was used as a part of hybrid orthosis and due to this aid patient was able to stand and to walk on short distances

Discussion:

According to many authors, if the LMN for a particular muscle are not intact due to injury or disease, FES of the nerve and muscle will be impossible. Another similar clinical experience as ours was reported by Štefančič in 1982.

Conclusion:

Although orthotic application of FES is very rare in treatment of LMN, according to our clinical experiences, it cannot be, a priori, excluded when various orthotic options are discussed. Our recommendation is to look for the best option for each patient individually, including FES.

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Which Training Preparing Fes-Assisted Walking In Complete Sci Patient?

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BACKGROUND AND AIMS OF THE STUDY:

FES could compensate for weakened or paralyzed muscle function during gait. We know that FES walking requires a specific training program which modalities are not defined. Aims of the study was to test the feasibility and the effectiveness of a specific training program preparing walking with FES in spinal cord injured (SCI) complete patients.

METHODS:

3 thoracic level chronic SCI patients, age 36,67±1,15 years, Asia Impairment Scale A, Ashworth Scale 2, wheelchair locomotion. The system PO22 Stimulator Fequa and Parastep system were used for walking.

Training: 1) Patterned Electrical Stimulation (PES) assisted isometric exercises for the quadriceps muscles, 30 minutes, every day session for 3 weeks 2) FES cycling with an active pedalling induced by alternated contraction of right and left quadriceps, 60 minutes 3 times a week for 3 weeks 3) FES walking realized with body weight supported treadmill (TR Spacetrainer) reducing gradually the suspension from 70% to 30% of body weight considering the gait pattern and physiological parameters, 30 minutes 3 times a week for 3 weeks 4) overground FES walking training, 30 minutes 3 times a week for 4 weeks.

The training was monitored at every steps through 1) plicometer to calculate the thigh muscle area 2) isokinetic dynamometer to test quadriceps isometric torque during PES 3) analyzer (2900, Sormedics Corporation-USA) to measure the respiratory gases exchanges at the mouth and the relative concentrations of O₂ and CO₂ 4) heart rate (Hr S810, Polar Electro Oy-END) device.

RESULTS:

During the training we verified an increase of the thigh muscle area (from 112,3 to 120,44 cm²), an increase of quadriceps thigh torque (from 0,350 to 0,508 Nm/kg), an increase of the walking speed (from 0,17 to 0,20 m/s), a decrease of the energetic cost of gait (from 29,79 to 19,95 J/Kg/m) and of the subjective index of fatigue (Borg scale).

DISCUSSION AND CONCLUSION:

We believe that monitoring parameters of strength and efficiency of the muscles and the energetic cost of gait could permit the definition of a specific training to prepare complete SCI patients to walking with FES. Even an accelerated program could realize a gait which is biomechanically corrected and it is advantageous from an energetic point of view.

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System For Hand Sensorimotor Augmentation

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Introduction:

Injury to a central nervous system can result in loss of sensory and motor functions in upper extremities. One possibility for restoring the lost sensorimotor ability of the hand is the use of functional electrical stimulation (FES) [1]. Besides, the tracking tasks also proved as a promising approach for training and assessment of hand function [2]. The aim of our study was to develop the system for sensorimotor augmentation of the hand by combining force tracking task with FES.

Methods and Subjects:

The system is designed to train finger flexor and extensor muscles through a force tracking task under isometric conditions. Closed-loop controlled FES is added to the tracking exercise to augment patient's voluntary activity. The actual forces are acquired by a special designed adjustable measurement device with two force sensors. Visual feedback of tracking performance is provided to the patient. The system was evaluated in experimental training study with two incomplete tetraplegic patients over a period of four weeks.

Results:

For the assessment of hand capability maximal voluntary hand force and relative root mean square error in tracking were used. After the training period, the results show that both patients have strengthened the finger flexor and extensor muscles and that they both have reduced the tracking error.

Discussion:

The results show that both patients have strengthened finger extensor and flexor muscles and reduced tracking error, implying the improvement of grip force control and magnitude.

Conclusion:

The results of training in two incomplete tetraplegic subjects suggest that augmentation of voluntary grip control and increased hand strength is possible with presented system.

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Effects Of Functional Electrical Stimulation On Wrist Function And Spasticity In Patients With Post Stroke Hemiplegia

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Introduction:

Functional electrical stimulation (FES) has been reported to enhance upper limb function in chronic stroke patients (1). We have investigated the effect of FES on wrist function and on upper limb spasticity in subacute and chronic stroke individuals.

Methods and Subjects:

This is a randomized, controlled and prospective study that included 28 patients with a mean age of 58,9±12,3 years, and a mean time of 100±62 days after stroke. The standart rehabilitation program was applied to 14 patients, and standart rehabilitation program plus FES of wrist and finger extensors (sessions of 30 minutes/5 times a day/for 2 weeks) was applied to the other group of 14 patients.

Upper limb function was assessed by the Motricity Index (MI) and spasticity assessed by Ashworth Scale (AS) in the beginning and after two weeks of treatment. Resistance to passive wrist flexion and extension at 60, 90 and 120 degrees/sec velocities were measured by using an isokinetic dynamometer. Wilcoxon Signed Rank test was used for evaluation of the improvement within the groups, and Mann-Whitney U test was used for comparison of the two groups.

Results In FES group, there were statistically significant improvement in MI ($p=0.027$), and improvement in elbow spasticity ($p=0.059$). No statistically significant difference was found in other evaluated parameters in FES group and in none of the parameters in standart rehabilitation group ($p>0.05$).

Pre and posttreatment differences of the groups with respect to upper extremity MI scores, AS scores of wrists, digits, and elbows flexor and extensor peak torque values at 60, 90, 120 degrees/sec velocities did not reach statistical significance level.

Discussion:

Positive effect of FES on upper extremity function have been reported previously (1-2). We similarly found improvement in upper extremity function which was achieved in a very short time. We also observed a decrease in spasticity.

Conclusion:

Addition of FES to standart rehabilitation program has positive effect on improving the upper limb motor function of the patients with post stroke hemiplegia.

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Do Temporal Limits For The Common Peroneal Nerve Stimulation Exist?

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Abstract:

We present the reasons and procedures for re-implantation of an implantable stimulator for stimulation of the common peroneal nerve (CPN) after twenty-five-year use in correction of drop-foot in hemiplegic patient.

Strong dorsal flexion and moderate eversion of the left foot was achieved again with a monopolar half-cuff (CUFF) reinstalled on the nerve behind the lateral head of the fibula. However, significant thickening of the CPN about 20mm proximal and about 20mm distal to the site of stimulation was observed.

Electrophysiological findings have not revealed reliable sign which could be attributed to the damage of the CPN induced by the cuff or by the stimuli.

Relationship Of Primary Motor Cortex Activation And Upper Extremity Motor Characteristics During Acute Stage After Stroke

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Introduction:

Recovery of upper extremity function after stroke is generally poor. Absolute force and speed of a movement are controlled by the primary motor cortex (M1). This study aimed to establish the relationship between the recovery of M1 and strength and dexterity of hemiparetic upper extremity (HPE) in acute stage after stroke.

Methods and Subjects:

12 patients with partially impaired function of one upper extremity 2-8 days after first ischemic stroke participated in the study (age: 65 ± 15 years). A 1.5 T scanner was used for brain fMRI during upper extremity functional tasks. Motor characteristics of the HPE were measured by hand-held dynamometry, hand and pinch grip dynamometers, Nine Hole Peg Test and timed Action Research Arm Test (ARAT). Measurements were performed in the first and third week and 3 months after the stroke. Spearman correlation coefficient was used to compare the M1 activation of each brain hemisphere and the motor characteristics of the HPE.

Results:

In the first week after stroke, intensity of ipsilesional M1 activation correlated with muscle strength of shoulder extensors ($r = 0.66$) and abductors ($r = 0.76$), duration of 6 (of 19) ARAT tasks ($r =$ from -0.61 to -0.87) and Nine hole peg test ($r = -0.70$). In the third week after stroke, there was no correlation between muscle strength and M1 activation. However, 6 ARAT tasks correlated with intensity of ipsilesional M1 activation ($r =$ from -0.59 to -0.80). Three months after stroke, 10 ARAT tasks correlated with intensity of ipsilesional M1 activation ($r =$ from -0.68 to -0.92). Area of ipsilesional M1 activation correlated with 3, 1, and 9 tasks of ARAT, during all 3 measurements, respectively ($r =$ from -0.67 to -0.83). Area of contralesional M1 activation correlated with ARAT pinch grip in the week 3 ($r = 0.64$) and with pinch grip strength 3 months after stroke ($r = -0.82$).

Conclusion:

The findings might indicate the importance of functional training and use of HPE in promoting the process of cortex reorganization.

Recruitment Patterns Of Homologous Muscles During Unilateral Movement In Hemiparetic Subjects

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Introduction:

The presence of un-intentional muscular activity, with or without overt movement, in the contra-lateral side to the limb being activated voluntarily, has been documented in both healthy and hemiparetic populations. This activity has been termed contra-lateral motor irradiation (CMI), mirror movement, associated movement, motor overflow or synkinesis.

Aim:

To characterize the CMI phenomenon in healthy subjects and in hemiparetic patients with varying degrees of motor impairment and to assess the ability to consciously control this phenomenon.

Method:

A cross-sectional design was used to study adult stroke patients within 6 weeks of the insult. Participants were given a simple motor task comprised of unilateral fingers extension and wrist dorsi-flexion, while sitting comfortably with forearm support. Concomitant muscular activity on the contralateral upper limb was the focus of interest, while activation on both sides was monitored by means of surface EMG. The Fugl-Meyer test was used to assess the overall motor capacity of the upper limb.

Results:

CMI was demonstrated during voluntary activation of each hand in healthy subjects. In contrast, the stroke patients demonstrated CMI only during voluntary activation of the paretic hand. Healthy subjects were able to consciously reduce CMI. Stroke patients were initially unable to reduce CMI when first evaluated but showed such capacity in subsequent testing.

Conclusion:

Although the mechanisms underlying CMI are poorly understood, they reflect an important aspect of inter-hemispheric relationship in motor control. In stroke patients, CMI monitoring by surface EMG can be used to assess (1) the dynamics of this relationship during the recovery phase, and (2) its characteristics following damage to different elements of the motor system.

Stroke And Physical Exercise

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Introduction:

Stroke is one of the main causes of mortality all over the world, and the first cause of morbidity and disability in Europe. The incidence in Portugal is about 1,7-2,2 cases/1000/year, which is one of the highest in Europe. About one third of strokes are recurrent. This disease implies a large investment on health care due to the consequent disability. Cerebrovascular disease results from brain arterial changes developed over the years and influenced by several risk factors.

After a stroke, because of the resulting disabilities, patients are usually in poor physical condition and tend to lead a sedentary life-style, performing only a limited selection of their daily habits, which increases the risk of recurrence of a stroke and cardio-vascular accidents. Prescribing a customized exercise programme to stroke patients in a chronic phase is effective in the prevention of new cerebrovascular accidents, as well as in promotion of motor, sensory, functional, and psychological improvements. Most health professionals have limited experience in prescribing exercise programs for this specific patient target group.

Purpose:

This study aims to review the type of exercise program recommendable for stroke patients and to evaluate its benefits.

Methodology:

Research was oriented to articles published in the medline/pubmed database and the portuguese index of medical publications. Several internet sites were also consulted.

Discussion/Conclusion:

The intensity, frequency, and duration of the prescribed exercise depend on the functional and cardiovascular condition of each patient. It is known that stroke patients have a low level of aerobic conditioning that drops even further after the end of the rehabilitation program.

The prescription of an exercise program allows for a reduction of the cerebrovascular risk factors and a reduction of functional disability. Nevertheless, physical exercise is still under-used as therapeutics concerning secondary prevention.

Standing And Gait Recovery In Hemiplegic Patients: Outcome Comparative Analysis Between Postural Reflexes / Reactions Stimulation Vs. Classical Proprioceptive Procontractile Facilitation Method

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Objective: Retrospective comparative analysis, concerning the efficiency of two rehabilitative techniques in the recovery of orthostatism and walk.

Material: Group of 337 patients with hemiplegia (various etiologies) admitted in the Rehabilitation Clinic during 2007, splitted in 2 homogeneous lots: 168 submitted classical proprioceptive pro-contractile facilitation (CPPF) method (97M 71F mean age= 59,04 yo mean number hospitalization days 20,84 days of physical therapy 15,16) vs. 169 who underwent postural reflexes stimulation (PRS), by precocious vertical elevation on tilt table or/and standing frame (98M 71F, mean age=53,42yo mean number hospitalization days 24,20 days of physical therapy 17,53).

Mathematical methods used: multiple correlation, multiple regression analysis, dispersion analysis ANOVA. Most contributive assessed items: admission/discharge functional independence measure (FIM), evolution status at discharge (ES), number of days of physical therapy (PT), hospitalization length (H), days until functional (sustained-orthostatism enableing) knee extension achievement (FKE), until (assisted) walk between parallel bars (WPB), cane assisted walk recovery (CWR), first time independent walk recovery (IWR), stairs ascent/descend recovery (SR).

Results: For CPPF lot the tightest correlations were between the H-PT ($r=.99p=.001$) CWR-SR ($r=.95p=.001$) H-WPB ($r=.68p=.001$) the dependent variable FIM at discharge was tightly related with the following independent variables: FIM at admission ($T=17.588\text{sig. } T=.0000$) ES ($T=5.842\text{sig. } T=.0000$) age ($T=3.283\text{sig. } T=.0013$). For PRS group the tightest correlations were between the H-PT ($r=.99p=.001$) FKE-WPB ($r=.84p=.001$) CWR-SR ($r=.75p=.001$). Dependent variable FIM at discharge was tightly related with the following independent variables: FIM at admission ($T=19.360\text{Sig. } T=.0000$) ES ($T=5.865\text{sig. } T=.0000$), WPB ($T=3.527\text{Sig. } T=.0005$).

Discussions: PT (and respectively, H) were strongly correlated with improvement in FKE/WPB, respectively with CWR/SR. Age could be a limitative factor for rehabilitation/improvement of discharge FIM. The dispersion analysis underlined a possible cost-efficiency advantage in favor of the classical kinetic therapy method (CPPF) (mean values semnificatively different) its disadvantages: more analytic, time, energy consuming, potentially more stressful, risky for vascular aggravation or even recurrence. Conversely, use of postural reflexes stimulation (PRS) of central medullar pattern generator, have specific benefic effects on both, patient (psychological, cardio-vascular, maintaining the muscle pool and bone density) and therapist (less effort/time consuming).

Conclusions:

Both kinetic therapy techniques assesed, have pro- and cons they must be adapted to the peculiar general and neurological status.

Driving A Car After Stroke

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Introduction:

Consequences of stroke affect many capabilities that are vital for safe and effective driving. One third of stroke survivors in Slovenia are younger than 35 years (1). We present three clinical cases of patients after stroke, their driving abilities were tested by a specialized team at the Institute for Rehabilitation.

Case No. 1 The 42-year old female suffered subarachnoid bleeding, and additional ischemic stroke in the postoperative period with left-sided hemiparesis. At the end of rehabilitation she was independent in most of ADL and able to walk for long distances with support of AFO. Improvement of cognitive capabilities was determined at the follow up. Testing of driving abilities was successful, advised adaptations of the vehicle were automatic transmission and mirror for widening the visual angle (X safe mirror).

Case No. 2 The 76-year old female patient suffered cerebral stroke with sudden onset of mild left-sided hemiparesis. At discharge she was able to use the arm in functional activities and able to walk long distances. Test of the driving abilities was successful, with none adaptation to the vehicle.

Case No. 3 The 38-year old male patient suffered from cerebral stroke in the postoperative period after a car accident. After rehabilitation he was independent in all ADL, and able to walk short distances. At the follow-up, improvement of all cognitive abilities was determined. Test of the driving abilities was successful, with none adaptation to the vehicle.

Summary of assessment of driving abilities The assessment is done by clinical medical examination, assessment of cognitive functions, testing with the driving simulator and the in-car track test with the instructor. The Mediatester driving simulator offers objective and valid measurement of important driving parameters e.g. the moment of force, the reaction times and the visual fields (2).

Discussion:

All known methods to evaluate fitness to drive for post-stroke patients' mainly focus on vision, cognition and motor function. The weakened capabilities in cognitive, emotional and behavioral domain after stroke can be very often unstable and also not well recognized by patients and also by medical specialists.

Conclusion:

Assessing ability to drive for post-stroke patients should always be based on team-work of different specialists. Patients are advised to change their driving habits to ensure safe and effective driving.

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Rehabilitation / Kinesitherapy After Botulinum Toxine In Spasticity. Rational Use

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Introduction:

The use of botulinum toxine type A (BTX-A) as a therapeutic option revealed a great advance in focal spaticity due to its effectivity and little adverse effects.

Aim:

Review the rational use of evidence based rehabilitation technics after BTX-A. Discussion Randomized controlled trials and open label studies published in last decade have shown the antispastic effect of BTX-A, but little evidence of functional benefit. Rehabilitation after BTX-A enhances its effect controlling spaticity, reducing deformity and improving passive care and active function.

Rehabilitation after BTX-A should include different kynesiterapy technics, ocupacional therapy, physical modalities and also functional training.

Conclusion:

There is a growing conviction that BTX-A should not be used alone but as a part of integral rehabilitation program.

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Botulinum Toxin In Vascular Hemiplegics - The Smfr-Huc Experience

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INTRODUCTION:

Post-stroke spasticity is an important cause of disability in adults which results in limb stiffness and muscle spasm. Conservative measures, such as positioning, stretching and exercise are essential in spasticity management, but often inadequate to effectively control it. Oral antispastic medications often provide limited effects and frequent systemic side effects. Neuromuscular blockade with botulinum toxin local injections became one of the best options for the treatment of focal spasticity, particularly in stroke patients. The aim of this paper is to show the SMFR-HUC experience with toxin botulinum type A in these patients.

METHODS AND SUBJECTS:

A transversal descriptive study was performed, revising 43 post-stroke spastic patients, treated from July 2002 to December 2007. The authors registered the gender, age, injected limb, number of injected muscles, number of sessions and the period of time between each session. The results of a longitudinal study of 13 patients who made at least 3 sessions are also presented. After the treatment all patients were submitted to conventional kinesitherapy.

RESULTS / DISCUSSION:

The average patients age was 59.9 years (29-84) and most were male (58.1%). The 43 patients were subjected to a total of 110 treatment sessions. The medium interval between sessions was 7.3 months. 49.1 % received treatment only for the lower limb, 34.5 % only for the upper limb and 16.4% for both limbs. The average number of injected muscles was 6 in the upper limb and 3 in the lower limb. The most injected muscle in the upper limb was flexor digitorum profundus and in the lower limb was gastrocnemius. The 13 patients with 3 or more treatment sessions were mostly females (53.8%) with an average age of 54.8 years.

CONCLUSIONS:

It wasn't confirmed a progressive increase in the period of time between sessions, nor a decrease in the number of injected muscles. The authors think that this is due to the small sample of patients with 3 or more sessions. In the future, with more patients treated, we think that results will become similar to those of the literature. The authors still think that kinesitherapy may prolong toxin effects, achieving bigger intervals between administrations.

Does Electrical Stimulation Reduce Spasticity After Stroke? A &Randomized Controlled Study

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OBJECTIVE:

To discover the therapeutic effect of electrical stimulation on the plantar flexor spasticity in stroke patients.

DESIGN:

A randomized controlled clinical trial study.

SETTING:

Rehabilitation clinic of Semnan University of Medical Sciences.

SUBJECTS:

Forty stroke patients (aged from 42 to 65 years) who suffered from ankle plantar-flexor spasticity.

INTERVENTION:

Fifteen minutes inhibitory Bobath techniques was applied to one &of the experimental group and a combination of 9 minutes electrical stimulation on the dorsi-flexor muscles and inhibitory Bobath techniques was applied to another group for 20 sessions daily.

MAIN MEASURES:

Passive ankle joint dorsi-flexion range of motion, dorsi flexion strength test, plantar-flexor muscles tone by Ashworth Scale and Soleus muscle H-reflex.

RESULTS:

The Mean change of passive ankle joint dorsiflexion in combination therapy group &was 11.4 (SD 4.79) degree versus 6.1 (SD 3.09) degree, which was significantly higher ($P=0.001$). The mean change of plantar-flexor muscle tonicity measured by Ashworth scale in &the combination therapy group was -1.6 (SD 0.5) versus -1.1 (SD 0.31) in the Bobath group ($P=0.001$). Dorsi-flexor muscle strength was also increased significantly ($p=0.04$) in the combination therapy group (0.7 ± 0.37) compared to the Bobath group (0.4 ± 0.23). However, no &significantly change in the amplitude of H-reflex was found between combination therapy (-0.41 ± 0.29) and Bobath (-0.3 ± 0.28) groups.

CONCLUSION:

The combination therapy of Bobath &inhibitory technique and electrical stimulation may help to reduce spasticity effectively in stroke patients.

Neuropathic-Radicular Pain May Be Relieved By Botulinum Toxin-A

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Introduction:

Sciatic radicular pain is frequently associated with lumbar myofascial pain. There are increasing evidence that botulinum toxin-A (BTX-A) has also specific analgesic mechanisms apart from its known muscle-relaxing effect. In this open study we describe a group of patients that were relieved with BTX-A not only of myofascial syndrome but also of the neuropathic pain.

Method and Subjects:

Thirty patients with chronic low back and sciatic pain, diagnosed of postlaminectomy syndrome, were injected with BotoxR (Allergan) 30-50 units per trigger point (TP) in lumbar and gluteus muscles. The diagnosis was performed clinically and with electromyography. Visual Analogue Scale and analgesic intake were evaluated previously and every month for 6 months.

Results:

The sample consisted of 18 females and 12 males (mean age 48 range 24-68), with myofascial and radicular pain, lasting for 23 month on average. Nineteen out of thirty cases (57%) obtained more than 50% of analgesia that lasted for a mean of 3 months (2-8 m) in the low back pain. Fourteen out of them (73% of 19) were also alleviated in the neuropathic-radicular pain. Most of the cases could also decrease the analgesic consumption and 3 cases came back to working activity.

Discussion:

All patients were injected in order to improve the regional, myofascial pain. This objective was reached in 57% of cases. However, we believe that it is important to emphasize the analgesic effect of the BTX-A on the radicular pain, that shows the possible utility of this neurotoxin for these cases.

Conclusion:

We believe that BTX-A has shown as a valuable therapy for some cases suffering from chronic lumbar radicular pain. This therapeutic approach should be tried before than other more invasive techniques.

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Evaluation Of Tactile Tresholds With Von Frey'S Hair

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Introduction:

The assessment of sensory thresholds provides a method of examining the function of peripheral nerve fibers and their central connections. Quantitative sensory testing is a variant of conventional sensory testing wherein the goal is the quantification of the level of stimulation needed to produce a particular sensation. While thermal and vibratory testing are established methods in assessment of sensory thresholds, assessment of tactile thresholds with monofilaments is not used routinely. The purpose of this study was to assess the tactile thresholds in normal healthy population.

Subjects and Methods:

In 40 healthy volunteers (20 man), aged 23 to 71 years the tactile thresholds were assessed with von Frey's hair (Aesthesiometer Somedic, Sweden) in 7 parts of the body bilaterally. The subjects were sitting with their eyes closed, legs resting comfortably on a bed and arms resting supinated on the thighs in quiet room. Von Frey's hair were applied in an order of increasing stiffness, the right part was always tested first.

Results:

There were no significant differences between men and women in all measured parts. The right side was significantly more sensitive lateral part of the leg ($p=0.011$) and left side in the medial part of the arm ($p=0.022$). There were also significant differences between sites ($p<0.001$), with mean values higher in medial part of the arm, lateral maleollus and lateral part of the leg.

Discussion:

The study was designed to determine the normal cutaneous sensation in different parts of the body in healthy population. Most of current literature regarding monofilaments has concentrated on validating the 5.07 Semmes-Weinstein monofilament as a test to distinguish the presence or absence of protective sensation in patients with diabetes. Based on our normal values, the inability to feel that monofilament, represents sensory threshold much above the normal. Earlier identification of the neuropathic process with von Frey's hair offers an opportunity for the patient with neuropathy to implement improved care before the onset of significant morbidity.

Conclusions:

Von Frey filaments allow the estimation of tactile thresholds without the need for complicated instrumentation.

Study Of Pain Intensity And Quality Of Life (Qol) Improvement In Patients With Cervicobrachialgia Treated By Dry Needling Analgesia

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Introduction:

The aim of our study was to evaluate the effects of dry needling in patients with cervicobrachialgia as their main problem.

Methods and Subjects:

30 patients received as many dry needling sessions to obtain pain relief. They were evaluated at the beginning and at the end of treatment by Brief Pain Inventory, which evaluates pain intensity and pain interference with seven domains of life on a 10 point scale.

Results:

At the beginning mean maximal pain was 8,13, minimal 3,56, and average pain 6,3 VAS . At the end mean maximal 5,14, minimal 1.68, and average pain 3,64 VAS. Average pain was higher in the widespread pain subgroup 7,4, compared to regional pain subgroup 5,9. At the beginning all mean scores on the interference QOL scale were between 5,5-6,1 but walking (1,7). After treatment, they were between 3,0-4,5 but walking (1,3). The ratings on the pain and QOL interference scale were higher in the widespread pain subgroup. Statistically significant changes were found in all items ratings, but walking in the whole group or separately observing widespread pain vs. regional pain subgroup or chronic vs. subacute pain subgroup.

Discussion:

Our results support the results of other researchers (2): good analgetic short term effectiveness of dry needling in patients with myofascial pain.

Conclusion:

Results of our study confirm significant analgetic effect of dry needling and consequently improvement in QOL. Effects were good in subacute as well as chronic pain patients. Pain and functional improvement was better if patients had regional compared to widespread pain.

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Pressure Pain Threshold And Pressure Pain Tolerance Changes After A Single Dry Needling Therapy Of M. Trapezius In Patients With Cervicobrachialgia.

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Introduction:

The aim of the study was to observe the immediate and delayed effects of spontaneous pain, pressure pain threshold and pain tolerance of active trigger points in upper trapezius muscle after a single dry needling treatment.

Methods and Subjects:

26 patients. Maximal and average pain intensity was evaluated by VAS. Pressure pain threshold and pressure pain tolerance were estimated by pressure algometer. Evaluations were 1. before treatment, 2. immediately after dry needling and 3. at follow-up.

Results:

Elevations in pressure pain threshold between 1. – 2. evaluation and 1.-3. evaluation were statistically significant ($p=0,025$, $p=0,001$). Elevation in pressure pain tolerance was statistically significant between 1.-3. evaluation ($p=0,002$). VAS (maximal, average pain) was significantly lower at follow up ($p=0,005$, $p=0,01$). No correlations were found between pressure pain threshold or tolerance and perceived pain intensity. Changes in pressure pain threshold or tolerance correlated negatively with changes in VAS (-0, 71).

Discussion:

In our patients pressure threshold and pain tolerance was lower than normal, which increased significantly after dry needling. Consequently pain decreased. Lack of correlation between pain pressure threshold and tolerance with pain experience can be explained by variability of subjective perception of pain, compared to local event–sensitivity of trigger point to pressure pain. Conclusion our study supports beneficial immediate and delayed effects on pressure threshold and pain tolerance of a single dry needling therapy, consequently perception of pain in neck, shoulder and arm diminishes.

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Assistive Technology For Usage Of Information And Communication Technology In Iris Smart Home

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The article presents the role of assistive technology (AT) for usage of information and communication technology (ICT) in a demonstrative smart home IRIS (Independent Residing enabled by Intelligent Solutions), designed for people with disabilities and elderly.

The emphasis lies in computer usage. Information and communication technology in IRIS home is presented from technological as well as from users' point of view. Many AT for ICT for various disabilities within home IRIS are presented whereas the target user groups are visually, hearing and/or physically impaired.

The most appropriate AT for the patient is selected through a multidisciplinary team approach, where a physician, an occupational therapist and an engineer evaluate patient testing of various AT.

Introducing Smart Home Iris

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The article presents a demonstrative smart home IRIS (Independent Residing enabled by Intelligent Solutions). It is fitted with the latest equipment, technical aids, assistive technology and information and communication technology.

The aim of the IRIS home is demonstration, testing and application of contemporary technological solutions that compensate for the most diverse kinds of disabilities and thereby improve the quality of life of persons with disabilities and assure their optimal occupational, educational and social integration into society within their home environment.

Patients in the IRIS Smart Home are tested, analyzed and evaluated with standardized assessments for their abilities and functions, without and with various technological solutions. Advising for rearrangement and/or inclusion of various technologies suitable for his/her home environment is also included.

An important role for achieving aims and goals of the IRIS Smart Home plays a multidisciplinary team approach that provides the optimal treatment and solutions for the patient.

Effects Of Different Exercise Regimes On A Trunk Muscles Strength And Endurance In The Patients With Chronic Low-Back Pain

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Background/Aim:

An exercise regime for patients with chronic low-back pain (CLBP) means the application of appropriate exercise protocols. There are different expert's attitudes regarding the low-back pain exercise in a physiotherapy practice.

The aims of our study were:

- 1) To establish the effects of different exercise regimes for the patients with low-back pain
- 2) To compare a trunk muscles strength and endurance in the patients with and without chronic low-back pain.

Methods:

A prospective control clinical study with 30 patients: 20 patients had CLBP, 10 patients had no CLBP. The patients who had CLBP were randomly divided into two groups. The group A had an exercise regime consist of the back range of motion and muscle strength exercises. The group B had the same exercise regime plus muscle endurance exercises. The patient without CLBP had no exercises. Effects of two different exercise regimes were estimated by the muscle strength (manual test), the back range of motion (goniometer and tape), and the muscle endurance (McGill test).

Training lasted ten days. Measurements were made at the end and the start of treatment. In statistical analysis we used: Kruskal Wallis test, Mann Whitney Exact test, Exact Wilcoxon signed rank test and Fisher Exact test. Results. The patients in the group B, in contrary to the group A, had significantly better strength of the left and right lateral trunk flexors.

Flexion of the lumbar spine was significantly better in the group B. The patients in the group B, contrary to the group A, had significantly better endurance of the trunk extensors and flexors.

In terms of a trunk strength and endurance, there were significantly different between patients with and without CLBP.

Conclusion:

An exercise regime consists of the back range of movement, strength and endurance training was more efficient in the patients with CLBP.

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Exercises On A “Swiss Ball” For Chronic Low Back Pain

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Dr Klein-Vogelbach first introduced “Swiss ball” as an effective tool for enhancing postural training and exercises to increase mobility and stability of the spine.

Aim of this study was to determine importance and effectiveness of Swiss ball as part of the stabilization exercises program for chronic low back pain.

Prospective study was conducted in our Clinic from September 2007. until February 2008. Participants were 40 patients with chronic low back pain. Two homogenous groups of 20 patients were randomly selected (9 men and 11 women in each, age 25-45). Both groups had the same stabilization program for low back pain, divided into 20 sessions of 30 min each. Program was designed in order to enhance the strength of stabilization muscles: m. transversus abdominis and m. multifidus.

Experimental group A in addition had a set of 4 different exercises on the Swiss ball: 1-back roll-over 2- bridging 3-bridging with single leg elevation 4- bridging with contralateral arm-leg elevation.

Control group B had segmental stabilization exercises only. SF-36 and Oswestry Disability Score were used to measure a quality of life, mobility and self rated pain intensity. 18 of 20 patients in A group showed improvement in overall quality of life measured with SF-36 Questionnaire 12 of them had statistically significant ($p < 0,05$) self rated reduction in pain intensity (graded with 4 before and with 2 after the exercises).

Group B also showed significant improvement in Oswestry Disability Score (77%). 75% had improvement in quality of life according to SF-36 Questionnaire. Groups were compared. There was no significant difference in reduction of pain intensity between this two, but there was some improvement in quality of life, and especially in enhanced mobility and posture, in experimental group.

Swiss ball is an effective tool in back pain management. Patients in experimental group were more motivated and they considered their exercises to be more interesting than patients in control group. That also had impact on better results in this group.

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Effect Of Interferential Current And Therapeutic Ultrasound On Lumbar Spine Range Of Motion In Patients With Chronic Low Back Pain.

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Introduction and Aim:

Low back pain is an extremely frequent medical condition with up to 80% lifetime prevalence in adults. Among variety of therapeutic options for low back pain, interferential current (IFC) and therapeutic ultrasound (tUS) are among commonly used modalities.

The aim of the study was to evaluate the effect of IFC and tUS on lumbar spine range of motion in patients with CLBP, with emphasis on their comparative effectiveness.

Subjects and Methods:

Sixty patients of both genders (age 40,13± 1715,24 years) who were admitted to stationary medical rehabilitation were randomly assigned to either IFC or tUS, administered for 12 and 4 minutes respectively, daily for 5 days per week for 3 weeks along with exercise program. Blind efficacy assessment obtained at baseline and at the end of treatment, included range of motion measures (lumbar flexion - modified Schober's lumbar side flexion –fingertip to floor distance).

Results:

There was no statistically difference between two groups at the beginning of the study, with exception of lateroflexion on the right side ($p=0.04$). At the end of the treatment both IFC and tUS exerted statistically significant improvement in all measures of lumbar spine mobility ($p<0.0005$). The effect was similar on lateroflexion ($p=0.02$) while statistically different on Schober's measure ($p<0.0005$).

Discussion:

Although electrotherapeutic modalities and physical agents are frequently used in the management of CLBP, few studies were found to support their use. This study found positive results of IFC and tUS on lumbar spine range of motion. The main drawback is lack of a placebo control group.

Conclusion:

In our sample of middle-aged patients CLBP IFC and tUS improved range of motion of lumbar spine, with significantly different effect on Schober's measure.

Mesotherapy, Therapeutic Exercise And Cervical Pain

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Introduction:

This perspective and randomized study quantifies and compares, in a longitudinal and transversal way, the efficacy of Mesotherapy and Therapeutic Exercise in reducing the pain, recovering ROM and improving the normal activity of everyday life of the patient with chronic neck pain, after 5 weeks of treatment and after 1 week from its end (FU).

Materials and Methods:

The study has been conducted on 40 patients, randomized in three homogeneous groups and subjected to 3 therapeutic treatments:

Group 0 (10 patients) has undergone Therapeutic Exercise 3 times a week for 5 weeks.

Group 1 (20 patients) has been treated by cervical Mesotherapy once a week for 5 weeks using lidocaine 2%, lysine acetyl salicylic acid and physiological solution.

Group 2 (10 patients) has undergone both treatments contemporaneously for 5 weeks. Evaluation scales used: VAS, NPQ, CNFDS and goniometric measurements, carried out at the beginning of the treatment, at intermediate treatment (3rd week), at the end of the treatment and to conclude repeated 1 week later (FU).

Results and Discussion:

The statistics analysis executed on VAS, NPQ and CNFDS shows a significant beneficial effect on pain and on increasing the normal activity of everyday life in all treatments in relation to time ($p < 0.001$). The goniometric measurements show an improvement of ROM, statistically significant ($p < 0.001$) in relation to time, in all three groups. The test does not show significant differences between the three groups but in the 3rd week there is a slight significant difference in flexion in favour of group 1.

All groups have benefited of the therapeutic effect even one week after the end of the treatment. However in group 0 there is a reversal of trend with a significant decrease of the extension compared to the other two groups ($p < 0.001$).

Conclusion:

Both Mesotherapy, using lidocaine 2%, lysine acetyl salicylic acid and physiological solution, and Therapeutic Exercise, even combined, are valid instruments in reducing chronic neck pain, improving ROM and increasing the personal and social autonomy of the patient in his everyday life.

Development Of A Visual Feedback Setup For Increasing The Efficiency Of Posterior Pelvic Tilt Exercise

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Introduction:

Low back pain is a common health problem. Exercise is an important component in the treatment, but its efficacy is questionable when recommended verbally as part of a home program. Motivation through audiovisual feedback is expected to produce better results.

The aim of this study was to develop and assess the efficiency of a visual feedback setup intended to improve the efficacy of posterior pelvic tilt exercises (PPTE).

Methods and Subjects:

The feedback setup designed and constructed by the authors included a bed covered with a mat with three force sensors embedded in the midway corresponding to the lumbosacral region of the subject lying supine, a data acquisition card to collect and convert data, two monitors, one above the subject and one on the physician's table.

A software was developed to monitor the force exerted vertically upon the force sensors during PPTE which could be followed both by the physician and by the subject on the monitors.

Twelve healthy volunteers were asked to perform five consecutive PPTE with maximum effort, I) without feedback, II) during feedback, III) without feedback.. Mean of five forces for each situation were calculated.

A second experiment comprised of a series of 10 PPTE with an intensity of 50 % of maximum force of each subject was designated in the form of trapezoid traces with rest/exercise periods (10/6 s respectively) to provide feedback for a train of PPTE. Wilcoxon signed-rank test was used for statistical evaluation.

Results:

Maximum force increased from 62.5 ± 20.5 N to 71.64 ± 27.02 N with feedback ($p < 0.02$) and stayed steady showing a slight increase (73.05 ± 30.22 N) after feedback (NS). In the second experiment, visual feedback provided a better congruency with predesignated patterns of PPTEs, qualitatively.

Conclusion:

The visual feedback setup developed in this study proved to be successful in providing adequate feedback for improving the efficacy of PPTE. A longitudinal clinical trial has been commenced to assess the long-term efficacy.

The Importance Of Complex Rehabilitation Program For Quality Of Life In Rheumatoid Arthritis Patients

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Background and Purpose:

The severity of rheumatoid arthritis (RA) may fluctuate over time, but chronic RA most commonly results in the progressive development of various degrees of joint destruction, deformity, and a significant decline in functional status

1. The rehabilitation management in RA is imperative to decrease the potential long-term disabilities
2. The objective of this study is to analyze the importance of rehabilitation program following correlations between the clinical and functional parameters.

Subjects and Methods:

We observed 94 RA patients during six month, aged between 34 and 69 (average 49,55 years) and the sex proportion F/M=8/1 18 patients are entered in the functional class I, 56 in class II and 20 patients in class III. The goals of rehabilitation include pain relief, increased range of motion, strength and endurance, prevention/correction of deformities, improve the quality of life we used education and therapeutic exercises, assistive device equipment, joint protection and energy conservation techniques and occupational therapy.

The illness activity level was established with DAS28, the evaluation of the morning stiffness (minutes), of the PAN, SAN-number of painful and swollen joints and of the pain (VAS 10mm) the quality of life (HAQ). All these parameters were established at entry into the study (Time 1) and after 24 weeks (Time 2). The results were analyzed with the statistics SPSS program.

Results and Discussion:

An important correlation was underlined for the functional class of RA towards the improvement of clinical and functional status (R 0.786). The starting age and the period of the illness proved to be well correlated to the functional status after rehabilitation program (R 0.583). We obtained a weak correlation of the morning stiffness, PAN and SAN and the quality of life at the end of rehabilitation programe (R 0.241). All parameters, especially HAQ, had an important improvement.

Conclusions:

Even this treatment is not able to stop the progression of the illness, RA rehabilitation program collocate with medication can increase the quality of life for patients with RA.

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Study Regarding The Effect Of Respiratory Reeducation In Ankylosing Spondylitis

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Introduction:

The aim of this study is to demonstrate the importance of respiratory reeducation, complementary to the pharmacological intervention.

Method and Subjects:

Our study included 50 patients with ankylosing spondylitis attended a rehabilitation program for 2 weeks, either in General Hospital Oradea or Felix Spa (Romania). They were randomized in 2 groups. The first one followed both a pharmacological treatment and a specific respiratory reeducation program. For the second group (control group) the therapeutical intervention was only pharmacological. The duration of study was 12 months. The patients were evaluated at baseline, at the end of the treatment, after six and 12 months. Clinical evaluation included assessment of disease activity using VAS, BASFI. Chest expansion was recorded, pulmonary function test were performed, maximal inspiratory pressure and maximal expiratory pressure were measured using a digital mouth spirometer. The quality of life was evaluated using HAQ.

Results:

Comparing the 2 groups, in patients following the specific respiratory reeducation program we registered a significant improvement regarding chest expansion, maximal inspiratory pressure and maximal expiratory pressure, recorded at the end of the rehabilitation treatment. Furthermore the improvement in quality of life was sustainable for the next months if the patients continued to exercise at home.

Discussions/Conclusions:

The study showed that exercises have a positive effect on clinical variables regarding respiratory function, being a very useful complementary method besides the pharmacological intervention. Specific pulmonary kinetic program should be recommended as an important part of any rehabilitation plan for patients with ankylosing spondylitis.

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Physical And Rehabilitation Medicine In Adults With Cerebral Palsy

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Cerebral palsy (CP) is caused by a lesion to the brain resulting in adaptations to the structure and function of the muscles as well as compromised mobility. However CP is treated mainly during childhood until 3 or 5 years of age this represents a problem that affects patients during the rest of their life. Some authors have seen that people with CP can improve their disability even many years after discharge from treatment.

For this and other reasons it is mandatory for PRM specialists to adopt some measures in order to provide patients with physical and rehabilitation medicine and other kinds of physical activities that could be continued along their life. Thus during adolescence and adulthood we can better assess this procedure and its performance.

Some authors have seen that patients with CP who were able to walk and climb stairs without difficulty at age 10, had only a 23% chance of decline 15 years later. Children with diplegic spastic CP who suffered from selective dorsal rhizotomy for reducing spasticity, improved locomotor function 20 years after the operation compared with their preoperative status.

The level of every day physical activity and community participation in adults with hemiplegic CP are similar to the levels of healthy subjects, although adults with spend more time in non-intensive leisure activities. Participation in sports appears to be a determinant of every day physical activity. Adults with CP have been treated even with whole-body vibration or resistance training, concluding that muscle function increased with the two methods with no negative effect in spasticity.

Conclusions:

PRM specialists have to provide physical activity in adult CP in order to avoid losing their activity

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Kinesiological Gait Analysis As A Tool In Decision Making For Botulinum Toxin Application In Children With Cerebral Palsy

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Introduction:

Cerebral palsy (CP) is a neurodevelopmental disorder due to early damage of the brain. One of the aims of the habilitation program is to improve the gait pattern in ambulatory children with CP. Application of Botulinum toxin in muscles is used to lower spasticity and thus improve the gait pattern. A thorough examination of function is needed in order to choose the right intervention in a particular case. Clinical observation of gait, passive range of motion measurement, muscle tone and strength assessment are regularly used.

Specialized examination procedures, such as kinesiological gait analysis, are used to gain a more precise data for the intervention decision. The aim of this study was to find out in how many cases and how the proposed plan based on clinical observation and measurement was changed on the basis of the kinesiological gait analysis results.

Methods In Rehabilitation:

Institute of Republic of Slovenia (IRSR) kinesiological gait analysis is used to assess gait pattern anomalies. The child is first clinically examined. The proposal of therapeutic interventions is made on the basis of this examination. The child is then sent to the kinesiological gait analysis laboratory, where exact measurement of gait with kinematic, kinetic and surface electromyographical parameters is made.

Obtained measurements are analyzed by engineer and discussed at the kinesiological team meeting. Considering all these informations, the final intervention plan is made.

Results:

In the years 2006 and 2007 88 children were sent to the kinesiological gait analysis.

The problem was discussed at the team meeting for all cases. In 29 cases the plan of the intervention was modified in regard to the initial idea based on the clinical assessment. In all cases more precise instructions for the intervention were proposed on the basis of analysis results and team experts discussion.

The authors discuss specific intervention proposal benefits of kinesiological gait analysis comparing to clinical examination.

Conclusion:

Kinesiological gait analysis is a useful tool for decision making in the intervention planning and follow up for CP children with gait problems.

The Effects Of Functional Electrical Stimulation On Body Control In Children With Dyplegic Type Cerebral Palsy(Cp)

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INTRODUCTION/OBJECTIVE:

In children with cerebral palsy (CP), one of the main problems is the inability to maintain a proper sitting position due to the inadequacy in body control. However, this position is of essential importance in order to have functional movements of the upper extremity during daily life activities. In addition to classical therapies for maintaining sitting position and related body control in children with CP, benefiting from functional electrical stimulation (FES) is a modality currently in the agenda. However, the number of studies performed with general FES applications is limited in number and content. Also, there are as well discrepancies in the basic elements of these studies, such as the individual characteristics of the patients examined, the quality of the diseases concerned and the FES parameters. This study was performed in order to search the strengthening lumbar-abdominal muscles in children with spastic dyplegic CP by FES and to evaluate its effect on body control of children.

PARTICIPANTS: 32 children with spastic dyplegic type CP aged between 2-10 years who have not developed full balance in sitting and were hospitalized for rehabilitation were included in this study. These children were divided into two equal groups as FES and control group. The children in FES group received physical therapy and rehabilitation (PTR) program in addition to electrical stimulation. Electrical stimulation was applied five days a week for four weeks to lumbar and abdominal muscles in 30 minute-long sessions. Electrical stimulation was at an intensity of 20-30 mA with 250 μ sequence pulse width, 25 Hz frequency it was on for 10 sec/ off for 12 seconds. The control group received PTR program only for four weeks. The change in sitting balance before and after treatment was evaluated with 19-item GMFM scale. Body asymmetry was evaluated with radiographic studies kyphosis, cobb and sacral angles were measured. For both groups in the study initial values of GMFM sitting scale and measurements of kyphosis, cobb and sacral angles were similar. That aspect was specifically emphasized.

RESULTS: Following the treatment, GMFM score increased significantly in FES group ($p < 0.001$), and cobb and kyphosis angles decreased significantly ($p < 0.001$) as well. In the control group, it has been observed that, GMFM sitting score and kyphosis angle changes significantly while cobb angle has not subjected such a change. Neither of the groups had a significant change in the sacral angle. When these two groups were compared to each other in terms of pretreatment and posttreatment data, in FES group, the decrease in kyphosis and cobb angles together with the increase in GMFM score was approximately two times higher than the control group.

CONCLUSION: In conclusion, our study bring out that FES strengthens lumbar-abdominal muscles, positively influences sitting balance in children with CP thereby improving daily life activities. Therefore, this brings us to an approach that FES could be reliably added CP rehabilitation programme.

Swallowing Disorders In Children With Tetraplegic Form Of Cerebral Palsy

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Background:

Cerebral palsy (CP) is a well-recognized neurodevelopmental condition beginning in early childhood and persisting through the lifespan. Observing patients with CP we have to be aware of different dimensions - motor abnormalities, associated impairments, anatomic and radiological findings. Concerning the motor functioning, it is the extent to which the individual is limited in motor function in all body areas, including oromotor function. Dysphagia is a frequent problem and may vary widely from mild to severe. Successful oral feeding is dependent not only on functional deglutition, but also on a broad range of neurodevelopmental skills involving gross motor behaviors, sensory systems, cognition/communication.

Methods:

The aim was to establish the prevalence of dysphagia in a population of children with CP, and to determine which factors are related to dysphagia. We studied 50 children with tetraplegic motor impairment, aged from 5 to 18 years. An exhaustive clinical assessment was developed and undertaken by a multidisciplinary team (physiatrist, neurologists and speech therapists) experienced in the treatment of motor problems and dysphagia in CP. The children were divided into two groups, based on the presence or absence of dysphagia. The analysis of data presented several important factors that contributed to dysphagia.

Results:

We defined two groups of children. The 1st comprises those with less severe involvement (only oromotor dysphagia). These children present significant feeding problems, primarily due to slow eating, but are not at risk for health due to dysphagia. The 2nd includes those with pharyngeal dysphagia (frequent cough, episodic aspiration and occasional pneumonia). There are some factors discussed, that correlate significantly with the severity of dysphagia.

Conclusion:

Clinical decisions in the management of the feeding problems depend on accurate diagnosis. Our clinical assessment proved to be a good clinical tool to evaluate the severity of such impairments. Our goal in the future is to better define the guidelines for the medical and surgical therapy of severe dysphagia.

Implications Of A Cognitive Behavioral Group Interventions And Peer Social Group On Adolescence And Young Adults With Cerebral Palsy: A Pilot Study

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Objective:

To determine the effectiveness of a cognitive-behavioral (CB) group intervention for the well being of adolescence and young adults with Cerebral Palsy (CP).

Design:

Before and after trial with a comparison group. Data was collected prior to the intervention (t1) and again at the termination of the intervention, twelve month later (t2).

Setting: Community-based.

Participants:

A convenience sample of sixteen adolescence and young adults with CP.

The study group consisted of 8 subjects who participated in a CB group, and the comparison group consisted of 8 subjects who participated in a social peer group.

Intervention:

The CB group intervention focused on identification and modification of irrational ways of thinking, relaxation skills, problem solving skills and assertive abilities.

Main Outcome Measures:

Participants completed the short form of the Sense of Coherence scale (SOC), Beck Depression Inventory (BDI), and the Systemic Quality of Life Questionnaire (QOL).

Results:

Before and after trial tests showed that the CB group intervention was more effective than the social peer group in decreasing depressive symptoms and in enhancing SOC, physical and cultural Quality of life. At the end of the year, not only did the peer social group show no improvement in the psychological indices, but the depression level of the participants in this group had risen.

Conclusions:

The results suggest that a CB group intervention is more beneficial for the well being of young adults with CP.

The Question Of Relations, Intemicy And Parenthood In Persons With Special Needs

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'Nitzan Onim' Residential Center for adults with severe learning disabilities and co-morbidity, prepares these young adults for independent living and gradual integration in the workforce. The Residential center located in the city of Kfar-Saba was established 20 years ago. In a long range survey it has been found that 90% of the program graduates are working in the open market and earning an average salary.

More than 80% live in supervised apartments within the community while continuing to receive support & guidance from the center's professional team.

One of the areas in which close lengthy and personal guidance is given is the sexual/ social behavior issue.

Young adults who previously suffered from loneliness enjoy the social opportunities now opened to them and many experience couples relations.

As in many areas, in the intimacy they experience difficulties in social judgment, in perseverance and in the establishment of their identity.

Today there are 10 such couples in the program, they live in their own apartments and run an independent household. Four of these couples are married.

Recently we have begun a special workshop designated for couples leading a communal household. Couples from other centers belonging to Nitzan Organization (a non profit organization that treats children, youth and young adults suffering from learning, adaptive and functional disabilities) participate in this program.

The organization has also recently established a training/consulting framework for parents with such disabilities.

Until today, the topic of couple's relation and parenting for individuals with special needs has not been dealt with and therefore cannot be found in professional papers.

Exercise On Childhood Obesity: A New Program In Portugal

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Introduction:

Childhood Obesity is a major public health problem nowadays. Obesity is associated with an increased risk of a number of chronic diseases and a reduced life expectancy and early mortality. The causes of obesity are complex, but basically, obesity occurs when the energy intake exceeds the energy expenditure.

Obesity treatment guidelines for children and adolescents were established and separated from adults. They were based in a multidisciplinary approach, including dietary and physical activity management, behaviour modification and family involvement. In 2005, it was created in HGSA, Oporto, an Obesity management medical consultation, by Paediatric Department. In August 2007, the PMR Department took part in this project and started a supervised, individualized Exercise Program for obesity children.

In this work I'm going to present this Program.

Methods and Subjects:

The patients that take part in this program are previously selected and addressed to us by Paediatric Department. They are obese children (BMI > Percentile 97) with metabolic or cardiovascular condition associated. The Exercise Program begins with a pre-exercise evaluation. It includes the application of a clinical protocol (medical history, physical examination and laboratory tests) and a health-related fitness test. After that, depending on the medical conditions and risk factors we establish an individualized exercise program.

Discussion:

Although the relationship between physical activity and body fatness needs to be better understood in physiological terms, as do the metabolic effects per se of physical activity in childhood, a formal exercise program is recognized to have many different benefits not only, but so in obesity treatment and prevention.

Conclusion:

The relative contribution of diet, exercise and behavioural modification in obesity programs cannot be determined. The multidisciplinary treatment is the best option including the prevention and habits modifications. The published results of weight-management programs are limited and show modest results however they provide direction for more universal weight-management strategies.

The Effectiveness Of Therapeutic Exercise Vs Plantar Orthoses In Child Flatfoot Treatment

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The aim of our study is to compare the efficiency of the therapeutic exercise with the plantar orthoses in child flat-footedness. We have examined three group of patients: the exercises to strengthen the plantar muscles have been provided for the first group the application of the plantar orthoses for the second one and the third control group had no treatment. The flatfoot evaluation has both clinical and baropodometric examinations.

The patients and their families have been taught to perform the specific exercises at home for at least 30 min a day for 5 times a week.

Subjects and Methods:

The study has been performed in 30 infant patients divided in three group homogeneous. The each group was composed of 10 patients, aged 4 -12 years old with an average group of 8,3, with a sex distribution 4:6.

The inclusion criterias: 4-12 years old infants plantar pathology of I-II degree according to Villadot classification. The exclusion criterias: cognitive deficits, metabolic and bone pathologies.

The groups have been evaluated by baropodometric platform. The protocol provided three follow-up evaluation every three months. The parameter utilized for initial and follow-up evaluations is a Chippaux-Smirak index ($>0,33$).

Results:

We have analyzed the variation of Chippaux-Smirak index before and after treatment measuring a footprint on baropodometric platform while in static position.

We have also estimated the average value obtained for each group during the first and second evaluation to obtain the percentage of flat-footedness decrease which provided a positive value in all groups. A decrease has been observed in all groups, especially in the group treated with therapeutic exercises. The statistical reports confirm a therapeutic effect of both treatments.

Conclusion:

Both orthosis and exercise treatments are efficient in the infant flat-footedness (I-II grade), but the therapeutic exercise seems to be more useful than plantar orthoses.

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Factors Important For Good Interaction In Physiotherapy Treatment Of Persons Who Have Undergone Torture A Qualitative Study

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Torture can be defined as the deliberate or systematic infliction of physical or mental suffering to force another person to yield information, as a punishment or to destroy a person's identity.

The aim of the physiotherapy treatment for persons who have undergone torture is to relieve or reduce pain, correct musculoskeletal dysfunctions, teach the client to cope with pain and regain body awareness. A good interaction and communication with each refugee is needed to optimize the treatment.

The aim of this study was to identify factors important for a good interaction between physiotherapist (PT) and the patient among PT's specialising in refugees who have been tortured. A qualitative multiple case study was done. Ten physiotherapists working within the Red Cross, psychiatry or primary health care, who held positions specialising in treating persons who have undergone torture were interviewed.

The interviews were analysed with content analysis. The results showed that the factors important for a good interaction could be summarized in five categories characteristics of PT, capacity to handle negative emotions, professional and therapeutic support services, tailor interaction to meet patients needs and shape environment factors.

All these factors have to be considered to improve the interaction between PT's and persons who have undergone torture.

Rehabilitation Of A Quadruple Amputee Adult Following Septicemia – Case Report

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Aim:

To describe the management, difficulties and independence achieved during a quadruple amputee's rehabilitation.

Material and Methods:

Case study of a patient with amputation of four limbs due to septicemia and description of her rehabilitation process.

Abstract:

Acquired limb loss from severe septicemia is very rare in adults. Few reports have been published until now, and none with this etiology included quadrilateral amputation.

The authors present the case of a 37 year-old female that in the sequence of septicemia, without identification of an etiologic agent, required a bi-transtibial and bi-transradial amputation in December 2005.

We review her medical recovery and rehabilitation, including upper and lower-limb prosthetic prescription and training, and adaptation to her altered body. A multidisciplinary approach led to effective management of her complex clinical and psychologic needs. The patient became a successful upper and lower limb prosthetic, independent for the majority of activities of daily life needing help almost only to place the inferior limb prosthesis.

Indoor independent walking was accomplished for small distances without ambulation aids. She returned to work without restrictions. She had an excellent social and family integration after environment adaptations.

Conclusion:

This case illustrates the need to address a range of medical, prosthetic, and family issues central to successful clinical outcome.

Imaging Technique For Fitting A Below-Knee Prosthesis

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The patellar-tendon-supracondylar-bearing (PTS) prosthesis appears to be the most useful below-knee prosthesis among the patients hospitalized in our department. After completing the final prosthetic adaptation, the new amputee undergoes gait training while the prosthesis is still capable of being adjusted and aligned.

The most frequent problems in socket fit encountered during the rehabilitation period are due to changes in the limb contour that result from local edema or inappropriate stump bandage. Prosthetic alignment is an important and commonly neglected contributor to abnormal pressure distribution at the residual limb-prosthetic socket interface.

Methods:

Four metal radioopaque stickers were attached to the weight-bearing points around the internal socket of the prosthesis. These points corresponded to the internal and the external femoral condyles, the tibial tuberosity and the patellar tendon. The X-rays were performed in antero-posterior and lateral views while the patient was in standing position after donning the prosthesis.

Results:

In some patients with skin breakdown in the stump the X-rays revealed that the metal stickers attached to the internal socket did not overlap the weight-bearing points, indicating that the prosthesis was most probably malaligned.

Conclusions:

Some patients with below-knee amputation suffer from skin breakdown over the tibial tuberosity or the patellar tendon after receiving their first prosthesis. The lesion appears generally a few days after the beginning of gait training. The ability to visualize the alignment of the residual limb inside the socket is an important step toward improving prosthetic fit assessment and preventing skin lesions.

Reference:

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The Evaluation Of Efficacy And Tolerability Of Hylan G-F 20 In Thumb Base Osteoarthritis

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Hand osteoarthritis (OA) is a common and disabling condition. Intra-articular hylan, a synthetic polymer made from hyaluronan, may be useful for pain and grip-strength in treating trapeziometacarpal osteoarthritis with level IIb evidence.

Objective:

The aim of this prospective trial were to evaluate the efficacy of intra-articular Hylan G-F 20 on of the pain, pinch-strength and functional status in patients with thumb base OA.

Patients and Methods:

Twenty-nine hands of 15 female patients (mean age: 62.6 ±6.4 years) with hand OA according to the ACR (American College of Rheumatology) classification criteria were included into this study on the Hand Rehabilitation setting. Patients free of any joint injection in tha last 6 months and free of any pain medication in the last 2 weeks with pain visual analogue score (VAS) >40 and with Eaton radiographic criteria between 2 and 4 were selected.

Four joints of two patients were dropped-out from the study (13.3%). Weekly Hylan G-F 20 injections were given for 3 weeks. Sociodemographic characteristics, VAS-pain 100mm, pinch-strength (tripod, lateral, and tip pinch) and functionality (Dreiser functional index) were assessed at baseline, at one month and at the three months. SPSS 11.0 NPar Wilcoxon signed rank test and NPar Spearman correlation test were used for statistical analysis.

Results:

Statistically significant improvements were detected in function ($p=0.001$), VAS-pain ($p=0.002$), and pinch-strength ($p=0.004$). Complete and partial pain resolution has been reported by 41.4% and 24% of the patients, respectively. Remaining patients reported no change on the pain. Changing percentages of pain were moderately correlated with changing percentages of function ($\rho=0.5$, $p=0.01$). Functional improvement were detected in 91.3% of hands. There were no adverse effects on the injections reported by any of the patients.

Conclusion:

Although plasebo effect couldn't be ignored, intra-articular hylan was effective on pain, pinch-strength and function in short-term. Long-term efficacy, and cost-benefit issues is stil question mark.

Estimation Of Balneotherapy Improvement At Patients After Icv By The Use Of Barthel Index

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INTRODUCTION:

Patients after ICV show different amount of disabilities. At group with moderate and severe consequences the rehabilitation could lead to a better outcome. The improvement could be registered by the Barthel Index (BI) of activities of daily living. BI is known since 1965 (1) but is still useful instrument in up to date clinics and research (2).

SUBJECTS AND METHODS:

Randomly chosen 24 subjects after ICV send to balneotherapy in Terme Topolsica participated: 10 men and 14 women. Age structure: mean 67,9, st.dev. 10,2, min. 40, max. 85. Men were statistically significant younger (mean men 60,7, women 73, $p < 0,05$). Subjects attended at 14 days of balneotherapy: physical and functional occupational therapy. Before and after the treatment the BI of ADL was assessed by FRM specialist.

RESULTS:

The sum of BI points before the balneotherapy was 8,6/20. After the treatment the sum was statistically significant higher – 13,0/20 (paired t-test: $p < 0,05$) 17 (70,8%) subjects were scored 12/20 or higher. Among 10 activities estimated by BI the following showed statistically significant improvement: bowel status (Hi2: $p = 0,0091$), grooming ($p = 0,0004$), mobility ($p = 0,0101$), dressing ($p = 0,0046$). Other (bladder status, toilet use, feeding, transfer, stairs, bathing) improved nonsignificant.

DISCUSSION:

14 days of balneotherapy statistically significant improved general BI score at observed subjects. Over 70% of subjects scored at the end 12/20 or higher which means that they have moved out of the poor outcome group (3). Closer look shows statistically significant improvement in bowel status, grooming and dressing independency while at other activities improvement was not significant.

CONCLUSION:

The 14 days of balneorehabilitation improve disabilities of patients after ICV in some activities. For better results longer treatment is necessary.

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Hypo-Gravity Exercise Induce Improvement In Physical Clinical Scales And In Pro-Inflammatory Index In Multiple Sclerosis

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Objective:

To evaluate and analyze, in patients with Multiple Sclerosis, fatigue levels, functional independence and the degree of autonomy with specific clinical scales correlated to the serum levels of specific inflammatory markers of demyelination (TNF- α , IL-6, ROMs).

Design:

To investigate the efficiency of hypo-gravity treatment for clinical improvement of the patients and its possible anti inflammatory effect. Subject/Patients: Twenty-two patients (10 male and 12 female, with an average of 49 years of age), with relapsing-remitting Multiple Sclerosis were enrolled.

Methods:

Each patient underwent a program of therapeutic exercise in hypo-gravity (swimming pool) within an 8 week period in a Day-Hospital regimen. At the beginning and at the end of the treatment the patients completed a series of clinical scales (FIM, BARTHEL, FSS) and underwent peripheral blood work for inflammatory markers. The group of 22 patients, were divided into two subgroups: group A underwent treatment twice a week and group B three times a week.

Results:

There was a substantial improvement in all clinical scales, with a significant variation in FIM and Barthel's Index values respectively ($P < 0.0001$) and ($P < 0.0001$) and a reduction of values in the FSS ($P > 0.05$). A corresponding reduction of serum levels of specific inflammatory markers of demyelinating process, TNF- α ($P < 0.05$), IL-6 ($P < 0.001$), d-ROMs ($P > 0.05$) was also shown.

Conclusion:

This initial treatment in the hypo-gravity environment demonstrated a significant clinical improvement to the disability of these subjects, and a considerable increase in autonomy and self-sufficiency. A reduction of the chronic inflammatory state which characterizes patients with Multiple Sclerosis was also evident.

Effects Of Single Low-Temperature Sauna Bathing In Patients With Severe Motor And Intellectual Disabilities

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Saunas have been used since ancient times as a tool for whole body thermal therapy. Low-temperature sauna bathing (LTSB) at 60 °C for 15 min improves the cardiac function in patients with congestive heart failure and is expected to improve the peripheral circulation of patients with severe disabilities.

Through a comparative before-and-after study, we studied the hemodynamic and clinical effects of a single exposure to LTSB in patients with cerebral palsy (CP) who usually suffer from chilled extremities and low cardiac output.

The study population comprised 16 patients ranging in age from 19–53 years with severe motor and intellectual disabilities. Noninvasive methods were used to measure the systemic and peripheral circulatory changes before and after LTSB.

The pulsatile index and resistive index of the peripheral arteries of the patients' lower limbs were calculated using blood flow velocity analysis. Following LTSB, the patients' deep body temperature increased significantly by 1 °C.

Their heart rate increased and blood pressure decreased slightly. The total peripheral resistance decreased by 11% and the cardiac output increased by 14%. There was a significant improvement in the parameters that indicate peripheral circulatory conditions, such as the skin blood flow, muscle hemoglobin volume, blood flow velocity, pulsatile index, and resistive index.

Numbness and chronic myalgia of the extremities decreased. No adverse side effects were observed. Thus, LTSB improves the peripheral circulation in CP patients.

Balneotherapy In The Treatment Of Psoriasis Vulgaris

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Introduction:

The treatment of psoriasis is very complex and scientists are still searching for effective therapeutic options. Apart from conventional therapy with calcipotriol - vitamin D analogue, lot of empirical evidences show the efficacy of balneotherapy in the psoriasis

Aim:

the aim of research was to examine the therapeutic effects of mineral water and peloids of Rusanda Spa on symptoms of psoriasis vulgaris.

Material and Methods:

60 patients were included in study and divided into two groups. The first group was treated with mineral water, peloids and calcipotriol in Rusanda Spa, and the second was treated only with calcipotriol at the Dermatovenerology Clinic in Novi Sad. The investigation lasted 21 days, and patients were followed-up for a month after completion of the treatment. Treatment efficacy was assessed by PASI scores at baseline, on days 7, 14 and 21, and 30 days after the end of treatment.

Results:

After three weeks of therapy in Rusanda Spa, in patients from the first group the PASI score decreased by 59,45%, whereas in the group treated with calcipotriol, it decreased by 39,34%. In relation to clinical symptoms, the best treatment results were obtained in regard to reduction of desquamation, infiltration and finally of erythema.

Conclusion:

The results of this study showed that balneotherapeutic resources of Rusanda Spa, combined with calcipotriol therapy, have beneficial effects in patients with psoriasis.

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Effects Of Spa Treatment On Functional Status And Quality Of Life Of Patients With Rheumatoid Arthritis

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Introduction:

This is an open uncontrolled study about effects of Physical spa treatment on Functional status and Quality of Life (QoL) of patients with Rheumatoid arthritis (RA). The aim of this study was to evaluate the effectiveness of spa treatment in Igalo on Functional status and QoL of patients with RA after 4 weeks of Spa treatment.

Methods and Subjects:

The research encompassed 69 patients with RA (51 female and 18 male), mean age $55,2 \pm 11,4$ and mean arthritis duration $12,5 \pm 7,5$ years. All the subjects came from Norway in cohorts and had 4 weeks rehabilitation period at Igalo Institute, in the summer period. The groups served as their own controls - 'one group pre-test post test' study. All the subjects had 6 days of Physical spa treatment per week during 4 weeks stay, which made summary 24 therapy days.

The therapeutic set consisted of mud applications, kinesitherapy, mineral water pool & electrotherapy. Assessment of the QoL and measurement of Functional status was made twice: at the beginning and at the end of treatment using SF-36 questionnaire and Modified Health Assessment Questionnaire (MHAQ).

Results:

Quality of Life of patients with RA was significantly reduced in all dimensions of SF-36. After 4 weeks rehabilitation QoL of patients with RA was significantly improved in all dimensions of SF-36 ($p < 0,01$) and MHAQ score was significantly better, too ($p < 0,01$).

Discussion:

The ultimate goal of health care is to achieve the highest possible OoL. Our results show that QoL and functional status of patients with RA is significantly increased after 4 weeks treatment in Igalo Spa. Similar to our findings, Hafström et al. found significant improvement of QoL and functional status in patients with RA who came from Sweden to subtropics climate. The limitation of the study was that we couldn't assess QoL and functional status after 3 and 6 months, because patients returned back to Norway.

Conclusions:

This study shows that spa treatment in Igalo, leads to a significant improvement of functional status and Quality of Life of RA patients.

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Isoinertial Ssemg And Vibration Test Assessment In Knee Acl Reconstruction

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Introduction:

Evaluation of neuromuscular behaviour is of extreme relevance and interest in the field of Rehabilitation in case of injuries or surgery. This should be used as clinical basic data for assisting and programming rehabilitation exercises. Furthermore it should be performed periodically for monitoring the effects of rehabilitation on neuromuscular functions and specific performances.

Several test methods and techniques have been used to provide information regarding the relevance of strength and power to various physical pursuits and to monitor progress of rehabilitation from injuries.

Objective:

Reparative knee joint surgery is usually followed, in a high percent of patients, by a long period of weakness of leg extensor muscles.

The aim of the present research is to introduce a new procedure (KACLiR test) to determine the amount of functional recovery after knee joint surgery. We propose to compare the biomechanic performance in the leg extensor test synchronised with sEMG, the H/Q sEMG ratio in jump test and the response of the EMG activity to vibratory stimuli, in the operated and in the uninjured leg.

Materials and Methods:

Ten patients with unilateral Knee ACL Reconstruction, with implantation of semitendineous muscle portion, were recruited from the Day Hospital of Rehabilitation Medicine Department of Tor Vergata University General Hospital in 2007 (Mean age 31 ± 4.5 years). The mean time was 3,5 months and all patients underwent same rehabilitation therapy.

- o Inclusion criteria were:
 - Patients with KACLiR (Knee ACL Reconstruction) with implantation of a semitendineous muscle portion
 - Within 3 months from operation
- o Exclusion criteria were:
 - Coexistent non-operated leg disease
 - Systemic diseases
 - More than 3 months from operation

The Knee ACL Reconstruction test (KACLiR test) is a four steps neuromuscular evaluation.

An Isoinertial s-EMG diagnostic technique consisting on monitoring the muscles EMGrms activity during free load leg extension and jumps was applied for identify strength and imbalance deficit of the operated (OL) and non operated (NOL) leg.

This evaluation consisted of:

- Leg extension (Monolateral test - OKC)
- Squat jump (Bilateral test - CKC)
- Counter movement jump (Bilateral test - CKC)

Biomechanical parameters analyzed were: Peak velocity, Mean velocity, Limb displacement, sEMG H/Q ratio.

A new diagnostic technique consisting of monitoring the muscle EMGrms activity during Whole Body Vibration was then applied to identify altered neural strategies of motoneuron pool recruitment. This fourth evaluation was performed in a half-squat position on a vibrating platform (Nemes ® Bosco System) and performed:

- 10 s without WBV
- 30 s with WBV at 30 Hz
- 10 s without WBV again

Results:

During leg extension test mechanical velocity ($p<0,002$), leg displacement ($p<0,004$) and sEMG activity of vastus lateralis and medialis muscles ($p<0,003$) in the non operated leg (NOL) were higher than those in the controlateral one (OL) (Neuromuscular activity of quadriceps of the operated leg was 40% lower than the controlateral one).

During Squat Jump and Counter Movement Jump the sEMG activity of leg extensor muscles was lower ($p<0,04$) than the controlateral one, whereas the sEMG H/Q ratio was higher ($p<0,05$) than the controlateral leg. During the vibration period higher EMG activity was noted in both legs compared to normal conditions. However a remarkable enhancement of the sEMG was noted in the post operated leg (VLR and VMR) compared to the healthy one: the increase in sEMG activity monitored during vibration treatment was 100% higher in the operated compared to non-operated leg ($p<0,02$).

Discussion:

Most of the muscular evaluation assessments were have been performed with constant speed dynamometers where the maximum speed allowed by the isokinetic apparatus was lower than 25% of the maximum speed achieved during natural leg extension.

From a physiological and functional point of view the best tests of muscular behaviour are those that use iso-inertial loads. The Iso-inertial force provides a motion against a constant mass. Iso-inertial test is a device based on a precise measurement of load displacement of any machine using gravitational loads as external resistance. The Iso-inertial test gives the possibility to isolate muscle groups; maximal accuracy, the reproducibility, specificity, force/velocity relationship; it gives the possibility to monitor any ballistic motion and to measure, record and analyse movements in all types of muscular activation: a) concentric, b) eccentric, c) stretch-shortening cycle (SSC) performance d) OKC e CKC. It allows the evaluation of neuromuscular behaviour at every velocity, from 1% to 95% of the maximal velocity, throughout the full range of motion.

Iso-inertial sEMG test instrumentation (Muscle Lab ® Bosco System) is composed of a microprocessor, a PC software, a Linear Encoder (that permits measurement of the load displacement in function of the time), 4 sEMG channels (those pre-amplify and record all derived neuromuscular parameters).

The assessment of biomechanical parameters associated with sEMG activity in isoinertial dynamic and vibration tests, represented by the comparison of operated/non-operated limbs, proves to be an effective clinical method of assessment of the neuromuscular behaviour of the operated leg in different exercise regimens.

The high EMG activity noted in the operated leg might be caused by the inappropriate function of the proprioceptors. During surgery the proprioceptors were severed, resulting in hyperactivity during vibration treatment, mediated by muscle spindle receptors and alpha motoneurons. Analyzing and recording sEMG behaviour of extensor muscles during vibratory stimulation could allow the quantification and assessment of knee impairment due to the proprioceptors inability to function properly after surgery.

Conclusion:

Results of our study suggest that the KACLIR test, a combination of an isoinertial dynamic evaluation and vibration stimulation, both associated with sEMG recordings, may allow for detection of impairment of neuromuscular functional as well as for monitoring progress of the Rehabilitation programs in Knee ACL Recostruction.

Treatment With Mechanical Vibration In Total Knee Arthroplasty Patients

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Introduction:

The application of mechanical vibration on muscle is capable to prolong the improvement of muscle tone and posture reflexes for a long period. On this basis, we applied short lasting period of vibration to the quadriceps muscle of elderly subjects, with Total Knee Replacement (TKR), and affected by chronic impairment in deambulation and we examined pain, muscle power and functional status of these patients.

Materials and Methods:

The authors studied 13 subjects (9 female, 4 male), mean age 71 years (68-75), underwent at least one year before to TKR. All patients underwent a clinical evaluation for joint range of motion, quadriceps muscle power (BMRC scale) and completed evaluation scales for independence in activities of daily living (Barthel Index, Quality of life Index-Spitzer, Deambulation Index) and impairment due to osteoarthritis (WOMAC).

Three applications of mechanical vibration (100 Hz, >20 Hz peak-to-peak amplitude, 1-2 N force magnitude duration of each application 10 minutes, time interval between two consecutive application about 30s) were performed on the skin overlying the distal part of quadriceps, on the operated side every day, in three consecutive days, while quadriceps was kept in isometric contraction. Recording sections were done before vibration application, and 30 days after the application. Analysis of results was made with T test for paired samples.

Results and Discussion:

We observed an improvement in muscle strength (p 0,0001), pain and function subscore of WOMAC scale (p 0,003-0,006), while there were no significant improvement for quality of life, Barthel Index and Deambulation Index. Results of this preliminary study encourage to continue the use of vibration in patients underwent TKR, but we need to improve the statistical analysis (increasing the sample).

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Rehabilitative Outcome In Patients With Coxarthrosis And Gonarthrosis Undergoing Infiltration With Hyaluronic Acid

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Introduction:

The aim of the present study was to evaluate the efficacy of hyaluronic acid infiltration in patients with gonarthrosis and coxarthrosis using clinical evaluation scales.

Materials and Methods:

Seventeen patients, underwent a cycle of three infiltrations of hyaluronic acid (MW 500-700,000) once per week. Prior to each treatment and two weeks after the last infiltration, the pain intensity, articular function and degree of disability were evaluated by physical exam and administered evaluation scales (Visual Analogue Scale, European Quality of Life Questionnaire and Health Assessment Questionnaire).

To complete our clinical evaluation, an echographic study of the articular cartilage of the hip was performed at the moment of all three infiltrations. Risultati: Statistical analysis of the results obtained at the end of treatment, using the Wilcoxon test and Student's t-test, demonstrated a statistically significant improvement in all clinical and functional indices under consideration.

Conclusion:

The results obtained from this study allowed us to verify the efficacy of treatment with hyaluronic acid in the reduction of the disability, given the increase in motor activity, improvement in activities of daily living and decrease in the pain symptomatology.

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Clinical Outcome After Revision Total Hip Arthroplasty

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Introduction:

Total hip arthroplasty (THA) has been performed for more than half a century and because of the limited life-time of joint components even a large number of revision THA procedure has been done up to now.

Aim:

The aim of this study was to compare the functional hip status 6 months after the revision THA done in patients due to the mechanical loosening THA and in patients with revision THA done due to infection.

Methods and Subjects:

The study included 42 patients, who underwent revision THA at Orthopaedic clinic between 1999. and 2006. and than discharged to the inpatient rehabilitation at Clinic of physical medicine and rehabilitation. They were at the time of revision 71 years old. The revision THA were performed in 27 patients because of mechanical loosening in average 9.2 years after primary THA. In 15 patients with infection joint component implants were extracted in average 3.8 years after primary THA and at least 6 months after, revision THA were performed.

The functional outcome assessment was performed for each patient at the 6-months follow-up using the Harris Hip Score (HHS). Patient satisfaction with functional outcome after revision THA was also evaluated. Results and discussion The mean HHS was 79.6 in the group with mechanical revision THA patients, while in the group with infection revision THA patients the mean HHS was 70.2.

There was a statistically significant difference between the research groups in relation to functional hip status. Patients satisfaction was almost the same in both groups even a little better in revision THA group (80% patients were part or completely satisfied in comparison to 77,77% of patients in the mechanical revision THA group.

Our results were similar to previously reported (1).

Conclusion:

Our patients had acceptable clinical outcome at 6 months follow-up, but functional hip status was statistically significantly better in mechanical revision THA, while in both groups 4/5 of the patients were partly or completely satisfied with their functional hip status after the revision surgery .

References:

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Determination Of Spondylolisthesis In Low Back Pain By Clinical Evaluation

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Objective:

Current guides recommend to evaluate the patients with low back pain complaints with initial clinical assessment and history, and to utilize radiological or other imaging technics, in case of possible diagnosis.

The aim of this study was to compare the findings of radiological and clinical assessment, and validate the reliability of spondylolisthesis diagnosed with clinical assessment.

This study is conducted on 100 patients with, and 30 patients without (control group) radiological diagnosis of spondylolisthesis, who had applied to Department of Physical Therapy and Rehabilitation, Haydarpasa Numune Hospital.

Clinic assessment was consisted of 20 parameters including examinations of motor system such as, sign of slipping observed on palpation and inspection, extension of trunk and increase in lumbar lordosis. Antero-posterior, lateral, oblique and lateral flexion/extension radiographies were used for radiological assessment. Slipping degree and lumbar lordosis angle were measured.

Results:

Women/men patients ratio was 91/9 in spondylolisthesis group and 22/8 in control group. Age of 68.5% of patients were 50 and over. In both groups, sciatalgia was observed in more than half of the patients, and no significant difference was detected in localization ($p>0.05$). In clinical assessment, weak and drooping abdominal wall, paravertebral muscle hypertrophy, increase in lumbar lordosis, sign of slipping observed on palpation and inspection, hamstring muscle spasm, pain during lateral trunk flexion-extension tasks and during double leg raising task were found to be positively correlated with radiological assesment ($p<0.05$).

Conclusion:

In our study, a systematic clinical assessment was proved to be useful in determination of possible spondylolisthesis cases. Radiological assessments are required in order to make the diagnosis clear and to determine the grade and prognosis of spondylolisthesis.

Advanced imaging techniques like MRI and CT have to be used when neurological symptoms are present, and when surgical intervention is indicated. Keywords: Low back pain, spondylolisthesis, clinical assessment, physical examination.

New Techniques In Hand Surgery: The Role Of Rehabilitation

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The constant and rapid advances in the appearance of new materials and surgical techniques (namely in total arthroplasty replacement) are offering patients with hand disabilities a new perspective in order to improve their quality of life.

Rehabilitation has an important if not fundamental role in the functional outcome. In this work the authors suggest a management approach, including a post-surgery intervention in wrist and metacarpophalangeal arthroplasty, in order to optimize functional recovery of these patients.

An Evaluation Of The Community Survival Period Of Cancer Rehabilitation Patients Following An Inpatient Rehabilitation Admission.

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Background:

We previously researched the survival period of patients who had undergone inpatient rehabilitation for oncology related conditions. With a goal of gaining better understanding of the patients' progress following their discharge we have now reviewed their duration of survival and rates of nursing home placement.

Aim:

The aim of this study is to determine the survival period in the community plus the rate and timing of nursing home placement for patients with primarily haematological or oncological cause for rehabilitation admission.

Method:

All Cancer Rehabilitation patients admitted to the Braeside Rehabilitation Unit in the 10 years from 1st January 1997 to 31st December 2006 were identified. Dates of death were obtained from the Patient Administration System, Palliative Care discharges or the National Death Index held by the AIHW [Australian Institute for Health and Welfare]. The ACE database was checked for determination of approval of nursing home placement and actual nursing home placement.

Results:

We identified a total of 182 patients who were admitted during the reference period. Of these 101 patients died within the year of admission. Sixty-two [62] patients were still alive twelve months or more following their rehabilitation admission. The median survival following discharge from the Rehabilitation Unit was 17 weeks (interquartile range 6 weeks - 46 weeks). Thirty-nine [39] patients were approved for high-level care prior to death, and were placed between a range of 3 and 286 weeks prior to death (median 6 weeks).

Discussion:

Our comprehensive model for long term monitoring of patients has resulted in accurate survival curves for cancer rehabilitation patients and the calculation of timeframes for placement preceding death.

Vocational Rehabilitation Of Cancer Survivors

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Introduction:

Cancer is a name for a great number of different diseases the survivors suffer very different long term consequences of the disease and aggressive treatments. Even patients with similar or comparable clinical stage disease have very different outcomes.

Methods and Subjects:

To understand the factors that influence the return to work of cancer survivors, and we have studied literature and the results of the work of a multidisciplinary team of experts in vocational rehabilitation.

Results and Discussion:

In the last 30 years the trend of cancer survivors to return to work is increasing (1). Literature search reveals different percentages of cancer survivors that return to work. The authors report that 75% of cancer survivors and 40 of their family members change their working status due to the disease consequences. Up to 65% of cancer survivors are still professionally active (2). It is not enough to consider the clinical information (the biology and stage of the disease) only, to understand the consequences of the disease.

Other factors revealing personal, social situation of the survivor, as well as the conditions at work, contribute significantly to the rehabilitation outcomes. For most survivors, work is a financial and emotional necessity, to help them keep their self-esteem and social support. In practice, the options for return to work are defined in legislation, and may not be comparable in different countries of Europe.

The prevalence of all cancers in Slovenia in 2003 was 57108 persons, of them 57.7% male, 55.5% female were in the age group between 18 and 60 years when we can assume they would be professionally active.

Conclusion:

Return to work of cancer survivors can be facilitated by a complex assessment of functional abilities, work endurance and effectiveness, learning abilities, work behavior and attitudes and necessary environmental adjustment, elaborated by a team of experts within the Institute for Rehabilitation.

References:

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Rehabilitation For People With Parkinson'S Disease

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Rehabilitation for people with PD (PwPD) calls for a team approach. After a careful clinical and functional evaluation by a physiatrist, subjects need to be taught strategies to defeat or bypass the dysfunction related to their disease and/or to be trained in the use of adaptive devices (non-skid place mats, Velcro fasteners, built-up utensils, mobility aids, etc.) to overcome their functional limitations. Individual sessions supplemented by supervised group work is the model generally preferred.

The rehabilitation program is usually run by a multidisciplinary team (physiotherapist, occupational therapist, speech therapist, etc.). Since the aim is also to improve social contacts and motivation, carers may be included in the program (to offer them information and advice). Attention must always be focused on meeting the specific individual needs, taking into account the effects of aging, concurrent pathologies, and secondary adaptive changes in the musculoskeletal and cardiovascular systems.

While there is clinical evidence that physical disability can benefit from non symptom-specific comprehensive rehabilitation interventions, it still appears worthwhile to tailor the rehabilitation program to each individual PwPD, selecting task-specific therapeutic approaches for the specific target disability. Besides general physical activity (regular aerobic exercises), a customised functional training of strength and flexibility (trunk and four limbs), balance, transfers (e.g. turning over, sit-to-stand, supine-to-sit, stand up, sit down) and general mobility (gait, stair climbing, etc.) is particularly recommended.

The movement disorders are mostly treated within the context of functional tasks of everyday living. Performance can also be improved with the help of compensatory movement strategies such as: a) avoidance of simultaneous (motor or cognitive) tasks b) breaking down complex motor sequences into appropriate component parts c) the conscious performance of impaired movements, using mental rehearsal of the forthcoming movement, and external (visual, auditory and proprioceptive) and/or internal (cognitive) cueing strategies.

Similarly, dysarthria can benefit from intensive speech therapy aimed at maximising phonation and respiratory functions.

References:

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2. Bleton JP. La rééducation de la maladie de Parkinson en fonction des différents stades évolutifs et du profil de handicap. *Rev Neurol (Paris)* 2000;156:S2b201-210.
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4. Morris ME. Movement disorders in people with Parkinson disease: a model for physical therapy. *Phys Ther* 2000;80:578-597.

Rehabilitation Of Respiratory Dysfunction In Deep Brain Stimulation Surgery

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Introduction:

Deep brain stimulation surgery is a recent surgical approach for Parkinson disease. On the surgery day, the antiparkinsonic medication must be discontinued and, during the surgery, the patient is asked to cooperate in several evaluations. The respiratory function is frequently impaired in these patients and a worsening is expected before surgery. Likewise, preoperative respiratory re-education becomes essential to optimize the respiratory pattern and to teach relaxing techniques.

Objectives:

Since May 2003, the Department of Physical and Rehabilitation Medicine of São João Hospital collaborates in the treatment of the patients who are submitted to this surgical intervention. The aim of this study is to evaluate the results obtained with the respiratory re-education in the preoperative period.

Material and Methods:

Patients that were operated between May 2003 and December 2007. The patients were evaluated by the Physiatrist in the admission day and started a program of respiratory re-education, consisting of thoracic expansibility training and relaxing techniques, until the surgery. The authors measure the outcome of the program of respiratory re-education using the oxygen saturations of those patients during the surgery.

Results and Conclusions:

The respiratory re-education has been an important contribution to the patients' preparation for deep brain stimulation surgery, rendering the patients much more cooperative during the surgery.

Clinical Long-Term Outcomes In Patients With Critical Illness Weakness.

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Critical illness polyneuropathy/myopathy causes limb and respiratory muscle weakness, prolongs mechanical ventilation and extends hospitalization of intensive care patients. Recently, the medical literature has introduced the term Critical Care Illness Weakness (CIW) in order to allow performing simple bed side diagnosis, obviating Electrodiagnosis and muscle biopsy for making the diagnosis in the context of a critically ill patient.

However, many aspects of neuromuscular involvement in critically ill patients are not completely understood. As more patients survive the critical illness, an understanding of the long-term outcomes of this condition is needed.

Aims:

To describe the clinical implications of CIW in correlation with electrodiagnostical findings in patients hospitalised in a rehabilitation setting.

Methods: A retrospective study was performed, including all patients with CIW admitted to the Neurological Department of the Sheba Medical Center since 1997.

Results:

20 patients with CIW were retrieved. In 13 patients CIW was the primary diagnosis and in the remaining 7 patients CIW coexisted with different central nervous system disorders.

Conclusion:

CIW may cause lower motor dysfunctions, higher medical complications and dependency in activities of daily living, especially when accompanying standard central nervous system disorders in rehabilitation practice. Prospective studies of this entity are required for a better understanding its frequency, natural history and clinical significance.

Rehabilitation Of Critical Illness Polyneuropathy And Myopathy Patients – Our Experience

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INTRODUCTION:

Critical illness polyneuropathy and myopathy (CIPNM) frequently develops in patients hospitalized in intensive care units (1). Number of these patients admitted to our Institute is increasing. The aim of the study was to evaluate the outcome of their rehabilitation.

METHODS AND SUBJECTS:

Eleven CIPNM patients (8 female, 3 male), aged on average 67.4 years (SD 16.1, range 42-85 years), were included in the study. The diagnosis was established clinically and confirmed electrophysiologically. Patients were admitted to our Institute on average 78 days (SD 40, range 38-180 days) after the onset of illness. Average duration of rehabilitation was 33 days (SD 11, range 19-54 days). Patient's function was assessed using the Functional Independence Measure (FIM) and muscle strength of selected 8 muscles of lower limbs with Manual Muscle Testing (MMT) at admission and discharge. Paired samples t-test was performed comparing average FIM and MMT score between admission and discharge.

RESULTS:

Average total FIM score improved from 76.6 (SD 24.8) at admission to 97.8 (SD 21.1) at discharge with an average motor FIM improvement from 44.4 (SD 24.6) to 64.7 (SD 20.7). The differences were statistically significant for the total FIM ($p = 0.006$) as well as for motor FIM ($p = 0.006$). Average total MMT score (having the maximum possible of 40) improved from 24.3 (SD 4.3) to 31.1 (SD 3.0) for left and from 23.1 (SD 6.6) to 28.9 (SD 5.7) for right lower limb. Differences were statistically significant for both lower limbs ($p = 0.001$).

DISCUSSION:

During a relatively short period of rehabilitation, clinically important and statistically significant improvement of functional performance as well as muscle strength was observed in CIPNM patients. The benefit of rehabilitation of these patients has already been proven and an early start recommended (2). Therefore, their admission to a rehabilitation centre/unit should be encouraged.

CONCLUSION:

Functional performance as well as muscle strength of CIPNM patients improved with rehabilitation.

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Amyotrophic Lateral Sclerosis In South-East England: A Population Based Study [South-East England Register For Amyotrophic Lateral Sclerosis (Seals) Registry]

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Aims:

We aimed to estimate the incidence and prevalence of amyotrophic lateral sclerosis (ALS) in the South-East of England. The reported incidence of ALS varies between 0.44 and 3.2 per 100,000 person-years. This can partly be explained by differences in design and diagnostic criteria used. There is little population data concerning England, particularly so in the South East., where service provision is developing in a heterogeneous manner.

This collaborative research project included the following centres: MRC Centre for Neurodegenerative Research, Institute of Psychiatry, King's College Hospital and National Hospital for Neurology & Neurosurgery, London and East Kent NeuroRehabilitation Services.

Methods:

A population study of South-East England (population: 2,890,482) was carried out and multiple sources including our tertiary centre and district general hospitals were used for complete case ascertainment.

Results:

Between 1 January 2002 and 30 June 2006 we identified 138 people (male = 76 female = 62) with a new diagnosis of ALS giving a crude incidence of 1.06 per 100,000 person-years. The projected age and gender adjusted annual incidence rate for England and Wales was 1.10 (95% CI 0.80-1.40). 142 people were alive on 30 June 2006 giving a point prevalence of 4.91 / 100,000 population.

Conclusion:

Our incidence and prevalence rates are similar to those reported in comparable studies from other countries. This argues against the role of a specific exogenous factor in the aetiology of ALS in South-East England. This is the largest population Register for Motor Neuron Disease (MND) in England, and will contribute to the European ALS Consortium Epidemiological study of ALS (EURALS).

This project is ascertaining the magnitude of the problem of providing care for MND patients, which is facilitate planning healthcare and identification of risk factors. The heterogeneity of case ascertainment within South East of England requires to be explored further for possible clustering.

Reference:

1. Piemonte and Valle d'Aosta Register for Amyotrophic Lateral Sclerosis (PARALS). Incidence of ALS in Italy: evidence for a uniform frequency in Western countries. *Neurology* 2001;56:239-244.

Integrated Care Pathway For Peg/Rig In Mnd Patients In East Kent, Uk - A Process Audit

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Aim:

Setting appropriate indication and timing of gastrostomy feeding can optimise nutritional management and quality of life of patients with Motor Neuron Disease (MND). An integrated care pathway (ICP) can help achieving that and improve communication.

Method:

The East Kent Rehabilitation team developed an ICP and checklist after consultation with multi-professional stakeholders and the patient forum. Implementation began in 2007. This retrospective case note review provided a snapshot of adherence to the ICP for initial 4 months (June - September 2007). The Quality Departments approved this multidisciplinary rehabilitation project after due scrutiny.

Results:

Total no of patients: 41 Appropriate for ICP: 19 Age: 50-91 All 19 were referred to the dietitian, speech therapist and physician Respiratory physician involved-8 Information leaflet provided: 11 Discussion took place at home:8 9 patients had gastrostomy insertion (PEG 9, RIG 2) Rehabilitation Consultant personally referred patient for PEG:5 Home Enteral Nutrition team involved-6 Documented evidence of Gastroenterology follow-up arrangements in MND casenotes-1

Conclusion:

This pilot evaluation highlighted the difficult aspects of the ICP, provided rationale to modify and simplify the process, suggested ways to improve the documentation and identified the gaps e.g. more respiratory assessments, electronic communication amongst professionals covering wide geographical area and different host organizations. The differences in the clinical utility of the 2 procedures ie percutaneous and radiologically inserted gastrostomy becoming more apparent. 6 action plans were agreed with responsible professional(s) to implement those within a deadline.

Reference:

1. American Academy of Neurology Guidance <http://www.neurology.org/cgi/content/full/52/7/1311>

Are Respiratory Tests Performed In Supine Position More Sensitive In Early Affected Patients With Amyotrophic Lateral Sclerosis?

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Introduction:

Respiratory Insufficiency due to respiratory muscular weakness is the main cause of death in patients with Amyotrophic Lateral Sclerosis (ALS). Earlier detection of signs of respiratory involvement is crucial to define prognosis and to plan respiratory rehabilitation. As the supine makes respiration more difficult and demanding it seems more likely to detect earlier respiratory dysfunction in laid patients.

Aim:

To test if evaluation of the respiratory function of early affected ALS patients in the supine position is more sensitive.

Methods:

We studied 14 consecutive patients (mean age SD: 57.5 9.9 yrs) with no respiratory complaints (mean disease duration SD: 11.9 7.9 mo) with probable or definitive ALS (revised El Escorial criteria). In all we evaluated ALS functional scale (ALS-FRS), neck flexion strength (MRC and maximal isometric contraction), nocturnal pulsed oximetry (OPN) and motor responses (amplitude and latencies) of sternocleidomastoid (SCM) and diaphragm (Phr), as well as forced vital capacity (FVC), maximal inspiratory and expiratory pressures (P_Imax and P_Emax, respectively), sniff nasal inspiratory pressure (SNIP) and maximal voluntary ventilation (MVV), the later four in both the sitting and supine positions. We considered as significant p value <0.01.

Results:

All measurements were within the normal range, except for P_Imax and MVV. We did not find any difference when testing the various measurements in both positions. We found a significant correlation between SCM strength and Phr to P_Imax.

Discussion:

P_Imax and MVV seem to be the first respiratory parameters declining in ALS patients, related to inspiratory weakness and fatigue. P_Imax and SNIP evaluate different muscular components of the inspiratory process, as shown by our correlations studies.

In early stages it is not possible to identify more abnormality by evaluating respiratory parameters in the supine position.

Prm Education And Research In The Mediterranean Countries (R&E)

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WORKSHOPS

Functional Electrical Therapy (Fet) For Hemiplegic Upper Extremity

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Abstract:

Functional Electrical Therapy (FET) is an intensive exercise of activities of daily living that integrates voluntary maximized manipulation and grasping augmented by electrical stimulation of forearm and hand muscles.

Ninety-eight hemiplegics: seventy-five in acute and subacute and twenty-five in chronic phase (and corresponding controls). All groups of subjects were divided based on their ability to control extension of wrist and fingers into Lower Functioning Groups (LFG) and Higher Functioning Groups (HFG). FET was applied for three consecutive weeks.

Typical stimulation parameters were: $f=50$ Hz, $T=200$ ms, and $I=15-45$ mA. Electrodes were positioned over following muscle groups: finger flexors, finger extensors, thumb extensor and thenar muscle group (mm. abductor et opponens pollicis) 30 min daily electrically assisted grasping of various objects forcing the subjects to practice palmar, lateral and precision grasp.

The subjects were trying to functionally use different objects triggering the programmed four-channel electrical stimulation with their nonparetic arm. First triggering: 'the open to grasp synergy'. Second triggering: 'the release sequence'.

Outcome measures:

The Upper Extremity Functional Test (UEFT), the Drawing Test (DT) on digitizing board, and the Modified Ashworth Spasticity scale.

The subjects were assessed: before treatment, after three weeks of treatment, and at follow-up sessions at 6, 13 and 26 weeks after the start of treatment with FET.

Results of our clinical FET studies:

FET if applied in acute and subacute hemiplegics leads to faster and greater improvement of reaching and grasping functions compared to controls. The outcome measures after treatment were significantly superior in all groups (acute, subacute or chronic) in the Higher Functioning Groups (HFG)

Bladder Management And Urodynamics

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Introduction:

Urodynamic investigations involve the study of the dynamic function of the lower urinary tract, and were developed to aid the diagnosis and therefore the management of patients with lower urinary tract symptoms (LUTS).

Urodynamic Techniques:

Urodynamic techniques range from simple eye-ball urodynamics and basic urodynamic techniques to sophisticated multichannel synchronous video/pressure flow/EMG studies that offer in selected cases the most comprehensive means of arriving at a precise diagnosis of bladder and sphincter dysfunction (BSD). A simple eye-ball urodynamics can be performed at the bedside or in the office.

The basic urodynamic techniques are:

- Uroflowmetry (UFM)
- Filling Cystometry (CM)
- Electromyography (EMG) of external urethral sphincter (EUS) and/or pelvic floor muscles (PFM)
- Urethral pressure profile (UPP).

UFM is a non invasive and simple test that gives information about voiding, including the flow rate, pattern and, in conjunction with bladder scan or catheterization, the ability of the patient to void to completion (measurement of post void residual of urine or PVR). CM is the study of detrusor (and urethral) function during filling and involves the measurement of vesical and abdominal pressure (subtracted CM) and hence detrusor pressure (vesical minus abdominal pressure = detrusor pressure) while the bladder is being filled.

The main findings of filling CM are:

- a) intravesical pressure (pressures ≥ 40 cmH₂O may indicate potential risk of damage to the urinary upper tract)
- b) the detection of detrusor overactivity (presence of spontaneous detrusor contractions of ≥ 15 cmH₂O when the patient is attempting to inhibit micturition)
- c) bladder compliance ($\Delta V/\Delta P$).

EMG permits evaluation of EUS/PFM during filling (gradual and sustained increase in EMG activity guarding reflex) and voiding (complete electrical silence during detrusor contraction or marked increase of EMG activity - detrusor external sphincter dyssynergia or DESD - in case of neurological lesions between the pontine and sacral micturition centers).

UPP (static and dynamic) is useful in evaluating maximum urethral closure pressure (MUCP), the functional urethral length, the ratio of abdominal pressure transmission, and increasing in urethral pressure during voluntary PFM contraction.

Multichannel and sophisticated urodynamic techniques include:

- Pressure/Flow (P/F) or P/F/EMG studies
- Videourodynamics (VUD)
- Ambulatory urodynamics (AU).

P/F studies (or voiding cystometry) are necessary to evaluate detrusor activity and detrusor pressure at maximum flow during voiding, residual urine and eventual presence of detrusor after-contractions. VUD is the association of fluoroscopy with filling CM and P/F studies, and provides additional information about bladder shape, vesicoureteric reflux, bladder neck competence and mobility, and urethral function during voiding. AU could be considered the gold standard for invasive and sophisticated urodynamics.

Urodynamic Patterns and principles of management, the main urodynamic patterns in neurogenic urinary dysfunction are:

- neurogenic detrusor overactivity (NDO), characterized by the presence on CM of detrusor unstable contractions > 15 cm H₂O, with coordinated sphincters or with DESD
- detrusor areflexia/contractility.

Initial treatment is suitable for the large group of patients with UI due to suprapontine lesions. A proper management of BSD requires a careful history, physical examination (including degree of mobility, dexterity, and ability to cooperate), and standard urological investigations. The bladder diary, recorded for a minimum of 2-3 days, UFM, and measurement of PVR are recommended as initial clinical assessment in order to establish a presumed diagnosis of BSD and program the appropriate treatment.

Recommended treatments are:

Behavioral modification, and antimuscarinics or bladder-relaxants drugs for presumed DO, and appliances or catheters for immobile or uncooperative patients. After treatment failure, if more information is needed in order to plan further therapy, invasive routine urodynamic evaluation (CM and P/F studies) is highly recommended.

In SCI (suprasacral infrapontine) patients, clean intermittent catheterization (CIC) and antimuscarinics are recommended.

UR obviously requires CIC regimen. Some urodynamic patterns in non neurogenic urinary dysfunction are:

- detrusor overactivity (DO)
- detrusor hyperreflexia (overactivity) with impaired contractility (DHIC)
- intrinsic sphincteric deficiency (ISD).

DO is a characteristic of urge urinary incontinence (UUI) and mixed urinary incontinence (MUI). DHIC is typical in older patients. ISD is frequent in females with stress urinary incontinence (SUI), and in men after radical prostatectomy.

Proposed treatments are multiple: lifestyle interventions, pelvic floor muscle training, bladder retraining, and specific drugs (antimuscarinics for DO and overactive bladder dual serotonin and noradrenalin reuptake inhibitors for SUI estrogen therapy).

Conclusions:

It is important to have a basic understanding of normal bladder function, pathophysiology of neurogenic or non neurogenic dysfunction, and urodynamic techniques to properly manage patients with BSD. Urologic and uro-gynecological programs should be designed to promote continent, low-pressure bladder storage, permit emptying without significant PVR, and reinforce pelvic floor support in order to avoid and/or treat the LUTS.

References:

1. Abrams P, Cardozo L, Khoury S, Wein A. Incontinence. Paris, Health Publication Ltd 2005

Post-Traumatic Headache: What Every Physiatrist Should Know

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ABSTRACT:

This 90 minute workshop will review the etiology, diagnosis, as well as, the medical and psychological treatment of post-traumatic headache (PTHA).

The major categories of headache pain in patients with TBI will be reviewed including musculoskeletal and myofascial, neuritic and neuralgic, tension, vascular/mixed, dysautonomic as well as more uncommon etiologies. Sources of head and neck pain will be examined as well as mechanisms of PTHA. Details regarding clinical presentations as well as medical and psychological treatment strategies will be discussed.

An algorithmic approach to PTHA care relative to diagnosis and treatment will be proposed.

OBJECTIVES:

1. review the basic sub-types of PTHA
2. discuss etiologies of head pain
3. examine the clinical history for PTHA
4. address specific exam techniques for PTHA
5. delineate medical treatment strategies for headache sub-types
6. define chronic pain emotional and behavioral assessment strategies
7. identify psychological and behavioral strategies for modulating pain and functional interference

New Directions For Stroke Rehabilitation: Clinical Monitoring And Modulation Of Brain Plasticity

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Target audience:

Rehabilitation professionals involved in treatment of patients with stroke and other causes of brain damage.

Purpose:

1. To present a novel rehab-oriented experimental paradigm for monitoring natural and treatment-related plasticity after stroke
2. To discuss the potential role of this approach, as a means to facilitate the selection of appropriate therapeutic interventions for stroke patients in a rehab clinical setting.

WS Program:

The program of the ws has six elements:

[1] A review of important fMRI research done in recent years that provided a theoretical rationale for the presented approach (Soroker). [2] Exposition of the concept of EEG-based neuropsychological imaging for brain rehabilitation (Shahaf).

Next we shall describe two lines of current application where close monitoring of cortical dynamics in response to treatment is employed [3] efforts to restore motor functioning of the hemiparetic upper limb by means of mirror therapy (Bartur), and [4] efforts to restore spatial attention capabilities in patients with unilateral neglect by means of EEG biofeedback (Soroker).

Next [5] we shall present an overview of the operation of the experimental laboratory within our department of neurological rehabilitation, and explain how this activity is integrated with the regular rehab treatment (Ben-Shoshan Hanuka).

The last part [6] will be an open discussion with the ws participants. The entire program is expected to take 2 hours. Participants will be able to download for themselves all the ws presentations.

W-05

Kinesiology In Clinical Practice.

A. Delarque¹

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Publishing In Rehabilitation - How To Write And Publish An Article

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In this workshop I will discuss the steps from writing and to publishing an article. Before starting writing you should make sure that you have a distinct topic, that you can define the aim with the study and then also of the article, that you have used appropriate methods and design and that your material have sufficient size, using e.g. power calculations, and that you used proper statistical methods.

Think of the readers: 'Do I have a good story to tell?' Review articles in the area you are addressing, but give only pertinent references in your text. In the

Introduction:

state the purpose of the article and justify the study. Summarize the rationale for it. In the Methods, describe selection of subjects and for a randomized controlled study follow accepted guidelines. Identify methods by description and/or references to allow others to reproduce the study. If pertinent, use ICF terms in defining the methods.

Follow the guidelines in the journal concerning use of statistical methods. In the Results, present in logical sequence and avoid repeating information in text, tables and figures.

Let the discussion start with one paragraph summarizing the main findings, place then your results in the context of the literature, discuss limitations of the study, clinical relevance and implications for future studies.

The Abstract can be structured or unstructured depending on the style of the journal. Be careful to adopt the length to the instructions of the journal. Only present information, which is available in the rest of the paper. If publishing in English and you are not native speaking get help from a professional language expert for language correction before submission. To follow these advices and what is written in Instructions to author will help and speed up the publication process. Before submitting the manuscript read the Instructions to the author carefully. In choosing a journal for submission consider if your study belongs to the main topics of the journal, but also the general quality of the journal, experience from earlier papers including time for publication etc.

After the paper has been received at the Editorial office, it will be sent for peer review to usually two or more experienced scientists, and the Editor will correspond to you concerning revision and finally hopefully accepting the paper for publication. In revising it, follow the comments from the reviewers carefully and answer point by point. If you do not agree clearly state why. You may need to shorten the paper and reduce tables or figures, as the journal may have limitations of space, or that your message can be reported more condensed. If your paper is rejected, take advantages of the comments given and reconsider to which journal to submit.

Note that you can only submit to one journal at a time. In some instances you may come to the conclusion that it was too early to publish your results not being conclusive or that they in fact had not sufficient new or relevant information to justify publication. Good Luck in publication!

Publishing In Rehabilitation - How To Write An Article

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W-08

Intraarticular Injections

G. Akyuz¹

1. Marmara University School of Medicine, Physical Medicine and Rehabilitation Department, Instabul, Turkey

W-09

Workshop On Problem Oriented Electrodiagnosis

E. Mohamed¹

I. Faculty of Medicine Alexandria university,

Objectives:

By the end of the workshop each participant will be able to apply a problem oriented electrodiagnostic approach in a given neuromuscular clinical problem.

Duration : three hours

Participants Number: 20

Speciality: physiatry , neurology ,clinical neurophysiology

Previous experience: clinical neuromuscular disorders with basic practical skills in conducting electrodiagnostic examination

Facilitator :

Mohamed A.R, El – Abd , M.D M .ed. Professor of Physical Medicine and Rehabilitation
Faculty of Medicine , Alexandria University – EGYPT

POSTER PRESENTATIONS

Functional Assessment- An Important Role In The Rehabilitation Team. 2 Case-Reports

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¹. Department of Physical and Rehabilitation Medicine, Centro Hospitalar do Porto, Portugal,

Introduction:

The physical evaluation and functional assessment are huge components at clinical practice of rehabilitation medicine. Although, at evaluation, physical impairments not always correlate with the real functional performance. Our objective is to describe 2 clinical cases having different motor impairments with unexpected functional outcomes.

Methods and Subjects:

Female, 42 years old, admitted for functional recovery after an intra axial hematoma at left frontal lobe with diffuse intra-arachnoide and interventricular haemorrhage.

No motor impairment at follow up was evident and an excellent functional prognosis would be expected. However, the patient presented constant disability to perform the routines of daily life, suggesting important cognitive deficits.

Neuropsychological evaluation revealed significant cognitive impairment with memory and attention deficits and low initiative. One year later, the patient remains unable to manage some daily-life activities, dressing and grooming, and almost all instrumental activities of daily living, like housekeeping, shopping and use of transportation.

Male, 55 years old, admitted for functional recovery of right hemiparesis caused by stroke at the middle cerebral artery's territory. After 2 years of phisioterapy, he presents plegic arm and paresis of low extremity, 4 points at subjective scale, associated with spasticity, 3 points at Ashworth Modified Scale. Despite all the motor deficits, the patient has a complete performance in daily-life activities. His independence goes beyond basic self-care and includes food preparation, laundry and shopping.

Conclusion:

This 2 cases illustrate that functional outcome is not only determined by motor impairment but also and with significant relevance by cognitive impairments. Regarding to a global functional assessment, evaluation of neuropsychological status constitutes an essential step in rehabilitation management of the patient, particularly in individuals with brain impairments.

Analysis Of Patient Falls In Rehabilitation Hospital

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¹. National Institute for Medical Rehabilitation, Hungary,

Introduction:

Falling is one of the most frequent accidents among the elderly and hospital patients, with several negative consequences. Not only can it cause serious effects, even deteriorated motion functions or quality of life, but it can also bring severe difficulties to their family or caregivers. More over, falling causes further hospital cost increases due to longer care periods and with the additional nursing requirements. Therefore great effort is put into the most careful possible clarification of the causes and the prevention of falling worldwide. By now, it has become an indicator of hospital care effectiveness.

Patients and Methods:

The authors have processed the results of surveys returned from seven hospitals. The circumstances of 178 cases of falling suffered by 166 patients have been analyzed.

Results:

64% of fallings have occurred to patients over 70 years of age, 82% of them to those over 80. As an effect, more than half of the patients have suffered two or more functional disorders, more than one third of them have experienced mental disorder, incontinence and balance problem. In 80% of the events, the place of falling was the ward, within that, in 28% of them, the bed or its close surroundings, in spite of the restrictive measures introduced in many cases. Several circumstances have been named as the direct reason for the fallings: loose beds, the patient neglecting to use the necessary aid, wet floors etc.

The analysis of the times of the accidents shows a significance of the period between 9 pm and 5 am. Most of the fallings occurred during the first two days of hospital care and during 90% of them no one from the hospital staff was present.

Conclusion:

Considering that falling in some cases causes severe consequences and induce considerable hospital care cost increases, its prevention has vital importance. There is a need for further comprehensive and more precise analysis of the reasons for falling.

Efficacy Of Phonophoresis Of A Cream Containing Glucosamine Sulfate& Chondroitin Sulfate Compared To Topical Use Of The Cream For Osteoarthritis Of The Knee

B. Forogh¹, S. Sohani¹
I. IUMS

Objective:

To assess the ability of a topical preparation of glucosamine sulfate and chondroitin sulfate to reduce pain related to osteoarthritis (OA) of the knee.

Methods:

Sixty-one patients were randomized to receive a topical glucosamine and chondroitin preparation (group A) or phonophoresis of this cream (group B) over a 6 week period. Efficacy was assessed using a visual analog scale (VAS) for pain as well as the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and questionnaire in evaluation of pain at rest, one leg stance, 50 step walk & 3 steps up & down pain.

Results:

VAS scores indicated a greater mean reduction in pain on one leg stance for the phonophoresis glucosamine/chondroitin preparation group (mean change -2.6 cm, SD 1.6 cm) compared to the glucosamine/chondroitin group (mean change -1.6 cm, SD 1.7 cm) after 6 weeks. After 6 weeks the difference between A and B groups in their mean reduction of pain at 50 step walk from baseline was 1.4 (95% CI 0.1 to 2.4, $p = 0.02$) and for 3 step up & down was 1.8 (95% CI for difference between groups, 0.7 to 1.9 cm $p = 0.003$).

Conclusion:

Topical application and phonophoresis of glucosamine and chondroitin sulfate are effective in relieving the pain from OA of the knee and improvement is evident within 6 weeks. The pain relieve is more prominent in phonophoresis of this cream. Phonophoresis of glucosamine and chondroitin sulfate cream is effective treatment method in physiotherapy of patient with OA of the knee.

Validation Of A Turkish Version Of The Burn Specific Health Scale

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2. BASKENT UNIVERSITY, FACULTY OF MEDICINE, DEPARTMENT OF GENERAL SURGERY,

The abbreviated Burn Specific Health Scale (BSHS-A) is an instrument that measure physical, mental, social and general health in burn survivors. This scale compromises 80 items.

The aim of this study was to determine reliability and validity of a Turkish version of BSHS-A. (BSHS-T)

Material & Methods:

BSHS-A was translated and adapted in to Turkish according to standard procedures. After the telephone interview with all eligible patients, BSHS-T was mailed to 103 burn patients.

Results:

Fifty-three patients (51.46%) were filled both questionnaires, with a fifteen days interval. The mean duration of complete the questionnaire was 31.06 ± 15.28 (3-60) minutes. The test-retest and internal reliability and construct validity were significantly satisfactory.

Conclusion:

BSHS-T is a reliable and valid instrument to detect health status in Turkish patient with burn.

Rehabilitation Of Complete Rupture Of Quadriceps Tendon By Crystals Of Uric Acid – Clinical Case

I. Lopes¹, J. Torres¹, P. Sousa¹, M. Gutierrez¹, A. Trigo Cabral¹, J. Barroso¹
I. HSJ,

Introduction:

The rupture of the quadriceps tendon is an uncommon and serious injury which needs early diagnosis and treatment. It is more common in individuals over 40 years of age and is sometimes associated with underlying medical diseases. Clinical findings typically include a triad of acute pain, inability to extend the knee and suprapatellar gap. The imaging studies confirm the diagnosis. The complete ruptures are best treated with early surgical treatment and an adequate rehabilitation program. The aim of this clinical case is to present a rare case of rupture of quadriceps tendon by crystals of uric acid in a patient with a history of high levels of uric acid in the blood but no clinical signs of current gout.

Material:

87 year-old patient with complete, non-traumatic rupture of left quadriceps tendon and all the therapeutic process before and after surgery including the rehabilitation program.

Methods:

Clinical examination analytical studies and anatomical imaging were carried out. Surgical suturing of the tendon was made (during the surgery were observed macroscopically collections of gouty tophus and signs of chronic inflammatory tendon reaction later confirmed by pathological anatomy). Two months after surgery, because of the delay in the recovery and the result of the ultrasound, the patient was again submitted to a surgical intervention which revealed septic arthritis and destruction of the tendon. Surgical drainage, re-suturing of the tendon and microbiological study was made. After surgery, the rehabilitation program was initiated. Follow-up consultations and clinical evaluation including analytical study were done periodically.

Results:

The recovery of the patient was interrupted by an episode of septic arthritis. However, the patient showed a positive development, with functional recovery of the limb after the rehabilitation program.

Discussion:

It was inferred a causal relationship between elevated levels of uric acid and rupture, particularly in the absence of other risk factors. The absence of symptoms of gout made the diagnosis difficult, particularly because it is a very rare cause of complete rupture. The patient was medicated to control the levels of uric acid. After the surgical procedures and the rehabilitation program the patient recovered the functionality of the limb.

Conclusion:

Detailed clinical history and an appropriate analytical study are of extreme importance in cases of complete, non traumatic rupture of quadriceps tendon in elderly patients. A good outcome is only possible with a correct diagnose and an early treatment.

Comparison Of Intraarticular Hyaluronic Acid And Short Wave Diathermy On The Treatment Of Knee Osteoarthritis

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This study has been conducted on 40 patients who consulted to Haydarpaşa Numune Hospital Physical Medicine and Rehabilitation Clinic with the complaint of knee pain, to investigate and compare the effectivenesses of the intraarticular sodium hyaluronate (HA) and short wave diathermy which stand as two high-valued treatment options in knee osteoarthritis (OA). In this single-blind, prospective and randomized study, the 40 patients were divided into two groups.

While 20 patients in one group were received with 2 ml intrarticular 1% HA once a week for a total of 3, shortwave diathermy was applied to the other group 5 times a week for a total of 15. In addition, both groups were informed of the protective precautions and they were made to practice isometric knee exercises after a hot-pack application of 20 minutes.

The patients are evaluated in terms of VAS, WOMAC OA index, Lequesne index, range of joint movement measurement and analgesic usage need, for a total of 6 times one in the beginning and the others on the 1st, 2nd, 3rd, 7th weeks and on the 3rd month, and the groups were compared.

In the end of the study, in the patients of the HA group a significant improvement on all parameters was achieved at the end of the 1st week, which stayed steady until the 3rd month. On the other hand, in the patients of the short wave diathermy group, although this improvement was dominant in the first two weeks, it is observed that the average point of the VAS and WOMAC Osteoarthritis Index were lower than in the HA group.

As a result it is concluded that patients with knee OA intraarticular HA and short wave diathermy are effective and reliable methods.

Our Experience With Sonophoresis In Patients With The Ankle Sprain

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The ankle sprain is one of the most common sports injuries, in recreational athletes especially. Deep Relief gel is a dual active gel which contains two ingredients: levomentol (provides the secondary immediate benefit of the direct analgesic action and produces local vasodilatation) and ibuprofen (reduces inflammation and swelling).

The dual action formulation allows rapid and concentrated absorption of the active ingredients through the skin, directly to the point of pain. In sonophoresis, in addition to deep heating, ultrasound is used to enhance percutaneous absorption of topically used drugs.

The technique is non invasive, well tolerated and involves minimal risk of systemic effect.

The objective of this paper was to show that the application of Deep Relief gel with sonophoresis produces antiinflammatory and analgetic effect faster, leading to the quick restoration of the full range of movements in the ankle, enabling patients to return to their sports activities. We studied 15 male patient with ankle sprain, average age 39,1 years.

They underwent sonophoresis with Deep Relief Gel (0.8W/cm², for 5 minutes) and kinesitherapy (exercises to widen the range of movements in the ankle, the strength of muscles and proprioceptive exercises of stability) during 10 days. Before and after the therapy, we evaluated: 1. pain, according to the Visual Analogue Scale (VAS) 2. swelling, by difference between bimalleolar diameters. We found statistically significant reduction of pain and swelling ($p < 0,05$). Active movements of the ankle were reduced due to pain, so the better analgetic effect led to the wider range of movements.

Systemic effects were not reported. Sonophoresis enhances the process of diffusion and permeability, enabling the deeper penetration of the gel, which leads to the synergistic analgetic and antiinflammatory effects of gel and ultrasound. The result of this combination is immediate pain relief which lasts for hours, faster and better improvement of functional capacity (range of movement and muscle strength) leading to the previous level of sports activities.

Dexa Evaluation Of Bone Loss Of The Hip In Chronic Paraplegic Men

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2. Department of Radiology, National Rehabilitation Centre, Athens (GR),

Background:

Immobilisation due to spinal cord injury is responsible for BMD alterations of the paretic limbs.

Aim:

To determine bone mineral density (BMD) of the hip in male patients with chronic paraplegia and compare to able-bodied-age-matched subjects.

Materials and Methods:

45 chronic paraplegic males, (mean age 41,8 years) due to complete traumatic spinal cord injuries were studied in comparison to able-bodied men as controls, using dual energy X-ray absorptiometry in order to determine the differences in BMD of the hip. Mean time of immobilization was 8,9 years.

Results:

The use of Student t test determined the statistically significant differences, when p values <0,05. BMD changes found to be as follows:

	Paraplegia	Controls	P value
BMD femoral neck	0,787	0,957	Reduction, p<0,05
BMD Ward		0,63	0,716 reduction

Conclusion:

The results of this study indicate that there was statistical significant decrease of BMD at femoral neck between paraplegic men and comparative group, whereas BMD at Ward's region was lower, but not significantly different.

References:

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2. Zehnder Y, Lüthi M, Michel D, Knecht H, Perrelet R, Neto I, Kraenzlin M, Zäch G, Lippuner K. Long-term changes in bone metabolism, bone mineral density, quantitative ultrasound parameters, and fracture incidence after spinal cord injury: a cross-sectional observational study in 100 paraplegic men. *Osteoporos Int.* 2004 Mar15(3):180-9.

Intra-Articular Hyaluronic Acid In Knee Osteoarthritis Patient – Sonographic And Functional Assessment.

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2. University of Craiova, Romania,

Background and Purpose:

Osteoarthritis of the knee (OAK) is reported to be a major health problem worldwide (1). OAK is often associated with synovitis, an inflammatory process of the surrounding synovium (2). Synovitis has been associated with the degree of knee pain and the predicted progression of cartilage loss. The purpose of this study was to examine the changes in synovial sac thickness using ultrasonography, to assess knee pain using a visual analog scale, to compare the differences of synovial thickness and measures outcomes between the hyalgan treatment and control groups.

Subjects and Methods:

32 females with OAK and rehabilitation program were randomly assigned to a hyaluronic acid (hyalgan) treatment group - TG (n=19, mean age 54±8 years) and a control group – CG (n=13, mean age 52±9 years) (no medication). We performed the initial ultrasonographic images. All females were examined for synovial sac thickness, and a pain index assessment (Visual Analogue Scale) also was undertaken. Follow-up evaluations (clinical, sonographic and functional) were performed on the day after the last hyalgan injection and 4 months later. For the CG the same evaluations were performed. Measured outcomes were the distance walked in 6 minutes (6MWD) and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

Results and Discussion:

The final measured suprapatellar synovial sac thickness in TG patients was 5.3±1.6 mm, which is slightly less than that initial measured (6.9±1.9 mm). For the CG we noted no modification of sonographic aspects. Only the TG had clinically and statistically significant improvements in measured outcomes and VAS score. By 4 months, WOMAC scores had improved by 62% in the TG and by 6% in the CG. Average 6MWD had improved about 17% in the TG, only. Subjects in the TG were less likely to be taking medications for their arthritis and were more satisfied with the overall outcome of their treatment.

Conclusion:

The treatment of knee osteoarthritis with intra-articular hyaluronic acid and rehabilitation program can relieve pain, improve function, and alleviate joint destruction by changing the inflammatory process.

References:

1. Deyle GD, Allison SC, et al., Phys Ther. 2005, 85:1301-1317.
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Tibio-Talar Arthrodesis Effects In Recurvatum At The Knee Joint: Case Report

E. Pujol Medina¹, M. Maiques¹, B. Müller¹, R. Garreta¹,
I. Egarsat. Hospital Mútua de Terrassa,

Introduction:

The use of arthrodesis of the tibio-talar joint is an efficient method for pain management at this level, whether of traumatic or inflammation origin. The optimum position of the fixation is in neutral or slight plantarflexion, 0-5° of valgus and about 5-10° of external rotation. Due to increased motion within the transversal-tarsal-joint arthropathy is seen often following arthrodesis, which is well documented.

However, changes in motion pattern at knee and hip level also occur, without much evidence of its influences at those articulations in a long term. 3D motion analysis is useful to detect pathologic knee-recurvatum.

Objective:

To analyze the kinetic and kinematic biomechanical effects of a tibiotalar arthrodesis at the knee joint in a patient with a history of failed bimalleolar fracture healing. Methodology Following a bimalleolar fracture in December 2005 a number of six 3D-motion analysis studies has been performed of a female patient of 43 years at time of accident (3 pre-arthrodesis and 3 post arthrodesis). Due to continuous pain, an arthrodesis of the tibio-astragal joint has been performed in March 2007.

Results:

Initial analysis, a static exploration detect hyper-extension over 10° was registered at knee level, with maximal ankle dorsiflexion of -5°. With 3D-motion analysis, bilateral dynamic recurvatum and increased knee extensor moment on both sides were recorded, predominantly at the left side. After physical therapy, the patient achieved a -2° ankle dorsiflexion, including reduction of the dynamic recurvatum. Seven month after the tibiotalar arthrodesis with the ankle fixed at 10° of plantar flexion, the patient complained of increased knee pain. The gait study found again an increased dynamic hyperextension, including a very high knee extension moment. Introducing a heel wedge reduced those moments only partially.

Conclusion:

In the present case, tibiotalar arthrodesis in plantar caused a remarkable knee hiperextension and increased knee extension moment. This would eventually lead to increased stress at the posterior capsule of the knee and pain. When planning tibiotalar arthrodesis, care should be taken to avoid ankle plantar flexion in cases of hiper laxity with an increased knee-extension moment. Small kinematic changes in ankle plantar flexion might result in dramatic changes in knee kinetics.

Excellent Functional Result After Complex Fracture-Dislocation Of The Elbow.

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Introduction:

We report a complex fracture-dislocation of the elbow associated with nerve radial palsy with a remarkable functional recovery.

Case report:

A 54-year-old man suffered fall from 3 meters high with a closed injury over his left elbow and right hand. A radial nerve dysfunction was discovered on early examination in the left hand. X-ray showed distal intra-articular humerus fracture, ulnohumeral dislocation, proximal cubitus fracture in the left arm, and medial phalangeal fracture on the third finger of the right hand. Open reduction internal fixation was used to treat the dislocation-fracture on the left elbow without exploring the radial nerve, and an immobilizer was employed in the right finger. Rehabilitation treatment began 3 weeks after injury.

It consisted of passive range of motion of the elbow joint and electrical stimulation of the radial nerve muscles in the left forearm. Six months after the injury the patient has achieved a nearly complete range of movement (ROM) and an excellent functional recovery (Flexion-extension arc of the elbow 0°-120°, pronation-supination arc 170°, radial muscle strength 4/5, and a Mayo elbow performance score of 95)), returning to his job as intensive care physician.

He complains of painful stiffness of the interphalangeal joint of the third right finger. EMG at 6 weeks after injury showed signs of denervation in the radial territory below the elbow with loss of voluntary activity. The radial motor nerve conduction was blocked below the torsion canal. It was detected a superficial low radial sensory potential.

Discussion:

It was complete recovery of the radial paralysis although the radial nerve was not explored intra-operatively. There is a controversy on that issue however most of the authors only recommend exploring the integrity of the radial nerve in the open injuries.

The ROM of the elbow was much better than the results published in the scientific literature. An anatomical stable reduction, an early passive motion, and the commitment of the patient to the rehabilitation treatment are key factors to obtain a good functional recovery.

The Possibilities Of Pulsing Electromagnetic Field In Treatment Of Patients With Hip Joint Osteoarthritis

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Introduction:

In the past thirty years significant results were obtained by using electromagnetic therapy in treatment of diverse diseases, especially in the domain of orthopaedics and rheumatology.

Aim:

The goal of this research is the objective evaluation of the therapeutic effects of the low frequency pulsing electromagnetic field (LFPEMF) and classic physical procedure- IFC in the treatment of patients with hip joint osteoarthritis.

Methods and Subjects:

This examination was made as randomised controlled clinical trial, opened type and included 40 patients (30 females, 10 males). All tested persons had pain, limited movements in the hip joint and difficult walk. All patients were divided into two groups. The first (control) group of 20 persons was composed of patients treated with IFC and therapeutic exercises. The second (experimental) group of 20 persons included patients treated with LFPEMF and therapeutic exercises. As observing parameters was used: Lattinen test for the evaluation of the pain sensitivity and passive movements in the hip joint. For statistical analysis of the aquired data was used Student's t-test.

Results:

After therapy the pain was considerably reduced or disappeared in each group, all patients had considerably improved the area of movements in the hip joint, but the therapeutic effects of LFPEMF (II group) are statistically more important ($p < 0,001$) than the effects of classic physical procedure (I group) ($p < 0,05$).

Discussion:

These results show excellent therapeutic possibilities of LFPEMF in comparison with classic physical procedure.

Conclusion:

According to the results of this study we can conclude that using LFPEMF represents a very efficient therapeutic procedure in treatment of patients with hip joint osteoarthritis.

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Effect Of Piracetam In The Treatment Of Chronic Aphasia: Case Report

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INTRODUCTION:

Patient who suffered severe chronic aphasia was treated with high-dose of piracetam showing good both clinical and SPECT images evolution.

CASE REPORT:

We report a 51-year-old man who suffered right hemiparesis and severe aphasia as a result of traumatic dissection of the left carotid occurred six years ago in a ski accident.

On examination, the Boston Diagnosis Aphasia Examination (BDAE) test showed non fluent aphasia with agrammatism, anomia, oral apraxia, and difficulties in complex sentence comprehension.

The Single Photon Emission Computerized Tomography (SPECT) showed hypoperfusion in the left frontotemporal and parietal cortex. He was given piracetam per oral, 4.800 mg/day combined with speech therapy (2 hours/ week) for six weeks. The BDAE test after treatment proved better fluency reduction of agrammatism, and improvement of anomia. No changes were detected in auditory comprehension. Piracetam was well tolerated and no adverse effects were presented. The SPECT after treatment showed an increase in the perfusion of the left temporal and parietal areas.

DISCUSSION:

Piracetam is a cyclic derivative of GABA with neuroprotective and antithrombotic effects that have a potential role in cognitive, language and memory functions. Some researchers consider piracetam as a promising drug for the treatment of poststroke aphasia based in clinical exams. Recently new methods of functional image as SPECT have been useful to demonstrate the effect of the pharmacology in cerebral perfusion. Kessler et al used positron emission tomography to assess the effect of piracetam on cerebral flow in acute aphasia patients. In the treatment group, an increase in activation was noted thorough the frontotemporal area compared with the placebo group.

We demonstrate the improvement on clinical tests and cerebral perfusion in a chronic aphasic patient when piracetam was administrated in combination with speech therapy.

Piracetam was well tolerated and no adverse effects were presented.

Effects Of Splint Therapy Combined With Low Energy Laser In Patients With De Quervain Tenosynovitis

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Aim:

The aim of this study was to evaluate the effects of splint therapy combined with low energy laser in patients with De Quervain tenosynovitis.

Material and Method:

Twenty one female patients whose Finkelstein tests were positive and who were diagnosed De Quervain Tenosynovitis at the dominant side were included in the study.

Group 1, which consists of 11 patients, were treated with laser with a dose of 1.5 joules/cm² at 5 points on radial styloid notch for ten minutes once a day, five times in a week, in totally 10 sessions. Additionally, they were given splint therapy for two weeks.

Group 2, which consist of 10 patients, were only given splint therapy. In order to evaluate efficiency of the treatment, pain with visual analogue scale (VAS), grip strenght capability with dynamometer and general healing score which the patient affirmed were recorded at the beginning and at the end of the treatment.

Results:

At the end of the treatment, in Group A patients a highly significant improvement in VAS (p 0,001), a significant improvement in grip strenght capability (p 0,005), and a quite significant improvement in general healing score were seen. In Group 2 patients, only in VAS a significant improvement (p 0,005) was observed.

When both groups were compared, only in VAS it was seen that there was a significant improvement in favour of Group1.

Conclusion:

Based on the results of our study, we are in the opinion that splint therapy combined with laser treatment might be a useful treatment option in patients with De Quervain Tenosynovitis.

Presentation Of Two Cases With Aseptic Necrosis And Osteoporosis

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We present here two cases with aseptic necrosis in more than one region, accompanied by osteoporosis.

Case 1:

A 21- year- old male patient entered our hospital with complaints of pain in both hips and limitation in his movements. We were informed that he had had complaints in his anamnesis for five years and that he had been dispatched to internal diseases by orthopedy clinic, where he had been diagnosed bilateral trochanter aseptic necrosis. In laboratory investigations carried out by internal diseases for aseptic necrosis etymology, HLA B27, Rheumatoid factor (RF), antinuclear antibody (ANA) and Anti DNA were found negative. It was also found that active protein resistance (APC), protein C, free protein S, Antithrombin 3 (A-Tr-3), Anti cardiolipin antibody (ACA) IgG and IgM levels were normal. The patient entered our clinic for physical therapy and rehabilitation. In the examination, flexion of his both hip joints, internal and external rotational movements were painful and limited. In addition, due to the fact that an osteoporotic radiolucense increase was seen in his front- back pelvis radiographies, bone mineral density was measured with DEXA, and he was diagnosed osteoporosis owing to his L1-L4 z score of - 2,62.

Case 2:

A 12 year-old girl entered our clinic with complaints of pain in her right heel and left foot second toe. In her physical examination, pain with palpation in medial region of her right calcaneus and susceptibility with palpation in her left foot second metatarsus end was determined. In X-Ray examination, upon seeing irregularity, slight deformation and sclerotic density increase in her left foot metatarsus end, and segmental formation in her left calcaneus apophysis, she was diagnosed Freiberg and calcaneal apophysitis. In laboratory examinations, HLA B27, RF, ANA and Anti DNA were negative and APC, protein C, free protein S, A-Tr-3, ACA IgG and IgM were in normal levels. Bone mineral density was measured with DEXA and L1 - L4 z score was found -2,09.

Result:

Determination of aseptic necrosis accompanied by osteoporosis in both cases made us think that osteoporosis might play a role in aseptic necrosis etiopatogenesis.

Effects Of The Early Balneo-Physical Treatment After The Osteotomy By Chiari With The Evolutionary Dislocation Of A Hip

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Introduction:

The goal of the osteotomy by Chiari is enlarging the roof of acetabulum in order to cover the head of femur, which enlarges the focus and consequently reduces the stress on the hip. This operation is recommended in the treatment of the hip dysplasia without osteoarthritis, congenital subluxation with young people, coxa magna in Porges' disease and paralytic dislocation caused by muscle weakness and spasticity.

The goal:

To show the significance of balneo-physical treatment after an osteotomy by Chiari applied as soon as possible.

Material and Method:

The case presents the female patient that is 23 years old with the bilateral evolutionary hip dislocation and she had the osteotomy surgery by Chiari done on her left hip in August 2006. She came to our clinic for the rehabilitation right after the hospitalized postoperative treatment, that is 3,5 months after the surgery.

During the following 3 weeks we applied intensive balneo-physical treatment with the special attention to individual kinesis-therapy program and hydro-kinesis therapy with the sulphat-sulphid mineral water of "Mljecanica". We monitored the following parameters: volume of extremity, range of movements (ROM) movements in the operated hip, MMT, ability to lean on the operated leg after admission to the clinic and 21 days later, x-rays after admission to the clinic and 4 weeks later.

Results:

After 3 weeks of the intensive balneo-physical treatment, there was an increase of the ROM in the left hip by 10 degrees compared to admission to the clinic, MMT of muscles that move the left hip was between 3 and 4 (at 2+ to 4-), ability to lean on the operated leg increased by 40 %, the patient replaced the underarms crutches with under elbow ones, RTG showed improved healing of the bone.

Conclusion:

1. to start with the balneo-physical treatment after osteotomy by Chiari as soon as possible because it brings to a quicker functional recovery of a patient.

Shock-Wave Therapy In Treating Chronic Supraspinatus Tendinitis Case Study

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Introduction:

Tendinitis of the supraspinatus is a common cause of pain in the shoulder. The acute form is usually treated by physiotherapy. In some cases acute tendinitis becomes chronic and is resistant to non-operative treatment. We recommend shock-wave therapy (ESWT) as a therapeutic option. Positive effect starts immediately, but the full result of the therapy is achieved in 8-12 weeks after completing one set of therapies. **Aim:** To show the effect of ESWT in the treatment of chronic tendinitis supraspinatus.

Method:

Female patient, 62 years old, complains of pain and limited mobility of her left shoulder for the past few months. Applied physical therapy did not have a positive effect. By clinical examination we found palpable sensitivity on pain below acromion, painful (VAS 59) and limited abduction up to 70 degrees and internal rotation (the distance between the tip of the thumb and processus spinosus vertebra C7: 21cm on the left, and 11cm on the right). Shoulder pain and disability index (SPADI) was 63.38. Ultrasound examination: Tendinitis m. supraspinati – thick and hypoechogenic tendon. Indistinct tendon joint. We applied one set of 5 ESWT therapies every third day within the period of 15 days using a low energy device according to the following parameters: 2.5 bar pressure, 2500 pulses per therapy.

Results:

After completed therapy, the patient feels better. We achieved a complete active abduction, elevation and internal rotation with the slight pain at the end of amplitude (VAS 11). SPADI was 12.30. Clinical examination after 2 months: All movements have full amplitudes and are without pain (VAS 0). SPADI is 1.5. Ultrasound examination of tendinitis m. supraspinatus - normal.

Discussion:

At the first checkup examination all movements had a full range and pain intensity was reduced by 48 per VAS. SPADI was reduced by 51.5. After 2 months, when the therapy should have its full effect, painful movements completely disappeared (VAS 0). SPADI was 1.5 because there remained a very slight feeling of tightness while washing her back.

Conclusion:

The use of ESWT in treating chronic supraspinatus tendonitis has produced highly satisfactory results in pain relief and restoring the full shoulder mobility.

Biceps Tendinitis - Analgetic Effects Of Low-Level Lasertherapy And Corticosteroid Infiltration

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INTRODUCTION:

Biceps tendinitis is caused by inflammation clinical manifestations are pain and impaired function. For the treatment is used low-level laserotherapy (LLT), besides local corticosteroid infiltration (CI).

AIM:

1. To establish analgetic effects of LLT and combination of LLT/CI therapy
2. To compare analgetic effects of LLT and CI (Betamethasone Dipropionate 1 ml local corticosteroid infiltration)
3. To compare analgetic effects of the two methods combination and monotherapy.

METHODS AND SUBJECTS:

Randomised, prospective clinical study included 30 patients with acute biceps tendinitis, comparable with regard to sex, age and concomitant diseases. Diagnosis was made with regard to clinical, radiological and ultrasound examination. Patients were divided into three therapeutic groups, 10 in each.

Group I patients aged 55.57 ± 6.24 were treated by LLT. Midlaser, Irradia, $\Lambda 904$ Hm, f 5000 Hz. 10 points located in inflamed region were treated, accumulative daily dose was 10 J/cm². Total number of therapies was X.

Group II: patients aged 49.50 ± 7.46 were treated with LLT/CI combined therapy. The initial dose of local CI was given. 48 hours later the same LLT as in the first group was conducted.

Group III: patients aged 55.90 ± 7.85 were treated with CI. The same drug admission was made after one week. All of the patients were given pendular free-swinging exercises. Visual analog scale (VAS) was used to evaluate pain level. Wilcoxon, Kruskal-Wallis and Mann Whitney Test were used for statistical analysis.

RESULTS:

1. Measuring VAS before and after the treatment, results in group I: VAS improved in 48% of patients group II: VAS improved in 54.7% group III: VAS improved in 44.16%. Highly significant statistical difference before/after was fortified in each of the three therapeutic groups (Wilcoxon test $p < 0.001$).

2. Significant difference was fortified in VAS lessening (Kruskal Wallis $p < 0.05$) among the three therapeutic groups. Best effects were found in group 2 (Mann-Whitney, $p < 0.05$).

CONCLUSION:

1. In biceps tendinitis patients, LLT, CI and LLT/CI combination are highly effective concerning pain reduction.
2. Among all of the used therapeutic models, the best effect on pain reduction was gained by combined therapy. We recommend to use laserotherapy as monotherapy in biceps tendinitis patients, or to combine it with local corticosteroid infiltration in high pain level cases.

The Laser Therapy On Cervical Syndrom

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The cause of cervical syndrome in 95 % of cases is a vestigial change in a jugular part of spinal cord. If the upper part of a jugular spinal canal is affected, the domineering clinical features include neck pain which spreads all over the occipital and temporofrontal region, further it leads to PVM spasm of a jugular part of spine and it limits the body movements in all directions. We examined the effectiveness of using laserotherapy in treatment of cervical syndrome and compared the effects of laser therapy of diadinamic currents in patients with cervical syndrome.

The 70% of patients, who were treated in hospital conditions of The Physical Therapy and Rehabilitation Centre, Niš, were examined (including 40 female and 30 male patients, 25-65 years of age). The patients suffered from cervical syndrome caused by vestigial changes in a jugular part of spinal cord.

The examinees were divided in two groups according to their age, lasting time of symptoms and the intensity of pain. The intensity of headache, neck pain, PVM spasm and the movements of a jugular part of spin were measured with the four degrees numeric scale, before and after the therapy itself. The first group had a laserotherapy (35 of them) with HeNe laser of wavelength 780nm, laser power 150mW, frequency 70Hz and 1000Hz and of energy 25 J per treatment. Ten treatment procedures were performed daily and five on the second day, altogether fifteen of them. The second group (35 patients) was treated with electrotherapy of DD current, fifteen therapies altogether. The statistic data were processed with the Mann-Whitney test.

By the comparison of the examined parametres before and after the laserotherapy, the improvement related to the partial reduction of difficulties in 21 patients (63%), and the complete reduction in 14 patients (37%) occurred. Within the group, where the DD current was introduced, in 6 patients (17%) the condition was unchanged, in 7 patients (20%) the complete reduction of difficulties occurred, and partial reduction occurred in 22 patients (63%).

Laserotherapy shows good results during the treatment of cervical syndrome, with frequencies of 70 Hz and 1000Hz, the complete amount of energy 25 J per treatment, included in 15 therapies. Having compared laserotherapy with diadinamic currents we came to conclusion that laserotherapy gives statistically significant results.

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Anthropometric, Lower Leg Alignment, Lower Leg Injury History And Menstrual Cycle Characteristics Among Sportswomen In Slovenia

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Introduction:

In order to obtain a greater understanding of the physical requirements of different sports it is important to evaluate whether sports differ in the characteristics of their participants.

Methods and Subjects: Six hundred sixty five sportswomen participating in basketball, volleyball and team handball in Slovenia had a mean age of 18 ± 3.7 yrs (range 11-41 yrs), mean height of $1.72 \pm .066$ m (range 1.47-1.96), mean body mass of 63 ± 8.1 kg (range 40-105) and mean body mass index of 18.4 ± 2.0 kg/m² (range 13-28.8) completed a general questionnaire regarding their menstrual cycle, contraceptive use, playing position, experience in sport (years in particular sport), any support orthotics (brace) used, average hours of training and hours of games played during the season and previous injury to the lower extremities. They were then tested for the following: leg dominance, knee anterior laxity, knee extension mobility, and foot pronation.

Results:

The sports groups exhibited statistically significant differences ($p < 0.05$) such that the basketball players were the oldest, tallest and heaviest. In contrast, the team handball players (TH) had the highest values of body mass index. Basketball players were also the oldest at the time of first menstruation. Similarly, the longest duration of sport participation was reported for the basketball players and this was statistically greater only when compared to volleyball players. In training exposure, basketball players trained significantly more per week than the volleyball and team handball players. In contrast, volleyball players had the greatest game exposure, which was statistically greater than for the team handball players.

Basketball players had significantly less anterior tibial translation than the team handball and volleyball players. In addition, there were statistically significant differences between the groups in oral contraception use, and history of ankle and knee injuries.

Conclusion:

These results may offer the background information for sports managers and for researchers concerned with understanding differences between sports groups that may lead to injury predisposition.

Do We Need Multicultural Approach Or Not?

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Introduction:

„Can we reasonably have a dream of a world...where people, whatever their race, religion, culture, abilities or disabilities...can find a place and reveal their gifts?“ (Jean Vanier) The world of 21st century is coming to be more and more a mixture of different cultures influencing each other. Although the Czech Republic – as one of the postcommunist countries – has experienced this influence during the last twenty years more intensive than ever, the way of multicultural work is not yet very good widespread among the health professionals. As Occupational Therapists we feel the necessity to develop our capability to work with people of different race or ethnic origin as a new and important challenge! Also in connection with the year 2007 as the European Year of Equal Opportunities for All. Our aim is to introduce the situation in Czech republic and encouraging a debate on ways of strengthening participation of all in the society.

Methods and Subjects:

- Summary of the ethnic minors living in Czech Republic (particularly the most important three – Romanians, Vietnamese and Ukrainians)
- important aspects of cultures
- the situation of the participation of ethnic minors in the process of Rehabilitation (How could we encourage them to increase their participation in the process of Rehabilitation?) and our ideas about the conception of the new project
- interviews and questionnaires with the OT practitioners
- encourage discussion about the above mentioned topic

Conclusion:

In conclusion we need to state the need to integrated different aspects of multicultural approach as result of our survey.

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Possibility Of The Prevention / Treatment Of The Aseptic Vascular Necrosis (Avn) Of Femur Haed By Applying Extra Low Frequency Pulsating Electromagnetic Field(Elfpemf) And Soft Laser

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The AVN of femur haed is relatively frequent complication occurring after the injury of the coxofemoral region-contusion, fractures, luxation, protrusion, combine injurie, fosely done reposition etc).

The blood supply to the femoral haed is fragile and disruption of this.

Supply can have catastrophic result. The biological effect of ELFPEMF are well konown and has been the primary method of slection employed in treatment of AVN and due to the synergic effect of soft laser we have decided upon this combine method.

The aim of this study was to find out wether it can be possible to prevent /cure AVN of femur haed. Ther were two group of patients control(C)treated with standard pocedures and experimental (E) whom got ELFPEMF+soft laser as an additional procedures. Soft laser(infra red) was applied with modulation 1100Hz, maximum external power per point 2,2 J/cm2, and ELFPEMF generator delivered 72 bursts per second with peak power 1mT (EBI impuls) In hope of evaluating treatment results, the following parameters were checked once a month: laboratory analyses, Rtg ,mobility, pain, muscle strength-MMT, etc.

After summarizing the results of the treatment, it can be concluded that a regression of subjewctive as well as significant improvement of locomotory an functional status has Been achieved, speaking in favour of the group treated by soft laser and ELFPEMF as outlined above.

Treatment Of The Humeroscapular Periarthritis By Applying Ultrasonophoresis Etofenamat Gel

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Hypermobility of glenohumeral joint may predispose it to the stress that can be resulted with tendonitis and bursitis so common in the joint area.

Calcification in rotator cuff tendon may suggest that a tendinitis exists but does not prove its etiology and that is all because of complex and specific structure of glenohumeral joint. In order to avoid more aggressive methods such as local steroid injection, we have chosen ultrasonophoresis etofenamat gel (NSAIL) with the one and only goal to break the vicious circle of pain and its consequences.

The aim of this paper is to find the better and more efficient method in treatment of this entity. In order to achieve the desired goal in this clinical study we have chosen two groups of patients: control (C) and experimental (E). All of them were treated by similar, regular physiotherapeutic procedures, and the experimental group was treated with impulse ultrasonophoresis (etofenamat gel) as an additional therapy.

The control group had ultrasonotherapy with a neutral medium and with the same parameters. After evaluating the results (pain-VAS scale, range of movement, MMT, functional status etc) it was noticed that there was a statistical difference in favour of the experimental group, especially within functional recovery and so it is obvious that successful recovery is determined by the improvement of functioning in the community, in terms of reduction of disability.

Are University Students Interested In The European Higher Education Space?

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BACKGROUND:

The new European Higher Education Space (EHES) framework is intended as a process to harmonise the higher education systems of the European Union in order to change university education based on three pillars: the catalogue of degrees, the system of credits and teaching methodology.

OBJECTIVES:

To know what our students know about the EHES.

MATERIALS AND METHODS:

We carried out a voluntary, anonymous and closed survey with 10 questions on the EHES with yes/no answers among 83 students registered in 3rd year of Physiotherapy at the Universidad de Extremadura and in 2nd year of Physiotherapy at the Universidad Complutense.

RESULTS:

67 students know what the EHES is (only half of which know when it begins), of which 67% participated in a pilot project interestingly, half of those who did not know what the EHES is participated in the pilot project. The average score of the pilot project was 3.35 points. 27 students felt that the EHES is a waste of time, and 29 students believe that professors concern themselves with the adaptation (irrespective of the students' overall assessment of the EHES). 55% believe that students will have to work more, and even those who believe that it will benefit students on average give it a failing score. 90% of students have not sought information on the EHES.

CONCLUSION:

With just two years to go before the EHES is implemented, students demonstrate a lack of interest in it, and those who participated in the pilot project do not approve of it. We still have a long way to go and little time.

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Rehabilitation After Surgical Repair Of Bilateral, Recurent, Anterior Shoulder Dislocation In Sportmen

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The shoulder is affected in up to 60% of all major joint dislocations one study citing an incidence of 1.7% in the general population. Most commonly, shoulder dislocations are anterior (90-98%) and occur due to trauma, particularly in contact sports. Usual mechanism of injury is extreme abduction, external rotation, extension, and a posterior directed force against the humerus. Dislocation is often associated with joint capsule damage, Bankart lesion and the Hill-Sachs lesion and this leads to shoulder instability and recurrent dislocation. The only definite solution in recurrent shoulder dislocation is operative treatment.

Our goal is to present the result of a rehabilitation of 20 year old sportsman (hand-ball), who was operated (derotation osteotomy - Weber and modified Magnuson procedure) due to trauma induced recurrent anterior dislocation of both shoulders. We started with early rehabilitation at the first postoperative day. The rehabilitation programme has been divided in three phases, which involved precise time

Introduction:

Of passive, actively assisted, active and exercises with resistance.

The patient obtained full recovery of the shoulder after 3 months. Sport activities were introduced after 6 month. We used The Constant score to evaluate the results and got an excellent outcome (90/100 pt). Good surgical technique and adequate early rehabilitation in bilateral recurrent, anterior shoulder dislocation leads to a fast and full restitution of shoulder function and arm function in total.

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2. Vukov V.: Posterior dislocation of the shoulder with a large anteromedial defect of the head of the humerus. Intern. Orthop., 9:37-40, 1985.
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Evaluation Of The Functional Outcome After Total Hip Replacement

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INTRODUCTION:

Total hip replacement (THR) revolutionized management of patients with advanced primary and secondary coxarthrosis, with very good long term results in sense of pain relief and improvement of the hip joint function.

AIM: evaluation of the functional outcome after THR and to determine weather there is an association between preoperative functional status and an outcome after THR.

METHODS AND SUBJECTS:

36 patients 37-72 years old (average age 65,7) were included in a prospective clinical study of THR for the treatment of advanced coxarthrosis. All patients were evaluated by completing 2 questionnaires that measured health-related quality of life-The WOMAC (Western Ontario and McMaster Universities) Index of Osteoarthritis, as well as the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) before the procedure and at follow up 6 months later. All patients had THR with cemented, noncemented and hybrid endoprosthesis and were involved afterwards in 4 weeks rehabilitation program which included kinesy and occupational therapy, low frequency pulsed magnetic field and interferent electrotherapy.

RESULTS:

Both questionnaires WOMAC and SF-36 showed significantly better outcome results for all the patients 6 months after the surgery due to pain, stiffness, physical function components, mobility and active participation in daily living activities and self care ($p<0,01$). Complete, or almost complete pain relief was achieved by more than 90% of the patients following THR regardless of their preoperative categorization of pain. However, the worse patients' preoperative status was, the more they gained in all the measures in comperison to their previous condition.

CONCLUSION:

THR combined with physical therapy helps patients overcome problems like pain, functional limitation and achieve range of motion essential for every day activities and considerably improves their quality of life. Patients with worse preoperative functional status achieved more improvement after the surgery in comparison to their previous condition, but they still did not reach results of the less disabled patients due to range of motion and muscular strength.

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Total Hip And Total Knee Arthroplasty-Comparative Analysis

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INTRODUCTION:

Today patients undergo total hip and knee arthroplasty hoping to get rid of pain and restore functional activities and former quality of life.

AIM:

comparative analysis of outcome after total hip (THA) and total knee arthroplasty (TKA).

METHODS AND SUBJECTS:

Prospective clinical study included 36 patients 36-70 years old (average age 66,8) assigned for THA and TKA. Patients were evaluated with self-report health-related quality of life questionnaires-The WOMAC (Western Ontario and McMaster Universities) Index of Osteoarthritis and the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) prior to surgery and 6 months after. Range of motion (ROM) and muscle strength were measured as well. All patients received postoperative rehabilitation regimen that included kinesy and occupational therapy, low frequency pulsed magnetic field and interferent electrotherapy.

RESULTS:

All patients achieved significant improvements in their scores for every category of WOMAC and SF-36 (pain, stiffness, physical function, vitality, active participation in daily living activities, social function and general health). ROM and muscle strength were much improved 6 months following surgery, as well. More than 90% of patients reported complete or almost complete pain relief regardless of the type of the joint replaced or their preoperative categorization of pain. Although questionnaires showed statistically significant differences between baseline and follow up scores for both categories of patients, THA patients achieved more improvement due to physical function, vitality, active participation in daily living activities and general health after the surgery. 90% of patient with THA were satisfied with their postoperative results, whereas 75% were satisfied among TKA patients. In both categories, patients with the poorer preoperative SF-36 and WOMAC score achieved more improvement than patients with better scores, but after the surgery they did not achieve scores of the less disabled patients, except for pain.

CONCLUSION:

Although all patients reached large improvement due to pain, muscle strength and function, patients with THA showed greater improvement and were more satisfied with the results than patients with TKA.

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Different Approaches In The Treatment Of Knee Osteoarthritis

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Osteoarthritis of the knee is the most common type of osteoarthritis, and one of the leading causes of disability, especially among elderly population.

AIM:

To determine the most efficient modality for the treatment of knee osteoarthritis.

PATIENTS AND METHODS:

Prospective clinical study included 45 patients, 47-69 years old, with clinical and radiological features of knee osteoarthritis. First group of patients was treated with NSAIL medicines and local application of Fastum gel second group received kinesy, magneto, diadynamic and low level laser therapy third group received medicament and physical therapy combined. Patients' functional state was estimated before therapy, after 20 therapy procedures and 3 months afterwards by measuring range of motion (ROM), muscular strength of m. quadriceps and hamstrings and knee diameter. The WOMAC questionnaire was used to detect patients' perception.

RESULTS:

Before treatment 19 patients had full ROM in the affected knee (42,22%), while 21 patients had decreased flexion for 10-60 degrees (47,78 %). Reduction of the muscular strength for m. quadriceps and hamstrings for all the patients varied between grade 2+ and 4, using manual muscle testing (MM-t). After 4 weeks of treatment pain relief was found in all 3 groups, but for the first group of patients there wasn't a statistically significant improvement due to ROM ($p > 0,05$). However, ROM improved in the next 3 months ($p < 0,05$), but there wasn't a statistical difference for the muscular strength ($p > 0,05$). After 20 therapy procedures ROM increased for 10 to 20 degree decrease in the second and 20 to 30 degree decrease in the third group, as well as muscular strength for 189 to 1 grade by MM-t. For the third group of patients statistically significant differences have been found in all parameters of the WOMAC score in comparison to both groups ($p < 0,05$).

CONCLUSION:

Physical therapy procedures combined with medicament therapy provide best results in the treatment of knee osteoarthritis, and help patients overcome problems like pain, functional limitation and achieve ROM essential for every day activities and improve their quality of life.

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Leg Oedema After Orthopedic Interventions – Diagnostic Problem In Rehabilitation

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Introduction:

A common case in physiatrical practise are the patients with leg oedema which was not verified before the patient's coming to rehabilitation. Deep venous thrombosis (DVT) is one of the most common causes of leg oedema after fractures, long-lasting immobilisation or operative cure (implantation endoprothesis in a hip or a knee or some osteosynthesis material). The oedema is at the same time the condition which is bound to life jeopardy and great disability if it not diagnosed and cured in good time.

The Aim:

To point out that DVT is the common cause of the oedema in posttraumatic conditions. Bearing in mind the fact that the clinical sight is not characteristic in diagnosing of DVT, we wanted to empasize the diagnostic guidelines for DVT.

Method:

By prospective clinical research in patient sent to rehabilitation in our institution after orthopedic interventions, the patients suffering from unilateral leg oedema which was verified after the first clinical examination were included. All the patients from the group were treated as follows: Welssov score was taken and ultrasonographic vein examination was run.

Results:

From January to July 2007. in 14 patients out of 27 suffering from oedema Welssov score was > 2 and DVT of various level of obstruction and degree of localisation was diagnosed by ultrasonography.

Conclusion:

Following the alogorithms for DVT in patients with leg oedema we can exclude or verify TDV wich is of great importance for furher treatment therapy and preventing from possible complications (embolism pulmonary, postthrombotic sequelae).TDV is as well a contarindication for the application of physical procedures whichs can result in rethhrombososis or thrombus fragmenting.

Evaluating Antonovsky'S Sense Of Coherence Scale On Professional Stuff Of Rehabilitation Setting In Umc Maribor

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Introduction:

The central construct of Antonovsky's salutogenic theory is Sense of Coherence (SoC) Scale. Higher SoC results suggest a better ability to deal with life stressors (1, 2).

Aim:

To establish if previous negative life and health experiences could diminish the SoC results. To define correlations between estimations of person's life view, satisfaction with person's life, and SoC. **Subjects and Methods:** There were 26 persons included: 17 physiotherapists, three physiatrists, four ergotherapists and two nurses. A long version of SoC was used. Person's life view and satisfaction with own life were evaluated with numerical rating scale from 1 to 7.

Results:

There were nine persons with serious negative personal life and health experiences. Their median scores were: life view score 5 (range, 4 - 7), life satisfaction score 5 (range, 3 - 6), and SoC: 116.2 (SD 9.7, range 104 - 131). The median scores in the other subgroup were: life view score 5 (range, 3 - 7), life satisfaction score 6 (range, 4 - 7), and SoC 115.7 (SD 7.8, range 101 - 133). The difference between life satisfaction scores was the only one that was statistically significant (Mann-Whitney U test, P=0.009). Life view score, life satisfaction score and SoC were not in statistically significant correlation.

Discussion and Conclusion:

Medical stuff without earlier negative life and health experiences was more optimistic and more satisfied with their lifes, but these differences were not reflected by SoC results. Our results do not confirm that higher SoC is mandatory to express person's more positive and optimistic life view and satisfaction. Two major study deficiencies have to be stressed: person's life view and satisfaction evaluation with numerical seven-point scale is of questionable value, and undersized cohort.

References:

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2. Flannery RB Jr et al. Validating Antonovsky's Sense of Coherence Scale. J Clin Psychol 1994;50(4):575-7.

Body Composition After Spinal Cord Injury

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Objective:

The aim of this study was to evaluate body composition, including lean tissue mass, fat tissue mass, and bone mineral content in people with spinal cord injury (SCI), and to compare body composition with time since injury , level of injury.

Material and Methods:

19 male people with SCI (mean age \pm SD 39.21 \pm 14.92 years) were included in thge study. A complete physical examination was performed. Fat tissue mass (grams), lean tissue mass (grams), and bone mineral content (grams) of both the upper and lower extremities were obtained from the total body scans determined by using dual-energy X-ray absorptiometry (Lunar DPX-PRO).

Results:

Mean time since injury was 12,63 \pm 6,03 months. A significant positive correlation was found between level of injury and both upper extremities lean tissue (right upper extremity p=0.006, r=0.729 left upper extremity p=0.001, r=0.729). In other words, as level of injury descends, both upper extremities lean tissue increases. A significant positive correlation was also found between time since injury and lower extremities fat tissue (right upper extremity p=0.027, r=0.506 left upper extremity p=0.018, r=0.537). In other words, as time since injury increases both lower extremities fat tissue increases.

Conclusion:

Spinal cord injury seems to affect body composition. As time since injury increases lower extremity fat tissue increases as level of injury descends upper extremity lean tissue increases.

Correlation Of Visual Analog Scale With Oswestry Index Questionnaire And Routine Laboratory Evaluation In Patients With Low Back Pain

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Objective:

The aim of this study was to evaluate the correlation between pain intensity and Oswestry Index Questionnaire along with hemoglobin (HB), hematocrit (Hct), white blood cell count (WBCC), sedimentation and CRP.

Material and Methods:

177 patients with low back or low back/leg pain were included in the study. A full physical examination and routine laboratory evaluation were performed. Patients with inflammatory low back pain were excluded from the study. Oswestry Index Questionnaire was administered along with visual analog scale (VAS).

Results:

Mean age and standard deviations of patients were 42.68 ± 12.17 years. VAS, Oswestry Index Questionnaire, Hb, Hct, WBCC, sedimentation and CRP were 5.48 ± 2.11 , 20.68 ± 9.17 , 13.36 ± 1.39 , 38.74 ± 3.37 , 7029 ± 1592 , 20.58 ± 14.22 and 0.55 ± 0.75 respectively. A significant correlation was found between VAS and Oswestry Index Questionnaire ($p=0.000$, $r=0.424$). No significant correlation was found between VAS and routine laboratory work ($p>0.05$).

Conclusion:

Low back pain intensity is in close relationship with every-day life activities. However routine laboratory evaluation does not seem to correlate with pain intensity.

The Effectiveness Of Ultrasound Versus Short Wave Diathermy In The Treatment Of Gonarthrosis

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Objective:

The aim of this study was to compare the effectiveness of ultrasound (US) versus short wave diathermy (SWD) in the treatment of gonarthrosis.

Methods:

48 patients (42 women, 6 men) with a mean age of 65.98 ± 8.47 years (46-81) were included in the study. Visual analog scale (VAS), WOMAC Osteoarthritis Index, daily life activities (DLA), general assesment (GA) on admission and discharge and Lequesne Severity Index were evaluated. 23 patients received SWD and 25 US treatment along with a standard physiotherapy programme.

Results:

The mean and standard deviations for VAS, WOMAC Osteoarthritis Index pain and physical activity scales on admission and discharge, and Lequesne Severity Index were respectively 7.35 ± 1.46 , 4.92 ± 1.73 , 14.65 ± 5.58 , 10.06 ± 5.26 , 4.04 ± 2.69 , 2.69 ± 2.08 , 14.04 ± 4.21 . No significance was found between the 2 subgroups in terms of VAS, WOMAC Osteoarthritis Index, DLA and GA on admission and discharge and Lequesne Severity Index. In contrast VAS improvement (VAS at admission – VAS at discharge) was significantly higher in the subgroup receiving US treatment than the subgroup under SWD ($p < .05$).

Conclusion:

US treatment in gonarthrosis seems to be more effective on pain improvement than SWD in short term evaluations after treatment in this study.

Pathological Gait Modeling

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Introduction:

While instrumented gait analysis can record detailed aspects of human locomotion, its applicability in interpreting pathological gait kinematics and kinetics and in predicting the outcome of particular therapeutical intervention is limited. For this purpose, the literature suggest to exploit versatility of biped walking modeling to synthesize and analyze pathological gait as well as to test the outcome of particular therapeutical intervention in biped walking model. The aim of this paper is to present a biped walking model that allows evolution of pathological toe walking and crouch walking patterns.

Methods and Subjects:

Biped walking model consists of torso, thighs, shanks and feet and the walking is confined to sagittal plane. Two level control strategy assures adaptive push-off control in a sense to maintain constant gait velocity. Push-off should increase if gait velocity should increase and should be less explicit if biped walker should decelerate. Additionally, the model allows us to change certain control parameters to investigate the influence of different control principles on gait kinematics and kinetics.

Results:

Extensive experimentation showed that the model is capable of generating stable cyclic gait in different walking regimens with gait velocity ranging from 0.6 m/s to 1.1 m/s. When varying control parameters, the model generates characteristic pathological gait kinematics and kinetics that qualitatively corresponds well with pathological gait as recorded in human.

Discussion:

Compared to similar models from the literature [1], described walking model has proven to offer considerable diversity, when synthesizing different walking patterns. Extensive experimentation with the model showed that, gait of a model corresponds well with human locomotion and fundamental mechanisms of human gait, when varying certain control parameters in value.

Conclusion:

Due to their versatility, biped walking models are becoming an important aspect of clinical gait assessment and are potentially considered to be a significant tool in pathological gait analysis and treatment planning

References:

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The Effects Of Physical Therapy And Dmoad In Treatment Of Knee Osteoarthritis (Oa) – Assessment Of Duration Of Treatment And Their Clinical Benefits

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OA is chronic progressive disease mostly of burden joints.

New approach in treating of OA is using of DMOAD, drugs who can modify evolution of OA by reducing of katabolic process and stimulating of anabolic process in cartilage.

AIMS:

to analyzing duration of treatment in patients with knee OA treating by physical therapy and combine therapy (physical therapy and DMOAD) and to evaluate clinical benefits of treating in both groups of patients.

METHODS:

Randomized controlled trial, included 80 patients, diagnosed with knee OA (ACR criteria) and K/L score 2-4. Observed sample were treated by physical therapy only (40) and combine therapy (40) - physical therapy and Glucosamin sulfat 1500mg daily. Efficacy of treating were assessed after 20 days, 2 months and 4 months, by evaluating of WOMAC index, functional status, time of achievement of clinical benefits and analyzing K/L index after two years.

RESULTS:

There is statistically significant in reducing of pain in patients on combine therapy after 20 days, 2 and 4 months of treating ($p < 0,001$). There is no significant between those groups of patients in duration of treating until reducing of clinical symptoms ($X^2 = 1.054$, $DF = 3$, $p = 0.79$). After 2 years we noticed significant reducing of pain in patients treated by combine therapy, evaluated by WOMAC index ($p < 0.01$). In control group there is no significant reducing of pain (WOMAC index) after 4 months and after 2 years ($p > 0,05$). After 2 years there is no statistically significant in changing of K/L score in experimental group ($X^2 = 1.33$, $DF = 1$, $p = 0.25$), and in control group K/L became significant worse after 2 years ($X^2 = 6.12$, $DF = 1$, $p = 0.013$).

DISCUSSION:

The optimal time to attain clinical benefits in patients treating by DMOAD and physical therapy is 6-8 weeks. Combine therapy doesn't reduce time needed for clinical benefits, but reducing appearance of recidivism and reduce evolution of OA.

CONCLUSIONS:

DMOAD in combination with physical therapy is very efficacy in treating of knee OA.

The Importance Of Physical Treatment Of Polytraumatic Patients With Pelvis Fracture Case Report

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Introduction:

Injuries of pelvis, acetabulum and lower limbs are very common in traffic accidents. Orthopedic treatment of acetabulum fracture may be conservative and operative. **Aim:** To show that teamwork of orthopedist, physiatrist, as well as opportune and sufficiently long balneophysical treatment may lead to satisfactory recovery, even in the most severe patients by case report of RB.

Methods and Subjects:

Patient RB, 26 years old, injured on December 31, 2006, while driving a car. Managed in HC Užice, with diagnosis: Fractura acetabuli bilateralis, Luxatio coxae centralis sinistri, Fractura ossis pubis bil. et ossis ischi dex, Fractura cominutiva femoris dextri, Fractura partis proximalis cruris dex, Fractura ossis cuneiformis medialis et ossis MT II pedis dex, Fractura costae I-IV lat sin. et costae II lat.dex. Paralysis n. Isthidici l.dex. and Ruptura traumatica vesicae urinariae, the latest being operatively managed, and the right leg fractures being stabilized.

From January 5, 2007, she was operated on several times at Military Medical Academy (MMA) in Belgrade: 08/01 – because of abdominal wound dehiscence, 23/01 – osteosynthesis acetabuli lat.sin, 12/02 - osteosynthesis acetabuli lat.dex. et reosteotaxis femoris dex, 06/03 – osteosynthesis femoris dex. 18/09 - Neurolisis N. Isthidici dex. She was on rehabilitation continuously at MMA between 03/04 – 16/11/2007.

While on rehabilitation in Banja Koviljača between 29/11/2007 – 09/02/2008 the complex treatment program was applied: kinesi, hydrokinesi, Horizontal, magneto therapy, electro stimulation.

Results:

Walks on two underarm crutches, completely leaning on both legs, Muscle Strength improved, motion range in hips enhanced with signs of reinnervation of n.ishiadicus, independent in Daily Life Activities - treatment has not been completed.

Discussion:

Similar results have been achieved in 12 other patients with acetabulum fracture treated in this institution recently (7 patients conservative, 5 operatively).

Conclusion:

In spite of the patient having severe injuries, satisfactory treatment results have been achieved and possible complications avoided by timely diagnosis, orthopedic and neurosurgical treatment as well as with complex continuous balneophysical treatment.

Selective Deterioration Of Decision Making After Spinal Cord Injury

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Introduction:

According to the influential Somatic Marker Hypothesis (SMH,¹) decision making is unconsciously biased by the perception of bodily responses previously experienced by an organism, and that we usually perceive as emotions. The regulation of such responses crucially depends on the somatic feedback to the autonomic nervous system. Therefore, a surprising prediction of the SMH is that patients with severe spinal cord injuries (SCI), whose afferent somatic pathways are seriously harmed, should manifest decision making impairments even in absence of brain lesions.

Subjects and Methods:

Six patients with SCI were compared with 6 age, sex and educationally matched control subjects. They were all tetraplegics with traumatic SCI between the C4 and C7 vertebrae. None of the subjects had autonomic system dysfunction. Both patients and controls were required to complete the Iowa Gambling Task (IGT) and to rate a selection of emotionally-charged pictures from the International Affective Picture System. These two tasks were selected to examine independently our patients' decision making capabilities and their emotional appraisal.

Results:

When compared with a group of healthy controls matched for age, sex and education, no difference was found in the picture ratings. However, patients scored significantly lower on the IGT ($t(5) = -2.11$, $p = .04$). In spite of the small sample, the effect size was considerable (Cohen's $d = 0.74$).

Discussion and Conclusions:

Results apparently show that, while emotional appreciation may be spared, SCI may lead to decision making impairments. Within a novel and unstructured task somatic feedback could play a more important role than in picture observation, where content and previous experience may overcome its absence.

References:

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Comparison Of The Differences In Clinical Disease Flow And Clinical Findings In Chronic Tendonitis Of The Shoulder Regarding Patients With And Without Calcifications

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OBJECTIVE:

Define the frequency of calcifications in rotator cuff tendons and compare the differences in clinical disease flow and clinical findings in chronic tendonitis of the shoulder in patients with and without calcifications.

PATIENTS AND METHOD:

We have enrolled 170 patients (99 women, 71 men), of the average age $57,53 \pm 4,21$ yrs, suffering from chronic tendonitis of the shoulder. According to the performed sonography, the diagnoses stating tendonitis of the shoulder was confirmed and we found calcifications in 48 (28%) patients. The patients were divided into two groups: I group 48 patients with calcific tendonitis of the shoulder and II group 122 patients without calcific tendonitis of the shoulder. The analyses were done in terms of: Demographic character of the patients, duration of disease, numbers of relapses in the year as well as duration of the relapses. Intensity of the shoulder pain in rest, on palpation and during active movements (VAS 100 mm), evolution at shoulder joint motions and specific functional testing of shoulder movements (Painful arc, Drop arm, Job, The full can, Speed and Yergason's test).

RESULTS:

There is statistically significant difference between the two groups of patients (t-test $p < 0,01$) in duration of the disease (I group $3,83 \pm 0,95$ yrs II group $2,27 \pm 0,36$ yrs.), in number of relapses in the year (Mann-Whitney median in I group is 3 (46,7%), in II group it is 2 (40,0%)), and duration of relapses (t-test I group $15,35 \pm 2,25$ days II group $9,47 \pm 0,96$ days). Analyzing symptoms of the disease, we found that the shoulder pain intensity during active movements was statistically different between the two monitored groups (t- test, $p < 0,05$), whereas there was not a statistically significant difference between the groups (t-test, $p > 0,05$) regarding the shoulder pain intensity in rest and on palpation, evolution of movements and functionality testing.

CONCLUSION:

Duration of the disease, numbers of relapses in the year, duration of the relapses and intensity of shoulder joint pain during active movements are higher at patients suffering from calcific tendonitis of the shoulder in comparison to the patients suffering from tendonitis without calcific. Calcific tendonitis of the shoulder is considered to be more difficult clinical form of disease in comparison with tendonitis without calcifications.

Frequency Of Secondary Complications In Patients With Spinal Cord Injury

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OBJECTIVE:

To examine the frequency of common secondary medical complications in patients after spinal cord injury during rehabilitation.

MATERIAL AND METHODS:

A retrospective study of 250 patients with spinal cord injury admitted to the Clinic of Rehabilitation Dr M. Zotović in Belgrade, Serbia from January 2000 to December 2004. A total of 250 patients were reviewed: 162 paraplegic (43 women and 119 men) and 88 tetraplegic (16 women and 72 men). Their age ranged from 18 to 78 years. Patients were divided into two groups: patients with complications and patients without complications during rehabilitation.

RESULTS:

The results of the study showed that 32 (12.8%) cases were without complications during rehabilitation and 218 (87.2%) patients had complications. More than 85% of these patients reported at least one secondary complication, and more than half (52.4%) reported three or more. The most frequent complications were urinary infection (78.4%), spasticity (55.6%), pressure ulcers (2.9%), pneumonia (1.9%), renal calculi (1.4%), autonomic dysreflexia (0.9%), deep venous thrombosis (2%). Gastrointestinal hemorrhage occur with relatively small frequency. The degree of pain decreased, whereas the degree of urinary infection and spasticity increased significantly during inpatient rehabilitation. Overall, increased age, increased body mass index, traumatic lesion, associated trauma, level of injury, and complete lesion all increased the risk of complications.

CONCLUSION:

Complications are common following spinal cord injury. They need specific attention after discharge from inpatient rehabilitation and within subpopulations.

Diffuse Idiopathic Skeletal Hyperostosis (Dish) - A Case Report

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Also known as Forestier's disease, describes a phenomenon characterized by a tendency toward ossification of ligaments. Ossification of the longitudinal ligaments (especially the anterior ligaments) of the spine produces a tortuous paravertebral mass anterior to and distinct from the vertebral bodies.

Grossly, the appearance is that of candle wax dripping down the spine. While the thoracic anterior longitudinal ligament is ossified, the areas of ossification often meet without fusion. Motion actually is possible, in contrast to lumbar vertebral bridging, which is associated with loss of lumbar motion. Some people experience the disease beyond the spine. It can also affect tendons and ligaments in the heels, ankles, knees, hips, shoulders, elbows and hands. Diffuse idiopathic skeletal hyperostosis often causes no signs and symptoms, though stiffness and pain along affected ligaments may occur.

Men are more likely than women to develop diffuse idiopathic skeletal hyperostosis. The condition is most common in older adults. Treatment isn't necessary in most cases, though physical therapy may delay the loss of motion in affected joints. Only in rare circumstances does diffuse idiopathic skeletal hyperostosis cause serious complications that require surgery. The authors present a case of a 40 years old man who went to an Orthopedic consultation on February 2007 due to lumbar, dorsal and cervical pain irradiating to the left upper limb, associated with neck stiffness and a mass in the left sterno-clavicular joint, that limited him in his working activities.

Radiographic and MRI study of the spine revealed an exuberant and deforming process of diffuse espondylarthritis with volumous osteophytes forming generalized bone bridges in the median region, without compromising the intervertebral discs height there was some degree of stenosis of the vertebral canal at the cervical level. He was also sent to an Internal Medicine consultation to exclude an auto-immune, metabolic or neoplastic disease. The conclusions were: osteophytical formations spread in the cervical and dorsal spine, calcification/arthritis of the left sterno-clavicular joint.

The physical exam revealed neck stiffness and pain with active spine and left upper limb movements, mainly at the cervical level, and reduced range of motion in all directions, but with no objective neurologic deficits (some strength deficit on shoulder elevation and arm flexion mainly due to pain). There were no deviations in the vertebral spine axis.

The patient started a physical therapy program concerning different modalities and active cinesitherapy, with a clear improvement in his pain and left arm functional capacity.

Chronic Pain Syndrome In End-Stage Renal Disease-What We Can Do?

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Chronic pain an unpleasant sensory and emotional experience associated with actual or potential tissue damage is the most common and disabling symptom for patients with end-stage renal disease (ESRD), and impacts virtually every aspect of health-related quality of life (HRQOL). Hemodialysis (HD) is a successful life-sustaining therapy for patients with ESRD with its effectiveness largely judged by patient survival. As the dialysis population ages and experiences multiple co morbidities, it will become increasingly difficult to maintain a reasonable HRQOL for these patients. The aetiology of pain may be from numerous causes and with the increasing prevalence of comorbidities it is not surprising that chronic pain is a particular problem for patients with ESRD.

Pain, however, may also be caused by ESRD itself. There are numerous painful syndromes unique to ESRD such as calciphylaxis and renal osteodystrophy that may develop during a patient's time on dialysis. On the other side dialysis related amyloidosis occurs as a result of deposition of β_2 -microglobulin amyloid in peri-articular tissue and bone and it become amyloidogenic when present at high concentrations with typical clinical manifestations as tenosynovitis, destructive spondyloarthritis, periarticular soft tissue swelling, bone fractures and generalised arthralgia. Their chronic pain is typically moderate to severe and is undertreated. For these reasons, it is very important for nephrologists and other physicians to master the principles of pain assessment and management. But more realistic goal of pain management may be to optimize pain relief while focusing on disability issues to make patients more functional in their daily activities. The reduction of pain severity across the severity boundaries might be thought of as clinically significant goals of therapy that could help achieve this aim.

Chronic using of medicaments such as analgesics, NSAIDs and opioids may increase the risk of bleeding because of their effects on platelet function and gastrointestinal mucosa. They may have potential cardiovascular risks and may also compromise residual kidney function and cause the adverse effects. Because of that it is perfectly situated to adopt the interdisciplinary team model (nephrologists-physiatrist) that is common to palliative care a model that provides excellent symptom management and HRQOL assessment. With using soft tissue and joint corticosteroid block injection which are a remarkably effective adjunct to pharmacologic and physical therapies, we suppose that it could be of great benefit in the patient's recovery.

We covered 43 patients of both sexes (31 to 84 years old) treated by chronic HD program at Institute for Renal Diseases, UCC Zvezdara-Belgrade, during the period from January 2002 to January 2006. Patients were divided in to several groups according to the age, duration of HD, duration of pain, changes in bone and joint structures and duration of no walking. The corticosteroid was given as a single injection of 2 ml of Betamethasone sodium phosphate mixed in 4 ml of Lidocaine. In some case (5 of 43) we noticed increased tenderness which lasts 2 days, other side effects we didn't registered. According to our results we conclude that the use of corticosteroid injections can be a useful addition to the treatments employed in treating musculoskeletal chronic pain syndrome in patients on HD. Injection of corticosteroids is a relatively safe procedure that can be managed by specialists. The significantly reducing of medicament intake was noticed.

Early treatment might have resulted in better outcome and can make slower muscle atrophy and improve physical activities.

Introduction: Of Kinesiological Diagnostics To Routine Evaluation In Prevention And Rehabilitation Sports Centre Smarjeske Toplice

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Work with athletes indicates the need for more complete treatment on all levels of their activities. There is unsatisfactory prevention from repeated and/or primary injuries. Especially deficient is the follow-up of the injured athletes in later rehabilitation phases before returning back to the sports terrains.

1. The activity of our center is a holistic treatment of athletes of all age and quality groups.
2. This is rendered by the knowledge of interdisciplinary staff (MDs, PTs, PETs, PsyD, etc.) with some most modern diagnostic and training equipment at disposal.
3. The center also organizes education for sports professionals with the aim to support the physical conditioning and injury prevention.
4. At rehabilitation work, we have for several years come across athletes after endured injury and post-operation treatment, especially of knee, shoulder, elbow, ankle, from different sport disciplines including some of the most reference midst's.

For more than fifteen years, the major part of our rehabilitation consists of patients with injured and usually operation-treated knee especially after ACL reconstruction. Consequently the related rehabilitation program has been designed in utmost detail and modernized all the time especially on the basis of own findings derived from thorough evaluation of rehabilitation results.

Treatment of a rehabilitated person consists of anamnesia, a general as well as local physical examination at a physiatrist, determination of the rehabilitation protocol and therapeutic program (time, content, volume and intensity), according to the clinical examination set of kinesiological measurements is applied.

Some of kinesiological measurements have already been a part of the routine while some others are just being applied.

If we list only some of them:

- static balance tested by body sway evaluation on a force plate and its sub-modifications - manipulation of vision, changing of hands` position, etc.,
- the quasi-dynamic balance test on a force plate using the COG tracking of a pre-defined shape,
- the dynamic balance test on a tilt board with embedded electronic goniometer,
- the force and angle tracking task for evaluation of sensory-motor integrative mechanisms,
- activation level of the neuromuscular system,
- contractile characteristics with a twitch technique,
- isokinetic measurements, etc.

The described approach in the rehabilitation of an athlete renders objective evaluation of the outcomes possible, so enabling us for an optimization of own work. To the patient it provides more self-control and thereby better cooperation in the program. Thereat possibilities of clinical and experimental as well as research work arise, which enables better interdisciplinary and intradisciplinary communication and thereby quicker achievement of the set goals.

Efficacy Of Medical Rehabilitation For Rizoarthritis Of The Right Hand

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Introduction:

Hand represents a preferential site for osteoarthritis, its articulations being among the most affected by this degenerative disease, with direct implications in decreasing of functional independency in daily life. Thumb base osteoarthritis (rizoarthritis) is a pathological condition which mostly causes various degrees of invalidity. The aim of our study is to evaluate the efficacy of a rehabilitation programme for preserving the functionality of hand.

Method and Subjects:

We evaluated 25 patients observed in our hospital, diagnosed with rizoarthritis based on clinical and radiological findings. The age was between 40-55 years old, 15 women and 10 men, all of them having in common a repeated mechanical stress in daily work. Treatment methodology included orthosis and electrotherapy for miliorating pain, exercise therapy for increasing range of motion, occupational therapy for promoting hand dexterity and functional activities. The pataients followed the rehabilitation programme for two weeks, and they repeted it after three months.

Results:

The rehabilitation programme outcomes were assesed using Dreiser Index and AUSCAN. Pain and range of motion of the thumb have been significantly reduced during the therapy. The global functionality of the hand was progressively improving during the following three months after the reabilitative treatment.

Discussions/Conclusion:

Hand osteoarthritis may be asymptomatic for quite a long period of time and therefore underdiagnosed, however the progression of the degenerative process leads to a clinical manifested disease evolving to a major disability. In this respect thumb base osteoarthritis (mainly in right-handed people) needs to be early diagnosed and treated using the diverse possibilies offered by the medical rehabilitaion.

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Unified Balance Scale: A New Balance Measuring Instrument Devised With Rasch Analysis

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Introduction:

In Rehabilitation several clinical scales are used to assess balance, such as the Berg Balance Scale (BBS), the Tinetti Mobility and Balance scale (TMB) and the Fullerton Advanced Balance Scale (FABS). A recent Rasch Analysis study comparing the psychometric properties of BBS, TMB and FABS, showed that none of these scale holds adequate measurement properties when used with a sample of neurological and orthopedic rehabilitation inpatients.

Aim:

To co-calibrate items of BBS, TMB, FABS and Trunk Control Test (TCR) to obtain a new summative balance scale that holds adequate validity and reliability for clinical use with orthopaedic and neurological rehabilitation inpatients.

Methods and Subjects:

In this single-cohort longitudinal observational study, 104 inpatients were enrolled. Study methods were compliant with Helsinki Declaration. An adequate sitting trunk control was the main inclusion criteria. BBS, TMB, FABS and TCT were administered to all patients. An administration protocol was devised in order to avoid too many postural changes for patients. Items from these scales were co-calibrated using Rasch Analysis to evaluate its internal construct validity (ICV) and reliability.

Results:

RA demonstrated lack of fitness to the Rasch Model (RM) for 1 item and lack of an ordered scoring structure for 24 out of 47 items. In order to achieve adequate ICV 19 items were deleted, and only 5 items retained the original scoring structure. The final 28 item scale fitted very well with the RM either at the subject and item level. No item was affected by DIF. Reliability was excellent with a Person Separation Index of 0.952. Targeting was excellent, with no floor or ceiling effect. The measurement range was wide, ranging from patients just recovering trunk control to very able fully-ambulatory outpatients.

Discussion:

This study suggests that a new balance scale could be constructed by merging items from 4 widely-used balance scale. The new scale holds adequate measurement properties when used with a sample of neurological and orthopedic rehabilitation inpatients and has a better psychometric profile of its parent scales.

This new instrument appears to be promising in view of its wide range of measurement (from recovering trunk control to fully-ambulatory outpatients) and its independence from the cause of loss of balance. Further studies based on larger samples are warranted to confirm these results and to evaluate other important psychometric properties as predictive validity and responsiveness.

Demographic Data, Clinical Features And Functional Status Of Benign Joint Hypermobility Syndrome

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Intoduction:

Benign joint hypermobility syndrome (BJHS) is a dominant connective tissue disorder, multiple joint and muscle symptoms, deficits in proprioception which all lead to functional impairment. The aim of the study is to compare demographic and clinical feature, functional status on patients were BJHS and non-BJHS.

Methods:

There were two groups-BJHS (group 1= n:100) and non-BJHS (group 2= n: 74) that had musculoskeletal pain. Clinical examination for posture and joint alignment localization and intensity of pain (VAS), functional status (SF-36), depression (BDI) and incidence of fibromyalgia and myofascial pain syndromes (FMS, MPS) were assessed. The results were compared both between two groups.

Results:

There were no significant difference about age, sex and education between two groups. The group 1 compared with group 2 in VAS, pain joint count and incidence of MPS and FMS, so a significant difference was found theirs. The group 1 was more high-level than group 2 in these parameters ($p < 0.05$). A significant difference in pes planus and scoliosis was found on patients with BJHS ($p < 0.001$). There was no significant difference between two groups in SF-36.

Conclusion:

Although patients with BJHS had more high-level widespread musculoskeletal pain than the same age and sex non-BJHS's patient as statistically significant difference, they had same functional status. Consequently more patient and controls need to be study before conclusion. This is preliminary report of study continuing with larger patient groups.

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Efficacy Of Back School Program In Patients With Chronic Low Back Pain

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Introduction:

Despite back school program is used frequently into the treatment program of chronic low back pain its efficacy is controversial. The aim of the study is to evaluate pain and functional status with back school program.

Methods:

Forty-two patients with chronic low back pain were randomly allocated into two groups. Both groups were received physiotherapy program. Group 1 (n: 22) was added back school, group 2 (n: 20) were not received its. They were evaluated with pain by Visual Pain Scale (VAS), functional status by Oswestry Disability Index (ODI) at the end of treatment and three month after treatment.

Results:

There were no significant difference about age, sex and education between groups. The group 1 compared with group 2 in VAS and no difference was found in three comparisons. At baseline and posttreatment significant difference in VAS showed within either group 1 and group 2 ($p < 0.05$), but three month after treatment it didn't. Both groups were compared in ODI and despite there were no difference at the end of treatment, a significant difference was found at baseline-three month after treatment and posttreatment-three month after treatment. In these three comparisons significant difference was found in group 1 ($p < 0.05$). In group 2 improvement was found at baseline and posttreatment in ODI ($p < 0.05$), but three month after treatment didn't show significant difference. At baseline, posttreatment and three month after treatment difference in ODI showed in group 1 ($p < 0.05$).

Conclusion:

A statistically significant difference was found between efficacy of group 1 and group 2 for the ODI three month after treatment. Back school program improved functional status. This is preliminary report of study continuing with larger patient groups.

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Sensory Changes To A Galvanic Current In Complex Regional Pain Syndrome

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Introduction:

Pathophysiology of complex regional pain syndrome (CRPS) has not been documented clearly yet, however, some clinical and electrophysiological sensory changes have been mentioned in the literature. The aim of this study was to put forward the sensory changes to a galvanic current in CRPS type I and compare the results with the normal extremity and with the control group.

Methods and Subjects:

22 patients with the diagnosis of CRPS in the upper extremity (study group) and 12 healthy subjects (control group) were included in the study. A galvanic current was applied to both extremities in both groups. The dose of galvanic current was increased slowly until the subject was able to feel the current. Each extremity was evaluated three times and the mean current was recorded as the sensory threshold.

Results:

All participants were young and male. Demographic features were similar in both groups. In the study group the mean galvanic currents were 20 14.7 mA in the affected extremity and 7.9 4.5 mA in the non-affected extremity. In the control group the mean galvanic currents were 8.1 4.9 mA in the dominant extremity and 8.5 5.2 mA in the non-dominant extremity. The difference in sensory thresholds obtained from the symptomatic and asymptomatic hands was statistically significant in the study group ($p < 0.05$). The difference in sensory thresholds obtained from the symptomatic hand in the study group and non-dominant hand in the control group was statistically significant ($p < 0.05$).

Conclusion:

The results of this study show that there are some electrophysiological sensory changes to a galvanic current in symptomatic upper extremities in CRPS type I. In addition, the galvanic sensory threshold test may show promise as a quantitative sensory test to reveal the sensory deterioration in CRPS.

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Insufficiency Fracture And Spontaneous Osteonecrosis Of The Knee Because Of Chronic Use Of A Computer.

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The clinical symptoms and signs of spontaneous osteonecrosis of the knee vary in severity and may mimic other conditions such as meniscal tears and osteoarthritis. Originally described as idiopathic osteonecrosis, the exact etiology is still debated.

Osteonecrosis of the knee should be differentiated into two main categories:

1. Primary, spontaneous, or idiopathic osteonecrosis
2. Secondary osteonecrosis (e.g., secondary to factors such as steroid therapy, systemic lupus erythematosus, alcoholism, Caisson decompression sickness, Gaucher's disease, hemoglobinopathies, and renal transplantation etc.).

Our patient 47 years old man without a history of other diseases or reception of medicines works for above 10 years and for long times with computer. Evidence suggests that an acute fracture occurs as a result of chronic stress or minor trauma to a weakened subchondral bone plate.

More appropriate terminology may be 'subchondral insufficiency fracture of the knee because use of computer'. The doctors in the future will be supposed to learn to connect the diseases with the new way of life with a computer.

Comparison Of The Analgesic Effects Of Suprascapular Nerve Block And Physical Therapy In Patients With Chronic Shoulder Pain

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Introduction:

Chronic shoulder pain is one of the most common complaints seen by the physiatrist. It has a wide range of etiologies most of which are adequately treated nonsurgically. In this study we aimed to compare the analgesic effects of suprascapular nerve blockage (SNB) and physical therapy.

Materials and Methods:

60 patients between the ages 40 and 80 with shoulder pain longer than 3 months were included in the study. Subjects were randomly allocated to one of the four treatment groups:

- Group 1(n:15): Exercise + SNB(active) + PT(placebo)
- Group 2(n:15): Exercise + SNB(active) + PT(active)
- Group 3(n:15): Exercise + SNB(placebo) + PT(placebo)
- Group 4(n:15): Exercise + SNB(placebo) + PT(active)

SNB was performed once with 10 ml bupivacaine (Marcaine) as described by Dangoisse et al(1). Placebo blockade of suprascapular nerve was achieved by injecting subcutaneously 5 ml of saline on the posterior deltoid (2). Subsequent active or placebo physical therapy was administered 5 days weekly for 2 weeks. Exercises that aimed to restore muscle function and range of motion were applied by a physiotherapist 5 days weekly for 2 weeks. Outcome measurements were goniometric range of motion (ROM), pain (at rest, with motion, night pain measured by VAS), functional state (by shoulder pain and disability index-SPADI) and disability (SDO) and quality of life (by SF-36) taken at baseline, after 2 weeks and 8 weeks of treatment.

Results:

Statistically significant changes were found in all treatment groups at both 2nd and 8th weeks of treatment. There were significant improvements with regards to ROM in Group 2 and 4 which included physical modalities besides exercise and/or SNB.

Discussion and Conclusion:

In chronic shoulder pain, SNB, exercise and application of physical modalities were effective in pain reduction at two months. Administration of physical modalities with or without SNB had the additional effect of improved shoulder ROM. A longer study period is necessary to evaluate the sustainability of the beneficial effect.

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The Effect Of Depression On Physical Therapy Of Patients With Failed Back Surgery: Preliminary Report

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Introduction:

The patient who continue to have chronic disabling back pain after one or more spinal surgeries are known to have failed back surgery syndrome. This study was planned to investigate the effect of depression on the physical therapy of patients with failed back surgery.

Methods:

Twenty patients with the mean age of 51.9 ± 10.8 years were enrolled to the study. In addition to demographic characteristics, duration to recurrence of pain after surgery, localization of pain, operation type, magnetic resonance imaging(MRI) findings, intensity of pain by 0-10 cm visual analogue scale(VAS) were recorded. Beck depression inventory and Roland Morris scales were used to assess depression and disability respectively. Ten sessions of physical therapy including hot pack, ultrasonography to low back region and diadynamic current between low back and foot was applied to all patients in addition with an exercise program. The patients were divided into two groups according to their depression status. The patients with the values higher than 17 was accepted as having depression (Group 1). The difference between baseline and posttreatment VAS- pain and Roland Morris scores of both groups were evaluated.

Results:

There was 13 patients (10 female, 3 male) in Group 1 and 7 patients (5 female, 2 male) in Group 2. Table 1 indicates the characteristics of the patients. There was statistically significant differences between pre and posttreatment VAS- pain and Roland Morris disability scores between the groups with better results in non depressive patients (Table 2).

Conclusion:

Failed back surgery patients with depression had less improvement than in patients without depression. In conclusion depression has a negative effect on the results of treatments in patients with failed back surgery. The therapeutic approaches for depression should be considered in patients suffering from failed back surgery.

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Table 1 : Characteristics of the patients

Age	Mean: 51.9 ± 10.8
	Female: 75%
Sex	Male: 25%
Pain recurrence time after surgery	Mean: 1.15 ± 2 weeks
	Low back: 35%
	Leg: 10%
Pain radiation	Low back and leg: 55%
	Discectomy: 30%
Operation types	Laminectomy and discectomy: 70%

Table 2: Pre and posttreatment scores of VAS- pain and Roland Morris disability scale

	Group 1	Group 2	p
VAS (pretreatment)	8.1 ± 0.70	6.1 ± 0.69	$p=0.00$
VAS (posttreatment)	6.5 ± 1.1	3.8 ± 0.69	$p=0.001$
Roland Morris(pretreatment)	17.76 ± 3.46	9.85 ± 4.67	$p=0.003$
Roland Morris(posttreatment)	15.53 ± 4.07	7.71 ± 4.3	$p=0.003$
VAS- pain pre-posttreatment difference	-1.46 ± 0.77	-2.28 ± 0.48	$p=0.020$
Roland Morris pre-posttreatment difference	-2.3 ± 3.4	-2.14 ± 2.79	$p=0.05$

Low Vision And Disability Scale: Preliminary Study

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Background:

Low vision is the condition of permanent reduction of visual function that doesn't allow a person to carry out the necessary daily work, to pursue one's needs and aspirations or make plans for his/her future life. According to WHO a person is affected by low vision when has a visus in the best eye of between 1/20 and 3/10.

Aim of the study:

The Aim of this study is to evaluate the correlation between disability scale and low vision.

Methodology:

In Tor Vergata General Hospital 19 patients affected by heavy low vision have been subjected to a Physiatrist examination and were administered the following assessment scales: Balance Scale(BS), Tinetti performance-oriented mobility assessment(TBS), Barthel index(BI), SF-36, FIM and Rivermead Mobility Index(RMI). BS consists of 14 items that require subject to maintain positions of varying difficulty and perform specific tasks. TBS is derived from the mobility index.

It's an observational and performance test that quantifies the provision motor and identify those at risk of falling. SF-36 is a multi-purpose, short-form health survey with only 36 questions. It yields an 8-scale profile of functional health and well-being scores as well as psychometrically-based physical and mental health summary measures and a preference-based health utilities index. BI is based on 10 items, each of them takes into consideration different aspects related to the common activities of daily life. The RMI is a measure of disability related to body mobility. FIM is an ordinal scales made up of 18 items which shows the degree of disability of patients and their need for assistance during their daily routine.

Conclusion:

From the analysis of data relative to the evaluation of the scales have shown a general reduction of the scores. This preliminary study shows that visually impaired patients have a change or an alteration, which involves many aspects on the quality of life and on autonomy of the individual. It then shows how the therapeutic and rehabilitative approach should be as comprehensive and complete as possible.

Rehabilitative Outcomes In People With Baker Cysts

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Introduction:

The Baker cysts, known also as popliteal cysts, is a very common disease that hurts all the joints, but prevalently the knee and the popliteal area. Actually it is estimated that the popliteal cysts is due to an abnormal distension of gastrocnemious-semimembranosus bursa or, less frequently, extraflexion of the articular synovial membrane. Many diseases could cause the formation of the Baker cysts: rheumatoid arthritis, osteoarthritis, less frequently psoriatic arthritis, connectivities, villonodular synovitis or amyloidosis the extended effort may facilitate or cause the disease.

Materials and Methods:

Four patients were followed at the Rehabilitation Medicine Service of Tor Vergata General Hospital, affected by relapsing Baker cysts. After the clinical examination, an individualized rehabilitative project was developed for each patient, it was divided into a motor programme, a physiotherapy programme, an orthosis programme and a pharmacological programme. The patients were subjected under ultrasound guide to the Baker cysts aspiration and to an injection of 40mg MetilPrednisolone acetate, they continued the injection treatment once a week for three weeks.

Subsequently they were prescribed therapeutic exercise with lengthening of lower limbs posterior kinetic chain, with mobilization of the femoral-tibial joint and strenghtening of the quadriceps femoris with isotonic contractions to increasing intensity, three times a week for three weeks.

It was applied short-wave hyperthermia at a frequency of 433.92 MHz provided with waveguide and bolus, three times a week for 30 minutes for each site. A plantar orthosis was prescribed on the basis of morphological and baropodometric features of the foot for each individual patient.

Patients took the Dexibuprofene with a dose of 400mg/die for 14 days in the morning after the breakfast.

Conclusion:

The results obtained show a significant improvement in the pain and in the function of the knee joint.

Effects Of The Therapeutic Exercise By Vibration Energy (Teve) In The Non-Union Fracture: A Preliminary Study

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Background:

A non-union fracture is usually defined as 'a failure of fracture fragments to unite or heal' or, better, 'a fracture that will not heal if left alone without specific treatment, usually orthopedic surgery', within approximately 6-9 months after the injury. It's a late complication, but not unusual. The most important cause of a non-union fracture is an insufficient or improper immobilization of fracture fragments also infection, inadequate blood supply, poor nutritional status, metabolic bone disease.

The application of Therapeutic Exercise by Vibration Energy (TEVE) to a non-union fracture finds its rationale in the ability of this method to activate osteoblastic capacity

Aim of the study: To evaluate the effectiveness of TEVE to promote bone healing in the treatment of a non-union fracture, in association with standard medical therapy (MT), versus MT alone, without exposure to vibration energy.

Methodology:

Patients with a non-union fractures, who come at the Rome 'Celio' military hospital orthopaedic department, are examined from a clinical, anamnestic and radiologic point of view, with, in addition, application of McGill Pain Questionnaire and other functional scale specific for the particular case. They are then divided into two groups A and B.

On the study start date, the A-group will start with the therapy, consisting of a total of 30 applications, received one per day, 5 days per week, of TEVE in association MT. The B-group patients will receive only the MT. Two clinical and radiological examinations (T1 and T2), respectively, will occur at the end of TEVE application and 60 days before the end of the treatment.

Conclusion:

At the moment 15 patients are included in the study. The preliminary results, based on x-ray imaging, confirm that the TEVE method could represent in a next future an useful method for the healing of non-union fractures in association with standard medical therapy.

Back Pain - It'S Treatment Using Physiotherapy And Maso-Chinese-Therapy

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INTRODUCTION:

Back pain is one of the more frequent pathologies that make the people wanting to see the doctor. 90% of the patients return back at work within three months, but they do suffer from the pain repetition and also they have limited functions.

THE PURPOSE:

To determine the effective ways for treating acute lumbago using physiotherapy and Chinese therapy. To evaluate the effectiveness of every physiotherapeutic procedure on the acute lumbago

THE MATERIAL AND THE METHOD:

There have been studied patients with acute lumbago (N=60) represented in the clinic of physiotherapy. There were excluded from the study pathologies such as:

1. fractures
2. tumors
3. osteomyelitis

CONCLUSIONS:

Classical physiotherapy, associated with elected exercises according to the problems that the patient does have, gives notable improvements at those patients to whom have been applied only procedures, no matter their type, the improvement is smaller than in those cases where the procedures are combined with massages and exercises.

The physiotherapeutic procedures such as: infrared, ultrasounds, diathermy, interferential therapy, are equally effective in soothing the back pain, but it is thought that using the interferential therapy combined with infrared + massage, may be the most elected therapy for soothing the pain on the acute lumbago.

RECOMMANDATIONS:

The lumbago has a multifactor etio-pathogenesis the precise diagnosis is essential for the therapy the physic - Chinese - therapeutic rehabilitation is part of every other therapy that has as its principle making the patient being active again and autonomous.

It is always necessary a close cooperation between the specialist doctor and the physiotherapist doctor in order to achieve a therapeutic result.

The physical methods combined with exercises, massage, give a notable improvement. The procedures that are used during the time that the patient is at hospital should be used also at home, following the protocol compiled by the specialist.

The sensibilisation of the patient may be achieved by making him conscious about his psycho-physic problem, his postural problem, his way of living, and also by changing for better his way of living being based on the advices taken from the team of his doctors.

Upper Extremity Musculoskeletal Disorders Among Computer Users

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Introduction:

The advent of the personal computer has focused our attention on work-related neck and upper limb disorders (WRNULD). The identification of factors that predict chronic disability may also shed light on why some workers develop chronic disability, and thus guide the development of intervention strategies that may prevent this process from occurring. The aim of this study is to investigate the prevalence of WRNULD in computer users and its relationship between hours of computer use and symptoms.

Methods:

The study group included 100 bank workers, who worked more than 6 hours per day for at least two years on video display unit and were recruited through convenience sampling. Sixty-five age and sex matched healthy subjects who work not more than 2 hours on computer keyboards for office work constituted the control group.

Results:

There were no significant differences between groups when age and sex of the participants were considered. The results suggest a high prevalence of musculoskeletal disorders of the upper extremities among intensive computer users. The differences were statistically significant except in neck range of motion and left cubital tunnel syndrome. As the time spent on video display unit increased, there is a tendency in occurrence of symptoms but only in carpal tunnel syndrome the relation is significant.

Discussion:

A large British national survey found that keyboard usage for more than 4 hr per day increased the risk of wrist/hand and shoulder symptoms, but not neck and elbow symptoms. The findings of our study is similar but we did not find any differences in neck range of motion and cubital tunnel syndrome but there was an increase in lateral epicondylitis in elbow. We only showed a significant association between carpal tunnel syndrome and cumulative hours of computer use.

Conclusions:

Intense keyboard usage increased the risk of upper extremity musculoskeletal symptoms. As the duration of job increased, the risk for carpal tunnel syndrome significantly increased. Further studies with the inclusion of a larger number of cases and potential risk factors would help clarify the role of variables in the aetiology of WRNULD.

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The Efficacy Of Cryotherapy On Postoperative Outcomes For The Rotator Cuff Repair Operation

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Introduction:

Cryotherapy is the use of cooling as a means of treating injuries, and may be used in different ways on both acute and chronic injuries. The use of cold for analgesia is a practice that dates to the time of Hippocrates in the 4th century BC. Ice was commonly used as a preoperative anesthetic agent in the Middle Ages. Although cryotherapy is in common use in the athletic training and rehabilitative environments to control pain and swelling after injury its use for control of pain after surgical procedures is not universally accepted. The purpose of this investigation was to evaluate the effectiveness of Cryotherapy in association with standard medical therapy (MT), versus MT alone in patients who have arthroscopic rotator cuff repair.

Materials and Methods:

Two patients were followed at the Rehabilitation Medicine Service of Tor Vergata General Hospital, affected by traumatic rotator cuff tear. After the clinical examination, an individualized rehabilitative project lasting two months was developed for each patient, it was divided for one patient into a daily motor programme, for the other into a daily motor programme and cryotherapy. The motor programme was performed in the first rehabilitative step in the rehabilitation pool.

Cryotherapy was delivered to the shoulder via a Cryo/Cuff ('Healthcare Shock', Zamar), the combined treatment of cold and heat therapy with a slight massage at adjustable intensity. We applied as assessment scales: the McGill Pain Questionnaire, Shoulder disability questionnaire and the Constant. We evaluated the patients at the beginning and at the end of the treatment.

Conclusion:

The analysis of data relative to the evaluation of the scales has shown that the patient who received the application of the cryotherapy had a faster recovering ROM and a better reducing pain and a better performance improvement on the normal activity of everyday life than the other patient.

Back Pain In Patients With Acute Stroke

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Aim of work:

To determine the frequency of back pain of patients with acute stroke.

Materials and Methods:

A total of 500 patients were observed (364 women and 136 men) treated at 'Saint Sava' Hospital in Belgrade. Average age was 64 ± 7 years. The study included patients that had never suffered from back pain (171 pts) or did not experience pain during the last year (329 pts). Pain intensity was subjectively described by the patients as weak, moderately strong and strong. All patients have had an early stroke rehabilitation began according to an individual program.

The rehabilitation program did not include methods for the LS spine nor the application of anti-rheumatics/analgetics. Upon release from hospital, an exercise program was created for the patients who included exercises for the back, protection positions were advised as well as the application of NSAIL. The patients were observed during hospital treatment (up to 14 days) and the following 3 months (2 control examinations).

Results:

Of the total of 500 back pain patients, 311 (62.2%) were filtered ad follows: for 92 patients experienced back pain for the first time and 219 patients had previous experience of back pain (repeated back pain). Slow intensity pain by 126 pts, moderate pain by 147 and strong pain by 38 patients were notified. After 14 days, the pain disappeared on 82 pts, weak pain was experienced by 172 pts, moderate pain by 49 and strong by 8 patients. After 6 weeks, the pain disappeared on 194 patients completely, while at III control after 3 months only 11 patients felt weak back pain continuously.

Discussion and Conclusion:

The appearance of back pain in stroke patients is mostly influenced by immobilization and also by a bad balance while sitting and standing. The pain disappears much faster on patients with quicker mobilization as well as a better balance in sitting and standing. More rapid disappearance of pain occurs on patients who experienced back pain for the first time in comparison with those who already had experienced back pain. Application of NSAIL does not importantly contribute to eliminating the pain.

Passive Stretching Of Skeletal Muscle Induced Muscle Growth Related Gene Expression.

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Introduction:

Recently, stretching have been considered to be a growth stimulation to skeletal muscle. We have reported the muscle growth effects of 1-4 hours passive stretching to the skeletal muscles. However, 1-4 hours are too long in clinical procedure. Then we studied the gene expression effects of passive stretching to skeletal muscle within clinically administratable procedure time.

Methods:

We used 28 Wistar rats aged 7 weeks. After deep anesthesia, one group were done with passive repetitive ankle dorsiflexion and plantar flexion with 15 times per minutes and another group were done with passive continuous ankle dorsiflexion to a stretching side of the rats . The procedure was done for 15 munetes a day and 4 times within a week. Then one week later, bilateral gastrocnemius muscles were removed and total RNA was extracted from the muscles.

Muscle of another side were remaind unstretching as a control and untreated animal also analyzed. Messenger RNA expression of myogenic transcription factors, Myogenin and MyoD, muscle component protein, myosin heavy chain (MHC), were analyzed with quantitative real time reverse transcription polymelase chain reaction methods.

Results:

The expression of Myogenin, MyoD, MHC mRNA were significantly increased compared with unstretched contralateral muscle and untreated control muscle on both repetitive and continuous stretched muscles. Additionally, MHC gene expression was significantly increased in repetitive stretched group compared with continuous stretched group.

Discussion:

The functions of Myogenin and MyoD are differentiation and proliferation of the muscle tissue and the function of MHC is to contract the muscle cells. Increased expression of these genes are suggested that passive stretching 15min a day induced activation of growth pathway on muscle tissues.

Conclusions:

Our results suggested that passive stretching activated the muscle growth pathways and promoted synthesis of the muscle proteins. These findings speculated that stretching may prevent a muscle atrophy on bed ridden or unconscious patients.

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Consequence Of Secondary Complications During The Acute Care And Rehabilitation Of Patients With Severe Brain Injury

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Introduction:

Recovery from brain injury is not only determined by the primary injury but a very important element is the development of secondary complications which have a major role determining the possibility of the achievement of available maximal functional abilities and the quality of life of the patients and their family after rehabilitation. This is why during medical treatment the prevention of secondary complications at least as important as the prevention of primary injury.

Aim:

Determination of the most important secondary complications after severe brain injury, and observation of these effects on the rehabilitation process.

Methods:

Retrospective study.

Results:

166 patients were treated with brain injury the mean age of the patients was 33 (8-83) years, in 2004. The majority of patients suffered traumatic brain injury in traffic accidents (125/166), while the rest of the patients suffered from falls, or acts of violence. Sixty four patients were admitted directly from an intensive care unit, 18 from a second hospital ward (traumatology, neurosurgery or neurology) and the rest of the patients were treated in several different units before they were admitted for rehabilitation. The time elapsed between the time of injury and the rehabilitation admission was 50 days (21 - 177).

At the time of admission 27 patients were in a vegetative state, 38 patients in a minimal conscious state, and 101 patients had already regained consciousness. 83 patients were hemiparetic, 54 presented tetra paresis, and 1 para paresis, but 2 patients were not paretic. The most frequent complications in patients with severe brain injury at admission in our rehabilitation unit were: contractures (47%), pressure sores (35%), respiratory (14%) and urinary tract infections (11%), malnutrition (20%). The functional outcome was worse in the cases arriving with secondary complications during the same rehabilitation period. The length of stay in the rehabilitation unit was much longer in these cases.

Conclusions:

We strongly suggest that actions to prevent secondary complications have to start at the acute care unit. After the acute care rehabilitation of patients with severe brain injury should be performed in specialised centers with multidisciplinary team for different functional deficits (physical-, cognitive-, communicational-, psycho-social impairments). Early and direct admission from neurointensive unit to the rehabilitation centrum seems to be optimal for best patient outcome, because this lowers the chance for the development of secondary complications.

Bone Mineral Density Of The Hip In Male Patients With Chronic Hemiplegia

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Background:

Hemiplegia is related with osteopenia of the paretic side and increased risk of fractures.

Aim:

to evaluate bone mineral density (BMD) in the paretic lower limb of male patients due to chronic hemiplegia.

Materials and Methods:

38 chronic hemiplegic men from cerebral vascular accident, mean age 64,4 years underwent hip BMD evaluation at the femoral neck and Ward's region of the paralysed limb using dual energy X-ray absorptiometry and compared to healthy age – matched subjects. The mean time of limited mobilization was 7,9 years.

Results:

The use of Student t test determined the statistically significant differences, when p values <0,05. BMD in the femoral neck of the paralysed limb was significantly lower compared to the controls, whereas BMD in Ward's region was lower, but not significantly different.

Hemiplegia	Controls	p values
BMD femoral neck 0,791	0,957	Reduction , p<0,05
BMD Ward	0,603	0,716
SSI 20%	400,1	402,7 reduction

Conclusion:

there is a higher risk of osteoporosis of the paralysed lower limb of male patients with chronic hemiplegia due to limited mobilization. The combination of increased incidence of falls and reduced bone density in the paretic limb may lead to increased fracture risks in chronic hemiplegic patients.

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Cortical And Trabecular Bone Density Of The Forearm In Multiple Sclerosis Men By Pqct

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Background: Multiple Sclerosis is related with motor disability during the long term course of the disease.

Aim: to determine trabecular and cortical bone mineral density separately in male patients with multiple sclerosis and compare these parameters to able-bodied age-matched subjects.

Materials and Methods: Sixteen male patients (mean age 50,6 years) with multiple sclerosis participated in this study. The mean time of their motor deficiency was 5,9 years but all of them were ambulatory. All patients had been given corticosteroids, but none of them osteoporosis therapy. Cortical bone density and stress-strain index (SSI) were measured at the 20% and trabecular bone density and stress-strain index (SSI) at the 4% of the length of the radius (using its distal epiphysis as anatomic landmark) by peripheral quantitative computed tomography (pQCT). The same measurements were performed in able-bodied age-matched subjects.

Results: The use of Student t test determined the statistically significant differences, when p values <0,05. Trabecular and cortical BMD and SSI values were as follows:

	MS (mean values) Controls	P values
pQCT BMD trab	160,6	205,5 Reduction, p<0,05
SSI 4%	289,5	330,7 reduction
pQCT BMD cort	1116,6	1128,8 reduction
SSI 20%	400,1	402,7 reduction

Conclusion: According to our findings, there was reduction in trabecular and cortical BMD of the radius in multiple sclerosis men, but only the trabecular bone loss was statistically significant compared to able-bodied controls.

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Relationship Of Bone Density And The Number Of Risk Factors For Osteoporosis

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Introduction:

A clinically important number of osteoporotic fractures may be related to lifestyle factors. The best way to address osteoporosis is prevention.

Purpose:

To find out the relationship between risk factors (RF) and bone mineral density (BMD).

Material and Method:

The study was conducted on 582 caucasian women from Banja Luka region, (age 33-81 mean age 57,6), free of medications affecting bones. The number of risk factors was collected by standardized questionnaires. BMD was measured at lumbar spine and left hip by DXA (Hologic QDR 4500), according to manufactures protocol and analyzed according to the WHO criterion. The accepted level of significance was sat at $p < 0,05$.

Results:

In total sample the low BMD was found in 88% (57% in the range of osteoporosis and 31% in osteopenia). The number of risk factors ranged from 1 to 6. In the group with only 1 (one) RF, low BMD was found in 58% (34% osteopenia 24% osteoporosis). In the group of 6 RF, 68% had osteoporosis and 32% osteopenia.

Conclusion:

This study identified consistent, inverse associations between BMD and the number of RF. The magnitude of these associations varied, with the strongest associations found for the six (6) RF. The number of RF is cost effective way to predict the risk of osteoporosis and proved useful as a selection criterion for DXA. Key wards: osteoporosis, bone mineral density, risk factors.

Application Of A 48-Channel Force/Torque Measurement Device For The Assessment Of Patients With Hemiparesis.

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INTRODUCTION:

A new assessment device was designed to assess patients with stroke objectively and predicting the functional recovery. The device is based on the thesis that precocity of motor reorganization in functional movement initiation is demonstrable far before a complete movement becomes possible.

METHODS:

The Alladin Diagnostic Device has explored the sensory motor reorganization nearly in 300 patients with stroke admitted to three hospitals (in Budapest, Dublin and Gent). Patients were monitored during 24 weeks. Sensors measure forces and torques (under isometric constraints) exerted by the patients during six different activities of daily living. The patients were also tested from clinical aspects.

EVALUATION:

The class posterior probability was applied which has the advantage taking explicitly both the normal controls and stroke patient into account. The class posterior probability is an easily interpretable measure, bounded by two extreme values: 1 as a measure for complete 'normality' and 0 as measure for complete 'disability'.

RESULTS:

The obtained posterior probability profiles resulted into a net classification of three groups: a fast and well recovering group, a slow but well recovering group and a group that did not show any significant improvement at all. The slow but good recovering patients start with a plateau phase and the time duration of this plateau is a marker for the final outcome. The longer the plateau, the slower the evolution once recovery starts, the less chance there is for full recovery. A patient with a quite short plateau has a very good outcome, but patient with longer plateau never reach the level of full recovery.

CONCLUSIONS:

This novel mechatronic device for objective measurement of patient recovery post-stroke provides the rehabilitation professionals to refine future decisions.

Bilateral Complex Regional Pain Syndrome: Case Report

I. Lopes¹, N. Figueiral, R. Almeida, G. Borges, M. Leite, J. I. HSJ

Complex regional pain syndrome (CRPS) may develop as a disproportionate consequence of a trauma affecting the limbs without nerve injury (CRPS I or reflex sympathetic dystrophy [RSD]) or with obvious nerve lesions (CRPS II or causalgia). RSD is a variable symptom complex that probably results from any number of multiple causes through different pathophysiologic mechanisms.

Limited information is available about the epidemiology of CRPS. Actual incidence is unknown, as CRPS is often misdiagnosed. RSD has significant morbidity, so raising awareness of this disease is important. Earlier recognition and appropriate referral is very important, especially in children. The typical clinical picture of CRPS consists of disproportionate extremity pain, swelling, and autonomic (sympathetic) and motor symptoms. The condition can affect the upper or lower extremities, but it is slightly more common in the upper extremities. Bilateral cases are rare.

No diagnostic criteria have been accepted uniformly for RSD, and no single special investigation has been proven sensitive and specific enough for diagnosing RSD. No criterion standard exists for making this clinical diagnosis, although some tests and findings may contribute to the diagnosis or help to diagnose or exclude other possible medical conditions. Physical therapy (PT), in association with occupational therapy (OT), plays an important role in functional restoration. The goal is to increase strength and flexibility gradually beginning with gentle gliding exercises. Recreational therapy can help the patient with chronic pain take part in pleasurable activities that help decrease pain.

Therapeutic strategies include pharmacologic pain relief, sympatholytic interventions, and rehabilitation. All treatments should focus primarily on functional restoration. Other treatments are available for more severe stages of RSD, such as sympathetic or somatic block, spinal cord stimulator (SCS), intrathecal infusion with baclofen pump, morphine pump or intrathecal bupivacaine infusion, sympathectomy, radiofrequency or cryoprobe lesioning and amputations.

The authors describe a clinical case of a patient with a bilateral CRPS, from diagnose to the therapeutic strategy used.

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Evaluation Of Physical Performance In Patients With Stroke Treated With Inpatient Rehabilitation

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Objective:

To determine the physical performance and motor gain in patients with stroke during inpatient rehabilitation program.

Patients and Methods:

Forty-three patients (women/men: 26/17, mean age: 60.3±11.1 years) with stroke were included. All of patients were given a convenient rehabilitation program. Brunnstrom motor stage and functional ambulation scale (FAS) were determined. Functional independence measurement (FIM) score, motor and total scores of Fugl Meyer Assessment Scale (FMAS) were calculated at admission and discharge. Physical performance was accepted as FMAS total score and consisted of upper and lower extremity total motor score and overall scores of balance, sensation, range of motion and pain. The gain in physical performance was measured as improvement in the ability to perform the Fugl Meyer Assessment Scale instrument.

Results:

88.4% of all patients had ischemic etiology. The duration of stroke was 64.9±66.8 days, and length of stay in hospital was 19.9±6.7 days. The motor and total FMAS scores of patients were 41.9±21.9 and 149.8±26.2 at admission and 55.3±23.6 and 169.7±27.8 at discharge. The motor gain and physical performance gain were 41.2% and 14%, respectively. In multiple linear regression analysis, the best predictor of motor gain was FMAS total motor score among length of stay in hospital, FIM total score and FMAS total motor score ($r^2=0.321$, $\beta=-0.849$, $p=0.000$).

Conclusion:

The effect of inpatient rehabilitation program was strong on the motor gain in patients with acute stroke, while weakly effective on physical performance recovery. It will be favourable to consider the other parametres.

Neurolysis By Transcutaneous Electrical Nerve Stimulation

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New method for functional recovery of upper limb in patients with ICV and TBI is exposed. This method was therapeutically applied at selective group of 30 patients, in chronic phase of treatment. All patients were with hemiplegic syndrome, with permanent motor deficiencies, especially hand.

Functional status of patients has been measured according to own clinical flow sheet and scale, after patients have been exposed to TENS/FES. Results fitted with clinical observations of benefit and showed significant negative correlation between application TENS/FES and spasticity and improvement in locomotion of paralysed arm.

There is evidence that these effects are permanent. Mathematical analysis undoubtedly proves (2 Way ANOVA) that program of TENS/FES enables functional progress in patients that reached plateau in recovery and support faster restoration function of hand and better self-care.

The Functional Disability Level In Patients With Stroke In Early Stage: The Relationship With Functional Gain

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Objective:

This study was designed to establish the determinants of functional disability level and to investigate the relationship between functional disability level at the baseline and functional gain in patients with stroke at early period.

Material and Methods:

Eighty patients who had their first stroke were enrolled in the study. Age, sex, location and type of the lesion were documented for each patient. The disease severity was assessed by the Canadian Neurological Scale. Functional disability levels of patients were determined by Functional Independence Measure (FIM) at the baseline and after a four weeks home exercise program. Functional gain was calculated by subtracting the baseline FIM scores from the control FIM scores.

Patients were divided into three groups according to baseline functional independence measure scores as patients with scores of ≤ 25 , scores of 37–72 and scores of ≥ 73 .

Results:

Significant improvement was observed in FIM scores of patients at the control examination (83.89 ± 33.98) compared to baseline (53.18 ± 29.31) ($p < 0.000$). The mean functional gains of cases were 30.7 ± 25.2 . It was observed that baseline FIM score was the best predictor of control FIM score. Baseline FIM score explained 48% of control FIM score [$\beta = 0.502$, $p = 0.001$, (95 % CI 0.223–0.781)]. Patients with scores of 37–72 according to baseline FIM scores had markedly higher functional gain scores (45.6 ± 23.1) than patients with scores of ≤ 25 (24.8 ± 25.5) or patients with score of ≥ 73 (16.7 ± 11.5) ($F = 13.5$, $p = 0.000$).

Conclusion:

In this study, it was determined that baseline FIM scores were the best predictor of functional disability, and also patients with moderate level of disability according to baseline FIM scores had higher functional gain. Patients with moderate level of FIM scores at the baseline should be admitted intensive rehabilitation programs, because these patients will provide higher benefit from the rehabilitation and could have higher functional gain.

Effectiveness Of Gait Training With Partial Body-Weight Support In Subacute Stroke: A Randomized Controlled Trial

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Introduction:

More than half of people with stroke in the acute phase are not able to walk, and walking impairments are still present 3 months later. In recent studies it was shown that gait training after stroke is effective. Our aim is to search therapeutic effects of gait training with partial body-weight support in subacute stroke patients.

Subjects and Methods:

15 patients who have subacute stroke (after stroke onset<6 weeks) were recruited. Participants were randomly assigned to 2 groups, 7 subject partial body-weight support (BWS) and 8 subject conventional gait training (CGT) group. BWS group received gait training 30 minutes every weekday for 4 weeks. In addition, all participants received their 40-minute sessions of regular physical therapy every weekday as a part of their treatment by the hospital.

Patients assessed in the beginning, at the end and after 3 months of the therapy. Functional Ambulatory Category (FAC), Rivermead Motor Assessment Score, Berg Balance Scale, Motricity Index Leg Subscale, Gait Parameters: six-minute walk test(6 MWT),10-m walking time, Cadence(steps/min), Step Length (right-left), Stride Length(right-left), base of support, Step Length Ratio (right-left), FIM Instrument Score, Bartel Index , Brunnstrom's Stage values and surface EMG potentials measurements were made.

Results:

The BWS grup had statistically significantly more improvement than the CGT group in FAC (P=0,001), Rivermead Motor Assessment (gross function and leg/trunk sections) (P=0,001-P=0,018), Berg Balance Scale (P=0,013), Motricity Index (P=0,005), 6 MWT (P=0,014), Cadence (P=0,048), Step Length Ratio (P=0,037), FIM Instrument Score (P=0,008),Bartel Index (P=0,04), Brunnstrom's Stage (P=0,027), Surface EMG: tibialis anterior (P=0,005), gastrekneimius (P=0,008), medial hamstring (P=0,049), vatus lareralis (P=0,048) after the training and in Berg Balance Scale (P=0,021),FAC (P=0,046) surface EMG: tibialis anterior (P=0,008), medial hamstring (P=0,008) after 3 months at the end of the therapy.

Conclusions:

At the end of the treatment, patients in BWS group were better mobilized and their functional walking and surface EMG potentials measurements was improved better. Our study is still going on.

Results Of Interdisciplinary Team Approach In Rehabilitation Of A Patient With Ruptured Posterior Inferior Cerebellar Artery Aneurysm (Pica)

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BACKGROUND AND PURPOSE:

case report of a 35-year old patient with ruptured PICA aneurysm. Postoperatively, she developed obstructive hydrocephalus, meningitis and ventilatory insufficiency. Ventriculoperitoneostomy, tracheostomy and gastrostomy were performed.

MATERIALS AND METHODS:

Neurological findings included tetraparesis, truncal ataxia, paresis of cranial nerves, dysphagia and aphonia. Cognitive impairment presented with signs of mental confusion. Functional limitations were of the utmost level- Barthel Index 0. Early rehabilitation was initiated. Interdisciplinary team (physiatrist, other medical specialists, therapists, nurses, speech therapist, phonologist, otorhinolaryngologist, psychologist) supervised the treatment. We used special care measures and combinations of range-of-motion and muscle-strengthening exercises, mobilization activities, neurophysiological therapies (reeducation technique by Brunnstrom, Bobath and Kabat) and various speech therapy treatment procedures.

Course of treatment was complicated with orthostatic hypotension, tachycardia, respiratory and urinary infection, neurogenic bladder, spasticity, pressure sores, anemia, dehydration and malnutrition. After six months of treatment patient was able to walk using walker. Indirect laryngoscopy found both hemi larynges to be mobile. Patient's voice was clear and tracheal tube extracted. Oral intake of food started. She was functioning adequately in activities of daily living. Barthel Index 45. Psychological testing showed mental functioning improvement.

DISCUSSION:

Aneurysms of the PICA account for only 0,49-3% of all intracranial aneurysms. Lanzino and associates reported their results with a protocol for delayed surgery (after day 7): 87% of patients had excellent or good surgical outcome, surgical mortality was 8%. However, additional 41% died under delayed treatment protocol before reaching surgery. Hernesniemi and colleagues reported outcome at one year in the late surgery group as follows: 59.3% good recovery, 11.1% moderate disability, 7.4% severe disability, and 22.2% dead.

CONCLUSION:

Outcomes and complications in survivors are multiple and complex. It is only the interdisciplinary team work that's able to produce satisfying rehabilitation results.

Experiences With The Use Of The Bobath Concept In Physiotherapy Of Patients After Brain Injury

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Department of Rehabilitation Medicine makes use of Bobath Concept since 1995.

Department of Rehabilitation Medicine was the first clinic in Czech Republic that introduced the Bobath Concept into the practice of both physiotherapists and occupational therapists.

Patients after BI suffer from various neurological problems. This presentation aims to focus on two of those problems: the increased muscular tonus in the sense of spasticity and ataxia that complicate significantly the therapy.

Part of this presentation is a video showing how the Bobath Concept can influence the spasticity and ataxia.

Algodystrophy After Craniotomy - Presentation Of Two Female Patients

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Algodystrophy is a syndrome which describes a complex form of neuropathic pain associated with hyperpathia neurovascular instability neuroinflammation and limbic system dysfunction. It has a long list of etiologies including trauma (usually minor).

It is triggered by stimulation of neurovascular thermoreceptor c-fibres sensitized to norepinephrine. It involves extremities, head, back, breast, as well as viscera. The disease affects young et old as well, it is not diagnosed in time, usually. There are a few synonyms for this syndrome: reflex sympathetic dystrophy (RSD), trophoneurosis, traumatic angiospasm, traumatic vasospasm, post-traumatic osteoporosis, Sudeck's atrophy, causalgia.

The latest terminology is complex regional pain syndrome (CRPS) which is a more descriptive and inclusive terminology. We present two female patients of the same age with removed meningeoma and administered Phenobarbiton therapy. Three months in the first case and four months in the other, after craniotomy both patients had pain, swelling and stiffness in both hands with gradual development of shoulder –hand syndrome.

Clinical examination, laboratory findings and X-ray images eliminated inflammatory rheumatic condition in both patients. Among numerous pathological states that may develop CRPS syndrome it is essential consider brain tumour craniotomy with administered barbiturate therapy as one of the possible causes.

Rehabilitation By Electrostimulation To The Hemiparesis Patients

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Intorduction:

It is known that neurological disability appear after an ischemic stroke. This imposed a supplementary attention to find new techniques for an earlier rehabilitation. One of this is electro stimulation with rectangular electric current for flabby muscle.

Aim:

We proposed in this study to evidence the roll of electro stimulation to the flabby muscle at patient with recent ischemic stroke using rectangular electric current which is followed by an isotonic contraction with isometric end.

Material and Method:

There were taken into the study 63 patients with ischemic stroke that happened at most 3 weeks earlier. All the patients included in the study had a flabby hemiplegia. The patient were divided in two groups: group A (42 patients) that received electro stimulation for superior limb, using rectangular electrical current for five minutes three days, and then with five minutes more at three days until for 20 minutes, and the motion obtained is a correct one and a group B (21 patients) , where electro stimulation was not applied. Both groups received the rest of the rehabilitation techniques, including the passive kinetotherapy. The program lasted for 15 days for both groups.

Results:

it was observed that group A had an active motion of the superior limb at an average of 6.5 days from the beginning of the electro stimulation, while group B had an active motion at an average of 12.6 days from the beginning of the treatment. From the 42 patients in group A, 38 had an active motion, when group B only 5 patients.

Conclusions:

The electro stimulation has an important role in the earlier rehabilitation of the superior limb process, being one of the techniques that initiate the active move of the superior limb at the patients with ischemic stroke.

The Therapeutical Effects Of Extra Low Frequency Pulsating Electromagnetic Field And Soft Laser On Patients With Multiple Sclerosis

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MS is an inflammatory disease of the CNS that is characterised by areas of demyelination and by dissemination in time and space, resulting in complexes of symptoms and signs that include functional and cognitive impairments, alteration of emotional response etc. The aim of this paper is to find the methodology of managing MS patients in order to minimize losses (level of disability) and to maximize function (independence), and if it is possible to extend the period of remission.

The biological effects of LFPEMF are well known and due to the synergic effects of soft laser, we decided to use combined therapy. In order to achieve the desired goal in this clinical study we had chosen two groups of patients. All of them were treated by standard procedures, and the experimental group was treated by LFPEMF and soft laser as an additional therapy.

The following parameters were observed: functional recovery, neurological recovery, gait control, speech disturbance etc. In the proceeding of data we used certain test such as FIM, Ashworth scale of spasticity, motor-pattern test etc. All data was statistically analyzed in order to quantify the effects of the treatment.

After evaluating the treatment results we noticed a statistical difference in favour of the experimental group, concerning most of the parameters. Favourable biological effects of physical/rehabilitational procedures can be seen in the velocity of patient recovery and in the completeness of the same, with a single goal- best possible quality of life.

Dynamic Changes In The Recovery After Traumatic Brain Injury In Mice: Effect Of Injury Severity On T2-Weighted Mri And Functional Recovery

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Memory and neurobehavioral dysfunctions typically occur after human and experimental traumatic brain injury.

A Neurological Severity Score (NSS, range 0-10) was developed for evaluation of trauma severity in mice. The object recognition task (ORT) measures specific episodic memory in rodents, and is expressed by the percent time spent at a novel object (Discrimination index, DI). The present study describes the effect of injury severity on the spontaneous recovery of neurobehavioral and cognitive outcome after severe and mild focal trauma in mice.

Mice were subjected to closed head injury (NSS at 1h post injury of 7.52 ± 0.34 and 4.62 ± 0.14 , respectively) and NSS was further evaluated during 25d. NSS decreased by 3.86 ± 0.26 and 2.54 ± 0.35 units in the severe and mild injured mice, respectively.

ORT was performed between days 3 and 28 after trauma. Whereas DI in non-injured mice is ~75%, $51.7 \pm 6.15\%$ on 3rd day and $66.2 \pm 6.81\%$ severely injured animals show DI of $51.7 \pm 6.15\%$ and $66.2 \pm 6.81\%$ at days 3 and 21 after trauma, indicating inability to distinguish between familiar and novel objects. In contrast, mildly injured mice do not show cognitive impairment throughout the same period. NSS_{1h} strongly correlated with the damage seen on MRI 24h post injury ($R=0.8$, $p<0.001$).

We suggest that NSS is a reliable tool for in-vivo continuous evaluation of neurological damage in head-injured mice, and its value at 1h predicts the extent of motor dysfunction, cognitive damage and brain water characteristics as depicted by T2-weighted MRI.

Combined assessment of neurobehavioral and cognitive functions along with MRI is most useful in evaluating recovery from injury, and was successfully applied in testing of novel pharmacological treatments.

Familial Amyloidotic Polyneuropathy: Feet Care

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Introduction:

Familial Amyloidotic Polyneuropathy (FAP), first described in Portugal by Corino de Andrade (1952), is known as “Doença dos pezinhos” (meaning “little feet disease”). FAP is an autosomal dominant progressive disorder characterized by systemic extracellular deposition of amyloid fibrils throughout the connective tissue, affecting particularly the peripheral nervous system. Loss of ability to feel pain, heat, and cold, starts with symmetrically feet involvement, in almost all FAP patients. It is accompanied with loss of sensation (numbness) and dysesthesia. As is common in peripheral neuropathy, damage to the feet can go undetected and lead to serious complications, mainly neurotrophic, such as trophic ulcers and possibly even amputation.

Neuropathy can also cause deformities such as Bunions, Hammer toes, and Charcot feet. It is important for FAP patients to treat their feet properly to avoid any future problems. Footwear and foot orthotics play an important role. Numerous patients use orthotics and have improved foot function as a result of wearing them.

Generally, the treatment for peripheral neuropathy is unsatisfactory and often only symptomatic relief is available. Some of these include transcutaneous electrical nerve stimulation, acupuncture and biofeedback. It is best to protect the feet with good fitting footwear and the feet should be inspected daily for damage. Aim Present different strategies for feet care in FAP patients, as feet are almost always the first body segment affected, naming the Portuguese form as “Doença dos pezinhos”. As in other neuropathies such as diabetic, the foot care is well studied and systematized, we propose the same approachment for FAP, which is a rare and severe disorder, with higher prevalence in Portugal.

Patients and Methods:

Literature review. Results Careful feet observation and adequate approach result in preventing sequelae, or sometimes, depending on disease progression, result in stabilizing the deficits already acquired. Conclusion Systematic careful feet observation must be performed in all FAP patients in order to determine their early changes. Only this way, we can act as early as possible, preventing the possible sequelae and providing the maintenance of function and quality of life of FAP patients.

Familial Amyloidotic Polyneuropathy – An Atypical Case-Report

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Familial amyloidotic polyneuropathy (FAP) is a systemic amyloid disease characterized by the extracellular deposition of transthyretin in several tissues, particularly in the peripheral nervous system. The main clinical symptom is a progressive polyneuropathy affecting both the peripheral and the autonomic nervous systems.

In Portuguese- type FAP, substitution of methionine for valine at position 30 occurs. This disorder was first described by Corino de Andrade in 1952. The authors describe a case of a 35 years old male, with familial history of FAP, and a positive genetic mutation of TTR Met30. He was asymptomatic until 1988, when he first started to show the clinical symptoms of spastic paraplegia. The patient's initial complaints, at age 15, were mild difficulty in walking and in climbing stairs.

The onset of the symptoms were insidious, becoming progressively more severe with asymmetrical lower extremity spasticity and weakness, hyperreflexia, extensor plantar responses, and mildly impaired vibratory sensation in the distal lower extremities. Urinary urgency since 2000. The investigation exams were inconclusive. The symptoms classically associated to FAP were first reported in 2005, characterized by dissociated anesthesia in the lower extremities, disturbance of GI tract motility (diarrhoea) and weight loss.

The patient undergone PM implantation in September/2007, and orthotopic liver transplantation (OLT) in February/2008. Before the OLT, the patient presented significant global muscle atrophy and weakness of the lower extremities, orthostatic hypotension, significant gait disturbance and moderate functional impairment in the DLA. At our first observation (March/08), the patient was deambulating with a walker, showing knee instability, increased muscle tone, weakness of the lower extremities (mainly, distal paresis of the right lower limb), and continuous bladder catheterization.

The patient was proposed for a specific rehabilitation program treatment for FAP patients carried out in our PRM department, bladder function evaluation, and it was prescribed an AFO. The aim of this case report is to expose to the medical community this extremely rare case evolution, and the proposed rehabilitation treatment strategies.

PSD And Functional Outcome

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To improve the effectiveness of rehabilitation treatments we have to know possible interfering factors of rehabilitation. Depression is the most frequent mood disorder after CVI, so we presumed that post-stroke depression has a significant role in process and outcome of rehabilitation programme.

We prospectively studied 36 patients with single, unilateral stroke at 1-3 months after the onset of stroke. Sample was chosen by accident from population of patients from Special hospital for neurological diseases and posttraumatic conditions, St. Slankamen, in period may-august 2003.

Patients with previous CVI, a markedly decreased level of consciousness, as well as patients with deteriorated cognitive functions, with previous psychiatric illnesses or CNS disorders were excluded. Also, a criterion was unchanged affective status during period between first and second evaluation. So, there were 36 patients who were eligible.

Patients were evaluated on admission with clinical interview by physician and psychologist, the Mini Mental State Examination, the Beck Depression Inventory, the Hamilton Depression Rating Scale, the NIH-NINDS Scale of Stroke, the Rankin Scale of Disablement, in coming and before they left hospital. In meantime them all have had standardized rehabilitation treatments. Sample subjects were distributed in two groups: control formed by no depressed patients and experimental by depressed.

There were no significant differences between groups with regard to rehabilitation parameters, sex, age, education, risk-factors: nicotine, alcohol, hypertension, diabetes, coronary heart disease.

Comparing groups inter and interior, with proper statistic analysis, we found that both of groups are getting improvement by rehabilitation treatments, but that level of functional recovery is statistically significantly higher in control group.

Our results point out that patients with PSD have a poorer prognosis and lower rates of functional recovery than patients who do are not depressed. There is a necessity of early detection, identification and treatment of PSD.

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Effect Of Neurophysiologic Improvement On Functional Status, Quality Of Life And Depression Among Hemiplegic Patients

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Purpose:

To evaluate of the effect of neurophysiologic improvement on functional parameters, quality of life and the psychological status of hemiplegic patients.

Method:

Study included 33 hemiplegic patients without aphasia or an accompanying neurologic disease that were between the 3rd and 6th month after stroke and did not receive any rehabilitation. Neurophysiologic improvement was evaluated by Brunnstrom staging, functional status was evaluated by Functional Independence Measurement (FIM), Rivermead (Riv) and Functional Ambulation Score (FAS), quality of life was evaluated by Short Form-36 (SF-36), psychological status was evaluated by Back Depression Scale (BDS) both before and after rehabilitation program.

Results:

All of the parameters evaluated showed significant improvement after rehabilitation ($p < 0.05$). Improvement of Hand Brunnstrom score was correlated with the improvement of FAS ($p < 0.05$), Riv. Gross ($p < 0.05$), Riv. Arm ($p < 0.01$) and FIM mobility ($p < 0.01$) scores. Improvement of lower extremity Brunnstrom scores was solely correlated with alterations in Riv. leg-trunk scores ($p < 0.05$). Changes in the motor function instruments of Riv. arm ($p < 0.01$) and Riv. gross ($p < 0.05$) were correlated with improvement in the Physical Functions parameter of SF-36, and changes in Riv. leg-trunk ($p = 0.01$) and lower extremity Brunnstrom ($p < 0.01$) were correlated with general health perception (GHP) parameter of SF-36. Although BDS showed significant improvement in all patients after treatment, it was correlated only with the changes in Riv. leg-trunk ($p < 0.05$) and SF36-GHP ($p < 0.01$).

Conclusion:

Improvement of Hand Brunnstrom scores also provides recovery in most of the motor functions but has limited effect on the lower extremity Brunnstrom scores. It may be concluded that the effect of improvement of motor functions by rehabilitation on quality of life and the effect of these both on the mood is not straight and immediate.

Community Based Rehabilitation After Stroke

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Background and Purpose:

Stroke is the most common nervous system-related cause of physical disability. Of the people who survive a stroke, 15% to 30% will have a permanent disability. Stroke disability may persist for life and limits independence and quality of life. The increasing number of people surviving increased need for programs to enhance their recovery, improve functional status, and optimize quality of life. A major component of stroke management is aimed at facilitating functional independence and community reintegration. It would be logical that the sooner the patient can be returned home following stroke, the sooner reintegration can commence. But discharge home without support services is not feasible or safe. A strong support network of family is very important too.

The aim of this study was to evaluate the one year outcome of a multidisciplinary home-based rehabilitation program for stroke patients.

Methods: This study included 634 stroke patients who admitted from hospitals in the years 2004-2007. This patients randomized to either the home intervention group (n=284) or the usual care group (n=350). The home group received a one year tailor-made home program of rehabilitation. Before randomization, three, six month and one year after stroke onset the patients were assessed by physician with Barthel-Index(BI), Functional Independence Measure(FIM) and Hamilton Anxiety and Depression Scale(HADS).

Results:

There was no difference between the 2 groups on average age or on gender. The home group showed more improvement in the first 6 months than usual care group ($p < 0,05$), although 12% of patients show continued measurable improvement to one year postonset.

Conclusion:

The effects of the home-based rehabilitation programme showed an increased quality of life. As an integral member of the rehabilitation team the family education and support is very important.

Stroke patients often heal faster in comfortable, familiar surroundings. Rehabilitation at home gives people the advantage of practicing skills and developing compensatory strategies in the context of their own living environment. They can recover the most in the first weeks or month after stroke but it can also happen a bit later.

Voice And Choral Singing Treatment For Parkinson'S Disease Patients

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Introduction:

At least 75% of Parkinson disease (PD) patients have voice and speech abnormalities related to their disease. The voice abnormalities have been attributed to inadequate vocal fold adduction, reduced laryngeal muscles activation or synergy, asymmetric vocal fold tension or movements, stiffness or rigidity of the vocal folds, and or respiratory muscles.

We proposed a new voice rehabilitation program for PD patients based on voice treatment and choral singing (VCST). The speech and choral activity are directed by a speech therapist expert in PD and choral singing.

Subjects and Methods:

To evaluate the effects of VCST, from October 2003 to February 2004, we carried out a pilot test-retest non-controlled study with 20 PD patients that voluntarily took part to our speech rehabilitation treatment. Patients underwent 20 hours of speech therapy, 2 sessions of 1 hour every week, and 26 hours of choral singing, 1 session of 2 hours every week.

The pre- and post-treatment assessment included neurological and otorhinolaryngological evaluation, auditory quality of voice analysis, respiratory function evaluation, that were carried out within two weeks before and after VCST. Results Our study display an improvement of the following variables: \hat{n} maximum inspiratory pressure (MIP) \hat{n} maximum expiratory pressure (MEP) \hat{n} maximum duration of sustained vowel phonation \hat{n} quality of prosodia reading a passage \hat{n} presence of fatigue reading a passage, No significant difference was found in prosodia and fatigue during conversational monologue.

Discussion and Conclusions:

Our voice and speech rehabilitation treatment (VCST) for PD patients can improve specific abnormalities with an amusing, agreeable, collective approach. Our results are interesting but, to find evidence of efficacy, we need a Randomized Clinical Trial to compare VCST with an other voice and speech therapy for PD (i.e. LSVT®).

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Churg Strauss Syndrome – A Case Report

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Churg-Strauss syndrome (CSS), or allergic granulomatous angiitis, is a rare syndrome that affects small- to medium-sized arteries and veins.

Causes of CSS are unknown and possibly it is an allergic or autoimmune reaction to an environmental agent or drug. It has an incidence of approximately 2.5 cases per 100,000 adults per year, males being affected slightly more frequently than females. The age at onset varies from 15-70 years, with a mean of approximately 38 years.

The most prominent symptoms and signs are those related to pulmonary, cardiac, dermatologic, renal, and peripheral nerve involvement. Peripheral neuropathy, usually mononeuritis multiplex, is the most frequent form, occurring in as many as 77% of patients. Glucocorticoids alone are usually adequate for the treatment of Churg-Strauss syndrome.

Overall, without treatment, the 5-year survival rate is about 25%, but with treatment, the 1-year survival rate is 90% and the 5-year survival rate is 62%.

The authors present a case of a 45 year old male, admitted as an inpatient in our hospital in February 2007 due to pneumonia, dysphonia and polyneuropathy (with motor and distal predominance). Functionally, due to the motor and sensitive involvement, the patient had difficulties in Daily Living Activities, being totally dependent for care, with Functional Independence Measure (FIM) 50/126.

The results of the etiologic study (including renal, nerve, muscle and skin biopsy) were compatible with a Churg-Strauss vasculitis. There was a good response to the corticosteroid and cyclophosphamide treatment, with gradual but slow improvement of motor and sensitive deficits.

He started a rehabilitation program in our Occupational and Physical Therapy Departments, with a significative improvement in his functional capacities, corresponding to a FIM of 84/126 in the last evaluation in April 2008.

Neurogenic Bladder Pos Meningitis In A Young Women With Previous Urinary Incontinence – Case Report.

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Abstract:

CCJS, female, 34 years-old. Urinary incontinence background (in the past 3 years), with no response to oral medication and several urinary tract infections as complication.

Admitted to Hospital de São Marcos – Braga, Portugal, in 31/01/2008, for meningitis.

There was no isolation of a causal agent. The disease responded to antituberculostatics.

Urodynamics revealed weak sphincters and hyperreflexic bladder.

Was treated with anticholinergic drugs, tricyclic antidepressives, and physiatric treatment - electric stimulation of the pelvic floor with a vaginal with a vaginal stimulation sensor.

The patient clinical condition improved.

Conclusion:

Concerning this case, the physiatric treatment had a determinant role in the improvement of the clinical condition.

Rehabilitation Of A Blind Female Suffering A Post Natal Cva: A Case Report

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In this case report we will present the rehabilitation process of a 43 year old blind female (blind since the age of 27) suffering a post natal CVA. Over 12% of perinatal maternal mortality is due to CVA.

In one of 6000 births occurs maternal CVA: 11% pre natal, 41% perinatal, 4% post natal. Our patient underwent a Cesarean Section and four days later had a CVA.

On admission she was fully dependent in ADL, suffered from complete left hemiplegia, left anesthesia, no sense of joint position in upper and lower left limbs, neglect and a severe attention deficit.

The patient received intensive treatment for 5 months. The treatment was multidisciplinary and included individual physical therapy, hydrotherapy, stationary cycling, daily standing on a tilt table, sensory stimulation, vestibular treatment, a daily exercise program conducted by her family and occupational therapy.

On discharge she was able to ascend and descend 25 stairs using a rail and under supervision, independent ambulation within her house and with minimal assistance outdoors.

This case report enhances firstly the complex issues regarding treating a blind patient with severe sensory and attention deficits.

Secondly there are the emotional aspects of treating a woman soon after birth and the crucial impact of family support upon functional outcome.

This case report will be accompanied by short videos demonstrating the patient.

Improvement In Activities Of Daily Living (Adl) In Ischaemic Stroke Patients Younger Or Older Than 65 Years

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Introduction:

To compare duration of occupational therapy (OT) and followed-up functional outcome in group of ischaemic stroke (IS) patients younger or older than 65 years.

Methods: Patients: IS patients who were consecutively included into OT within early hospital stay were contacted at three months after stroke. There were 24 with R-hemiplegia, 26 with L-hemiplegia 31 males, 19 females.

Assessment tools:

Assessment of Motor and Process Skills (AMPS) (1). It is an observational assessment providing information about the quality (effort, efficiency, safety, independence) of ADL motor and ADL process skills while a patient performing a meaningful task. It has no ceiling or floor effect. Procedure: AMPS was done during OT intervention and at follow up. AMPS software and SPSS were used for analysis.

Results:

There were 25 IS patients younger than 65 years (mean 55 yrs, range 39-65) and 25 were older than 65 yrs (mean 73 yrs, range 67-81). Mean duration of OT in younger group was 15 days (range 4-54) mean duration of OT in older group was 8 days (range 2-28).

This difference was statistically important ($p < 0,007$). During hospital stay in younger group mean AMPS-motor score was -0,18 (range -2,5 - +1,7) mean AMPS-process score was 0,18 (range -1,06 - 1,24). Mean AMPS-motor score during hospital stay in older group was -0,20 (range -2,7 - +1,5) mean AMPS-process score during hospital stay was 0,15 (range -1,0 - 1,3).

After month 3 was mean AMPS-motor score in younger group 0,18 (range -1,06 - 1,24) mean AMPS-process score was 0,47 (range -0,77 - +1,4). Mean AMPS-motor score in older group was -0,21 (range -2,1 - +1,5) mean AMPS-process score was 0,42 (range -0,60 - 1,38). Differences in AMPS - motor and AMPS - process skills correlated in both groups ($r = 0,6 - 0,7$). These correlations were at $p < 0,05$. However, there were no statistically important differences among groups in initial or follow-up assessment ($p = 0,28 - p = 0,67$).

Discussion/Conclusion:

The quality of ADL performance from early hospital stay to discharge, as measured with AMPS, has improved. However, there were no statistically important changes among groups at month three, although the younger group received more occupational therapy during early hospital stay.

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Can A Sting By The Great Weaver Fish (*Trachinus Draco*) Elicit Chronic Pain? - A Case Report

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Introduction:

A sting by the greater weaver usually elicits excruciating pain (1). Chronic pain was recognised as a consequence of a toxic event. It was described twice. The aim of our study was to determine the thermal specific and thermal pain perception abnormalities in a 54-year-old recreational fisher. The nature of pain were not mentioned previously. The appropriate diagnostic tool was not identified.

Methods and Subjects:

The Marstock method was used. For the assessment of thermal specific and thermal pain sensibility a MEDOC (Medoc Ltd., Ramat Yishai, Israel) apparatus was used. Normative values were assessed previously (3). A 54-year-old recreational fisher was in Dalmatia stung in his right hand by a Great Weaver fish. Within a few seconds he developed excruciating pain sensation. The treatment in hospital in Split reduced the severity of the symptoms. Four years after the accident, the patient still suffered from a dysfunction of the right hand as well as extreme fatigue and pain complaints.

Results:

Clinical symptoms were characteristic for *Trachinus Draco* toxin. Four years later abnormal sensitivity was confirmed by thermotest. Abnormalities were found on all examined sites. Qualitative alterations were most prominent, quantitative were also very indicative.

Discussion:

Injuries caused by weaver fish (*Trachinus* spp) are probably more ubiquitous than reported. Such injuries are extremely painful and require prompt treatment (1). The pain responds partly to the application of warm water, and usually necessitated systemic opiates for adequate control. Acute pain after bite activates nociceptive system. Our patient indicated prolonged, slow recovery of the local inflammatory reaction and development of chronic neuropathic pain (4).

Conclusion:

A sting by the greater weaver can elicit chronic pain and fatigue. It can extremely impair the patient. Neuropathic pain can be caused by immune events. Psychophysical examination confirms clinically stated abnormalities. The assessment of thermal specific and thermal pain sensitivity enables appropriate diagnoses.

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Small-Fibre Painful Sensory Neuropathy

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Introduction:

Peripheral neuropathy is a common neurological disorder. Small-fibre painful sensory neuropathy represents its most common type in patients older than 50 years of age. It is vastly underrecognized, and in most cases, no cause can be found (1). The goal of this study was to perform neurophysiological evaluation of positive sensory phenomena in a large group of patients complaining of intolerable burning pain...

Methods and Subjects:

The thermal specific and thermal pain perception thresholds were assessed by the Marstock method (2) on TSA 2001 Thermal Sensory Analyser (Medoc Ltd, Ramat Yishai Israel) was applied. Sixty-eight elderly patients, 46 women (29 - 78 years, 73.9 ± 7.1) and 22 men (36 to 88 years, mean 72.1 ± 5.5) are attending our out-patient clinic in the last 24 months. Normal nerve conduction were exclusion criterion.

Results:

In all patients thermal specific and thermal pain sensitivity determination showed remarkable quantitative and/or qualitative and/or spatial and/or temporal abnormalities, evaluated according to normative values determined in our laboratory (3).

Discussion:

Our patients complained of severe pain lasting many years, disturbing their normal daily life and cannot be ruled out by electrodiagnostic examination. However, preponderance of small nerve fibres was determined, as the ratio was found to be 3 or 4 to 1 (4, 5). Impairment of thermal specific and thermal pain sensation indicated the involvement of the thinnest somatic myelinated (A-delta) and unmyelinated (C) nerve fibres.

Conclusion:

Patients complaining of severe neuropathic pain lasting many years and disturbing their normal daily life were found to have small nerve function alterations. Alteration of thermal specific and thermal pain sensation indicated C and A-delta fibres impairment and this can explain the wide spectrum of altered sensation of cold, warmth, cold and heat pain.

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Psychophysical Assessment Of Sensibility

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Introduction:

Disturbances in sensitivity are at least as frequent as disturbances in mobility they frequently occur earlier, yet are less evident and more difficult precisely to assess. For clinical evaluation of sensibility some simple, fast and non-invasive but inaccurate and unspecific tests are available. Psychophysical examinations are a precise, sensitive and repeatable indicator of the functioning of the somatosensory system (1, 2). Some of them were tested.

Methods and Subjects:

The Marstock method and the von Frey hairs, the vibrometer, the algometer, and the thermotest were used. MEDOC (Israel) and SOMEDIC (Sweden) apparatuses were used. Normative values were assessed previously (3). Eight thousand body parts in 300 subjects, 100 healthy and 200 patients, were surveyed.

Results:

Psychophysical evaluation of nerve fibre function disclosed quantitatively, qualitatively, timely and spatially altered somatosensations, mostly reflected in abnormalities of sensations, caused by changes in the thresholds for excitation or aberrant impulse generation.

Discussion:

Disorders of small or large nerve fibres and/or neural pathways and/or centres produce specific symptoms and signs, and indicate the neural basis of dysfunctions (4). Assessment of perception thresholds depends on the preserved sensorium and subject's motivation and cooperation, and may give important information about their integrity (1 - 4).

Conclusion:

Psychophysical assessment of the thresholds is an easy, quick and exact, though subjective method for investigation of the nerve fibres. The status of somatosensory system from cutaneous receptor to mind, without precise localisation of their possible dysfunctions, is investigated. Changes are nerve type, location of nerve injury and disease stage specific.

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Transcutaneous Electrical Nerve Stimulation And Thermal Sensory Analysis

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Introduction:

Transcutaneous electrical nerve stimulation (TENS) is noninvasive, inexpensive, safe, easy to use, and one of the optimal forms of effective pain therapy with minimal or no side-effects. It is used to treat any localised pain of somatic or neurogenic origin. Different disease states are increasingly more commonly treated by TENS (1,2). In our study, the effect of TENS on the nervous system was established.

Methods and Subjects:

The moistened electrodes were placed at dorsal part of the left forearm for different times. The frequency was 100 Hz. Pulse-width was 0.2 ms. Temperature and pain perception thresholds were assessed by quantitative psychophysical test. The Marstock method (3,4) on a TSA 2001 Thermal Sensory Analyser (Medoc Ltd, Israel) was applied. The thermal specific and thermal pain thresholds at the stimulated region and at the distant regions were observed. Fifty-five pain patients, 39.W (66-89 y.) and 16.M (66-88 y.) were enrolled

Results:

Thresholds determined showed remarkable quantitative and/or qualitative and/or spatial and/or temporal abnormalities, evaluated according to our previously published normative values (3). Thresholds were assessed before and during TENS. In all subjects thresholds were higher during and after stimulation at the place of stimulation and at distant places. Thresholds remained higher weeks after stimulation. Later they diminish (study is on the way).

Discussion:

Higher thresholds during and after stimulation are explained by the gate theory. TENS probably activates segmental inhibitory circuits. They are supplemented by descending inhibitory pathways (2). A cumulative effect of TENS was observed (1), it is better if stimulation lasts longer (2). TENS induced analgesia lasts 5 to 6 months. The reasons for the different success of pain relief in different patients most probably reflect the nature of pain and the degree of peripheral stimulation achieved.

Conclusion TENS influences the perception thresholds from the beginning of stimulation. If stimulation builds up longer, the degree of pain relief is greater and lasts longer. Stimulation should to be persevered.

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The Use Of Botulinum Toxin In The Rehabilitation Of Traumatic Brain Injury (T.B.I) Patients

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T.B.I is a leading cause of death and severe disability among young patients. AIM of our study was to examine the use of Botulinum toxin (BTX-A) in patients with T.B.I who presented focal spasticity and the impact in rehabilitation outcome.

Method:

18 patients aged 18-45 with T.B.I, who were admitted in our department during 2007, focal spasticity presented Glasgow coma scale >9 and focal spasticity were included in our study. Clinical and functional evaluation was performed according to Asworth and Barthel scales.

Results:

Almost all patients showed improvement and Asworth score was significantly reduced

Conclusion:

(BTX-A) can be a useful and safe tool for the control and improvement of the spasticity in T.B.I patients.

Diabetic Neuropathy

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Introduction:

Diabetic neuropathy (DN) is a group of clinical syndromes and the most common complication of diabetes mellitus. Numerous studies have elucidated the important role of peripheral neuropathy in the etiology of diabetic foot ulcers. Typical symptoms of neuropathic pain related to small fibres include burning, sharp, shooting pain, and aching in the toes and feet (1).

Methods and Subjects:

The thermal specific and thermal pain perception thresholds were assessed by the quantitative psychophysical test. The Marstock method (2) on TSA 2001 Thermal Sensory Analyser (Medoc, Israel) was applied. Hundred-fifty diabetic patients, 72 women (32 - 88 years, 62,8 7.1) and 78 men (33 to 92 years, mean 67.1 7.5) are attending our out-patient clinic in the last 48 months.

Results:

Sensory testing disclosed disturbed small-fibre function by measuring pain and temperature thresholds and assessing properties of sensation. Qualitative and/or spatial and/or temporal abnormalities, evaluated according to normative values determined in our laboratory (3), were assessed.

Discussion:

The early recognition and appropriate management of neuropathy in the patient with diabetes is important for a number of reasons (4), and in small-fibre painful sensory neuropathy this is extremely important role for diabetic foot ulcers. Additionally, up to 50% of DN may be asymptomatic (1). Provision of education, and appropriate foot care may result in a reduced incidence of ulceration and consequently amputation (5). All patients with diabetes should be screened for DN at diagnosis of type 2 diabetes and 5 years after the diagnosis of type1 diabetes and at least annually by examining sensory function in the feet and checking ankle reflexes (1). We are convinced examining sensory function should be touch and pain (A-beta, A-delta, C fibres).

Conclusion:

Diabetic patients should be screened regularly. The examination should include pain evaluation.

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Complications Of Osteoporosis In Male Patient: A Case Report

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INTRODUCTION:

The incidence of osteoporotic fractures in elderly increases exponentially with age. Its prevalence is about 3% to 6% in men older than 50 years. The osteoporosis rates are higher and fragility fractures are more frequent than previously believed. Men account for approximately 20% of symptomatic vertebral fractures, more often in low dorsal and high lumbar vertebrae. Up to 50% of osteoporotic males have no identifiable aetiology. Age-related bone loss in men is a poorly understood phenomenon, although increasing data is becoming available. The longer life-span exposes a number of men to the risk of mild-to-severe hypogonadism which is one of the steps towards the loss of bone mineral content. Hypogonadism may, therefore, be one among many corrigible risk factors such as cigarette and alcohol. The aim of this paper is to report a case of severe osteoporosis in a man.

METHODS AND SUBJECTS:

The authors describe a case of a 77 years old man presenting an acute low back pain radiating to the right lower limb, after a flexion trunk effort, with disability. Clinically, a severe lumbar paravertebral contracture and tenderness, without neurological signs, could be seen. He performed a lumbar X-ray, a lumbar scan, bone scanning, DEXA, bone markers, tumours markers and routine blood exams. Although under medication, the pain became worse and a new lumbar X-ray was performed. The patient had a personal history of previous D12 and L1 body impact fractures and a familial history of severe osteoporosis.

RESULTS:

The lumbar MRI showed a L5 vertebral body image compatible with an osteoporotic fracture, metastasis or osteomyelitis. Bone scanning excluded a bone tumour and metastasis. Blood cells count, CRP and ESR were normal DEXA showed severe osteoporosis bone reabsorption markers were raised. In contrast with the first lumbar X-ray the second showed a L5 vertebral collapse, due to a compression fracture. The patient started Teriparatide, resulting in significant pain remission.

CONCLUSION:

This is an unusual case of a male's osteoporotic L5 fracture. In men, osteoporotic fractures are associated with more significant morbidity and mortality. Osteoporosis is now known to be gender blind. It is important to recognize and treat early this condition, in order to prevent cases of fracture with consequent pain and disability.

Elbow Heterotopic Ossification Following A Stroke: A Case Report

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INTRODUCTION:

Heterotopic ossification is the formation of mature lamellar bone that occurs in soft tissues in which bone does not normally grow, near one or more proximal joints. It may be encountered in several circumstances: genetic, neurogenic, post-traumatic, post-surgical and 'reactive' causes. The mostly reported are trauma to the central nervous system, severe neurological disorders (neurogenic heterotopic ossification) and muscular and skeletal trauma. Soft tissue bone deposition may range from minimal and inconsequential to massive and clinically significant. Clinical, radiological, and bone scan findings are typical. Complications may threaten function therefore, differential diagnosis is crucial in its early stages. The aim of this paper is to report an unusual presentation of an elbow heterotopic ossification following a cerebral haemorrhage.

METHODS AND SUBJECTS:

A 34-years-old woman, who suffered a haemorrhagic stroke due to a vascular malformation at the age of eighteen, presents a long standing right elbow pain. At palpation a solid mass was felt at elbow ventral aspect, with a ROM limitation on extension. There was no history of trauma. At the time of the stroke, neurological impairment was a tetraplegia with a right predominance. At this time she presents a spastic paraplegia, without upper limb impaired function. An elbow X-ray and a 3-phase bone scan scintigraphy were made.

RESULTS:

X-ray showed an unusual heterotopic ossification with a diaphyseal segment bonny shape. In bone scintigraphy a slightly increased activity at the elbow was evident. Other heterotopic ossifications were excluded.

DISCUSSION / CONCLUSIONS:

A history of cerebral haemorrhage, without known muscle and skeletal trauma, allows us to conclude that this is an elbow's neurogenic heterotopic ossification. The initial long standing coma and the multiple acute post-stroke impairments may explain the late diagnosis. At this stage, the best therapeutic approach will be the surgical excision of the elbow's heterotopic ossification.

Service Of Physical Medicine And Reghabilitation In Primary Health Care Facilities In Belgrade, 2001- 2006

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Introduction: and Aim:

The Service of Physical Medicine and Rehabilitation is an important part of the system of primary health care in 14 community health centers and 3 institutes of health care.

This service is team-based. A specialist of physical medicine and rehabilitation and a physiotherapist make the core. Other professionals, including a nurse, may be in such teams. The team promotes health and healthy lifestyles, instigating patients to take responsibility for own health. It also provides treatment and rehabilitation, preventing complications and disability. Our paper is based on the analytical data.

We comment on the structure and number of employees in the services in primary care. The legal basis for our analysis is the norms concerning manpower, defined by the Ministry of Health of Serbia and Rulebook on the Conditions for Performing of Health Care Activities in Health Care Facilities and in Other Types of Health Care Services ('Official Herald of the RS', no 43/ 2006). Our aim is to enable another view on the issue and instigate discussion about the practice in the services of physical medicine and rehabilitation in primary health care in Belgrade.

Methods:

We analyzed data by methods of descriptive statistics and linear trend.

Results:

Between 2001 and 2006, there was an average of 412 employees in those services in primary health care. We analyzed the structure and number of those employees. Between 2001 and 2004, the number of employees increased. After 2004, it constantly decreased ($y = 0.5714x + 415.67$). The number of visits in the services recorded an increasing trend ($y = 148,396x + 1E+06$). There were 1,919,323 visits to these services in 2006.

The Rulebook defines that the team (one specialist and 6 physiotherapists) covers 40,000 populations. The number of visits in one year per one specialist is 4,000, while per one physiotherapist it is 6,000.

Conclusions:

Since norms and practice are not harmonized, it would be beneficial for us to exchange experiences and analyze the situations through discussions and examples from other environments.

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Comparison Of Hopelessness Status In Caregivers Of Aphasic And Non-Aphasic Hemiplegic Patients

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Aim:

The objective of this study was to investigate the hopelessness status using the Beck Hopelessness Scale in caregivers of aphasic and non-aphasic patients with hemiplegia.

Patients and Methods:

Twenty caregivers of aphasic patients with hemiplegia and 20 caregivers of non-aphasic patients with hemiplegia were enrolled the study. Demographic properties and Beck Hopelessness Scale of two groups were recorded.

Results:

Mean age of caregivers of aphasic patients was 54.10±14.17 and that of the other group was 66.70±13.44. Eight(40%) female and 12(60%) male caregivers were in each groups. There is no statistically significant differences between two groups about demographic findings($p>0.05$). Beck Hopelessness Scale scores in caregivers of aphasic and non-aphasic patients were 11.65±1.81(8-15) and 12.05±2.16(8-16) respectively.

No significant difference was found between Beck Hopelessness Scale scores in caregivers of aphasic and non-aphasic hemiplegic patients($p>0.05$, $z=-0.618$).

Conclusion:

The results of our study show that status of hopelessness is not different in caregivers of aphasic and non-aphasic hemiplegic patients.

Comparison Of State And Trait Anxiety Status In Caregivers Of Aphasic And Non-Aphasic Hemiplegic Patients

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Aim:

Our aim in the present study was to evaluate the anxiety status using the State-Trait Anxiety Inventory in caregivers of aphasic and non-aphasic patients with hemiplegia. **Patients and**

Methods: Twenty caregivers of aphasic patients with hemiplegia and 20 caregivers of non-aphasic patients with hemiplegia were enrolled the study.

Demographic properties and State-Trait Anxiety Inventory of two groups were recorded.

Results:

Mean age of caregivers of aphasic patients was 54.10 ± 14.17 and that of the caregivers of non-aphasic group was 66.70 ± 13.44 . Eight(%40) female and 12(%60) male caregivers were in each groups. There is no statistically significant differences between two groups about demographic findings($p > 0.05$). State Anxiety Inventory scores in caregivers of aphasic and non-aphasic patients were 47.8 ± 6.64 (35-57) and 42.20 ± 7.68 (29-59) respectively.

Trait Anxiety Inventory scores in caregivers of aphasic and non-aphasic patients were 52.25 ± 7.91 (39-64) and 49.25 ± 11.27 (27-71) respectively.

A significant difference was found between State Anxiety Inventory scores in caregivers of aphasic and non-aphasic hemiplegic patients($p < 0.05$, $z = -2.439$).

No between-group differences were found regarding Trait Anxiety Inventory scores($p > 0.05$, $z = -0.921$) in caregivers of aphasic and non-aphasic hemiplegic patients.

Conclusion:

The results of our study show that State Anxiety Inventory status in caregivers of aphasic hemiplegic patients is higher than caregivers of nonaphasic hemiplegic patients.

The Properties Of Geriatric Patients Who Enrolled Inpatient Neurorehabilitation Program

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Aim:

Our aim in the present study is to evaluated the properties of geriatric patients who enrolled inpatient neurorehabilitation program between January 2007-January 2008.

Patients and Methods:

All geriatric patients enrolled inpatient neurorehabilitation programme at last year were evaluated retrospectively. 319 geriatric patients were enrolled the study. Demographic findings and diagnosis of geriatric patients admitted neurorehabilitation program were recorded.

Results:

148 patients (%46.4) were male and 171(% 53.6) were female. Mean age of the geriatric patients was 72.8 ± 5.3 (65-91). 208 patients (%65.2) were between 65 and 74 years, 104 patients (%32.6) were in 75-84 years and 7 patients(%2.2) were in 85-100 years. 269 patients(%84.3) had hemiplegia resulting from cerebrovascular accident , 16(%5) had spinocerebellar disorders, 14(%4.4) had spinal cord injury, 11(%3.4) had Parkinson diseases, 3(%0.9) had traumatic brain injury, 3(%0.9) had Guillain Barre Syndrome, 2(%0.6) had tranverse myelitis, 1(%0.3) had neuropathy.

Conclusion:

Hemiplegia resulting from cerebrovascular accident is the most common diagnosis in geriatric patients admitted the neurorehabilitation program in our hospital.

Functional Outcome And Discharge Destination After Rehabilitation Of Neurological Patients

J. Karapandža

I. Splošna Bolnišnica Šempeter,

Rehabilitation plays an important part in regaining functional abilities and improving the quality of life of neurological patients.

The article presents the results of inpatient rehabilitation of 75 adult patients with various neurological diseases or injuries treated in our hospital. Two different parameters were used to measure the rehabilitation outcome. The first one was the functional outcome, which was determined on the basis of the Functional Independence Measurement score (FIM), and the second one was discharge destination of patients.

The acquired data show differences between age groups. The best results were achieved by patients under the age of 60.

Older patients had less satisfactory functional outcome, they were less often discharged home and were more frequently referred to an institutional care.

Patients with high FIM score at the end of the rehabilitation were as a rule discharged home regardless of their age. In contrast, lower FIM score resulted to higher rate of discharge into institutional care or readmission to acute hospital.

The Effect Of Body Mass Index On Bone Mineral Density In Geriatric Patients

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Purpose:

We aimed to determine the relationship between bone mineral density (BMD) and body mass index (BMI) in geriatric patients.

Method:

900 geriatric patients who admitted to our outpatient clinic from January to June 2007 were included in this study. Age, weight and height were recorded. Weight and height were measured and body mass index was calculated. The geriatric patients were classified under four categories on the basis their BMI, as underweight (<18.5), ideal weight (18.5-24.9), overweight (25-29.9), and obese (> 30). Bone mineral density in all the patients was assessed via dual energy X-ray absorptiometry from anteroposterior lumbar and right proximal femoral regions. For L1-L4, L2-L4 and femoral neck, mineral density and t scores were determined. The patients were classified in three groups according to their age as young old (65-74), old (75-84) and old old (>85)

Results:

The study was performed among 900 geriatric patients aged between 65 to 100 years. 85.4% of our geriatric patients were female and 14.6% were male. 66% of patients were young old, 30.7% old and 3.2 % old old . Mean of the BMI of young groups was 28.7 ± 4.7 , in the old groups 28.2 ± 4.3 and in old old groups 27.6 ± 5.5 . 2 (0.2%) of the geriatric patients were underweight, 218 (24.2 %) had ideal weight, 353 (39.2 %) were overweight and 327 (36.3 %) were obese . There was no statistically significant difference in body mass index in regard to sex and age groups ($p > 0.05$). There was statistically significant correlation between body mass index and bone mineral density of femoral neck ($r = 0.274$, $p < 0.001$), femoral neck t scores ($r = 0.317$, $p < 0.001$), bone mineral density of L1-L4 ($r = 0.186$, $p < 0.001$), t scores of L1-L4 ($r = 0.193$, $p < 0.001$), and bone mineral density of L2-L4 ($r = 0.167$, $p < 0.001$), t scores of L2-L4 ($r = 0.186$, $p < 0.001$)

Conclusion:

It is shown that obesity effects BMD in geriatric patients. Since fractures due to falls are frequent among these geriatric patients, to decrease the effect of trauma BMI should be maintained within normal limits.

New Concept Of Walker For Walking Disorders In Parkinson'S Disease Patients.

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INTRODUCTION:

We have developed a walker to improve walking disorders in the Parkinson's disease patients. This document provides an example of the desired layout for the 'Four page article' and can be used as a template for Microsoft Word versions 6.0 and later. It contains information regarding desktop publishing format, type sizes, and typefaces. Style rules are provided that explains how to handle equations, units, figures, tables, abbreviations, and acronyms. Sections are also devoted to the preparation of acknowledgments and references.

WALKER FUNCTION:

The L cane and the laser-type walk training device were well known for a walking aid of the Parkinson's disease patients, but there was it when use was difficult in the Parkinson's disease patients with poor standing balance. This walker is similar to that of a walking frame with 2 wheels or 2 casters. Characteristics features of this walker are: it has, as a mainstay, 2 rubber bars in front of frame which can move open and shut that used a bend of the rubber 2 rubber bars were possible to put on and take off, we could apply it to a normal walker or a T cane. In addition, this walker was able to improve problems that the operation of the L cane was influenced by quantity of load and the load direction, and a laser-type walk training device was influenced by the brightness of the use place.

RESULTS:

The frozen gait of the Parkinson's disease patient was improved by the use of this walker and led to improvement of ambulation.

CONCLUSION:

This walker is useful for the Parkinson's disease patient.

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Results Of Interdisciplinary Team Approach In Rehabilitation Of A Patient With Ruptured Posterior Inferior Cerebellar Artery Aneurysm (Pica)

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BACKGROUND AND PURPOSE:

case report of a 35-year old patient with ruptured PICA aneurysm. Postoperatively, she developed obstructive hydrocephalus, meningitis and ventilatory insufficiency. Ventriculoperitoneostomy, tracheostomy and gastrostomy were performed.

MATERIALS AND METHODS:

Neurological findings included tetraparesis, truncal ataxia, paresis of cranial nerves, dysphagia and aphonia. Cognitive impairment presented with signs of mental confusion. Functional limitations were of the utmost level- Barthel Index 0. Early rehabilitation was initiated.

Interdisciplinary team (physiatrist, other medical specialists, therapists, nurses, speech therapist, phonologist, otorhinolaryngologist, psychologist) supervised the treatment. We used special care measures and combinations of range-of-motion and muscle-strengthening exercises, mobilization activities, neurophysiological therapies (reeducation technique by Brunnstrom, Bobath and Kabat) and various speech therapy treatment procedures. Course of treatment was complicated with orthostatic hypotension, tachycardia, respiratory and urinary infection, neurogenic bladder, spasticity, pressure sores, anemia, dehydration and malnutrition. After six months of treatment patient was able to walk using walker. Indirect laryngoscopy found both hemi larynges to be mobile. Patient's voice was clear and tracheal tube extracted. Oral intake of food started. She was functioning adequately in activities of daily living Barthel Index 45. Psychological testing showed mental functioning improvement.

DISCUSSION:

Aneurysms of the PICA account for only 0,49-3% of all intracranial aneurysms. Lanzino and associates reported their results with a protocol for delayed surgery (after day 7): 87% of patients had excellent or good surgical outcome, surgical mortality was 8%. However, additional 41% died under delayed treatment protocol before reaching surgery. Hernesniemi and colleagues reported outcome at one year in the late surgery group as follows: 59.3% good recovery, 11.1% moderate disability, 7.4% severe disability, and 22.2% dead.

CONCLUSION:

Outcomes and complications in survivors are multiple and complex. It is only the interdisciplinary team work that's able to produce satisfying rehabilitation results.

Functional Recovery Of Sensorimotor Hand Functions In A Group Of Patients After Stroke - Results Of A Longterm Study

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The impairments of sensorimotor hand functions after a stroke have a negative impact on the subject's interaction with external settings and on performing common daily and working activities and thus on the quality of his or her life (Carey, 1995).

Since the structure and function of the cerebral cortex is capable of after-stroke modifications, new therapies are being looked for that support the desirable plasticity of the CNS to the maximum. The main condition for a successful treatment is a reliable target-focused examination of all hand functions affected by the stroke.

This requires both a differentiated and complex examination. This thesis presents the results and experience of treating patients hospitalized after a stroke.

Our study focuses on recovery of sensorimotor hand functions in patients after stroke by means of four assessments and compares the results with three neurological tests and one ADL test.

Comparison Of Electrodiagnostic Parameters: Median With Ulnar And Radial Sensor Nerves Examined For Carpal Tunnel Syndrome

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Carpal tunnel syndrome is the most common entrapment neuropathy, the diagnosis of which can be made through physical examination, electrodiagnosis and other diagnostic techniques. Electromyography (EMG) fibrillation potentials, positive sharp waves, neurological change in the motor unit action potential and reduction of interference pattern are revealed. In electroneurography, we may find markedly prolonged distal median motor latency, reduction of median motor nerve conduction at the point of compression, changing in M-wave and in aberration of parameters which we see in the examination of the median sensor nerve. During the EMG examination, there is a need to find early changes in the parameters which are manifested in the incipient phases in carpal tunnel syndrome. We found that over 50% of distal median motor latency is within the normal limit and that distal sensory latency is on high limit and one of the first parameters which we notice is a reduction in the amplitude of sensory median response.

Examinations were conducted on 58 patients, 40 female, 18 male, aged between 29 and 60, which came to the EMG unit with a prior diagnosis of carpal tunnel syndrome, either one arm or bilateral. Sensory stages are performed by stimulating the median, ulnar, and radial nerves at a distance of 140mm and recording on the palm and on the first second, third, and fifth finger, and we compared the latency and amplitude of those responses.

We derived mean values of latency at 3.2.ms. and amplitude at 3.4 mV of the median nerve, latency at 2.2ms and amplitude at 5.5 mV of the ulnar nerve, and latency at 1.9ms and amplitude 8.7mV of the radial nerve. We found a differential between median and ulnar nerves in latency of 1ms and 1,3ms between the median and radial nerves.

Differences in amplitude were bigger: 2.1 and 5.3 mV between the median and the ulnar and the radial nerves.

We noticed that the amplitude of sensory response of the ulnar nerve in carpal tunnel syndrome is lower than on the healthy arm and that the examination of the radial nerve is important in cases of incipient and bilateral carpal tunnel syndrome. The difference in latency and amplitude between the median and radial nerve is more significant, and this comparison can be useful, among other electrodiagnostic studies which are already recommended, to increase sensitivity in diagnosis.

People With Multiple Sclerosis And Physical Exercise: Tai Chi Chuan, An Ancient Innovative Proposal

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Multiple Sclerosis (MS) is a disabling demyelinating inflammatory with functional impairments (gait, poor balance, muscle weakness and fatigue). In people with MS (PwMS) patients there is an increased incidence of osteoporosis, depression, cognitive functional impairments, fatigue and cardiovascular diseases. Aerobic capacity (VO₂-max), maximal muscle strength measured during both isokinetic and isometric muscle contractions has been shown to be reduced among PwMS.

Tai Qi Quan (TCC), an ancient chinese martial art, consists in a continuous series of graceful movements so that the body is constantly shifting from foot to foot with a lower centre of gravity (CG) with knees and hips flexed producing higher extensor strength at all speed gait tested and smaller foot Centre of Pressure (COP) excursions for both open and closed eyes conditions. TCC practitioners shown better clinical test scores for functional reach, gait, speed, stride, length and all sway parameters during double and single leg stance and improving muscle strength and reducing fall's risk than non TCC groups.

PwMS rehabilitation remains the major strategy to improve disability and maintain functional status because of its recently proven beneficial effects in these patients. Resistance training (RT) and Endurance training (ET) constitute the two extremes of basic physical exercise. RT produces an improvement in muscle strength (quadriceps maximum voluntary, maximal isometric knee extensor strength) and neural activation. ET induces improvements in aerobic capacity and in measures regarding health related quality of life, mood and depression in PwMS. RT and ET with low to moderate intensity and a mild progression are well tolerated among PwMS having an EDSS below 6.5.

In the initial training phase should be preferred the use of closed kinetic chains instead of open kinetic chains. In general the exercise order should be planned so that large muscle group exercises are performed before small muscle group exercises, multiple-joint exercises before single-joint exercises.

PwMS suffering from major strength deficits may be unable to benefit from ET because ET of sufficient duration and intensity cannot be performed. A period of prior RT can probably make efficient ET possible for some PwMS suffering from these problems.

We propose TCC, considered a low intensity and impact aerobic exercise, like a new proposal for the treatment of PwMS including some features of RT and ET training.

Functional Analysis In Inpatients With Intracerebral Haemorrhage

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Introduction:

Intracerebral Haemorrhage (ICH) is one of the main disability cause in development countries and causes 10% to 15% of first-ever strokes.

Methods and Subjects:

Our aim is to describe functional outcomes at discharge of inpatients after intracerebral haemorrhage.

Retrospective analysis with inpatients between 2003-2007. Variables age, sex, risk factors, etiology, location, Barthel index at admission and discharge, complications and walking ability and DLA were analyzed by SPSS program.

Results:

At discharge, 37% free walking, 22% with technical aid, 33% wheelchair. About DLA 40% are independents. The mean Barthel index at admission was 20 and at discharge 57. Hypertension before the hemorrhage and location have statistical significative association with dependence at discharge ($p < 0.05$). Location and complications (spasticity and convulsions) also has statistical significative association with walking ability at discharge.

Discussion and Conclusions:

Intracerebral hemorrhage cause very important functional decrease in these patients. This pathology has not any recognized treatment so that is necessary primary prevention and the correct management to avoid complications and functional loss.

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Posttraumatic Syringomyelia And Neurogenic Bladder: A Case Report

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Introduction:

Posttraumatic syringomyelia (PTS) is a potentially life-threatening late complication of spinal cord injuries. It is a chronic progressive disorder characterized with the development of new neurological symptoms after a variable time interval ranging from 2 months to 30 years (1,2). Although neurogenic bladder (NB) is a condition that can emerge during the course of syringomyelia (3), it is rarely seen as the first sign of the disease (4).

Case:

For a 37 year-old female patient complaining of dysuria and pelvic pain for 3 years, anticholinergic therapy with a diagnosis of NB was initiated three months ago. Non-regression of her complaints prompted insertion of a dwelling urethral catheter, and after failure to detect any pathological finding after completion of renal function tests, complete urinalysis, urinary system ultrasound, intravenous pyelogram, gynecologic examination and gynecological ultrasound, consultation was required from our clinics in order to search for the cause of NB.

Her medical history only revealed difficulty in urination and pelvic pain, without any complaints of spinal cord, weakness of extremities and trunk and impaired sensation. Fecal continence was preserved. When interrogated for an incision scar. at T4-T7 vertebral level, we learned that she had fallen on her back 20 years ago and skin sutures were placed. Her locomotor system examination was unremarkable, and any pathologic sign apart from bilateral extensor response in Babinski reflex during her neurological examination was not observed. Under the light of these findings, dorsal and lumbar MRI were ordered. On MRI a cystic cavity between T4-T12 vertebrae with hypointense signal intensities at T1 and hyperintense signals at T2 weighted images was observed.

The patient was operated on after neurosurgical consultation (D8 laminectomy + syringopleural shunt). Upon development of muscular weakness at the right lower extremity, she was interned in our service for rehabilitation. Urodynamic test was required and detection of detrusor areflexia prompted us to discontinue anticholinergic treatment and initiate clean intermittent catheterization.

Conclusion:

NM might be the first sign of PTS, and emerge years after the trauma. Even in the absence of additional clinical symptom, PTS should be considered, and this diagnosis should be confirmed with careful history, physical examination and then MRI.

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The Comparison Of Ultrasonographic And Electrophysiological Examination In Carpal Tunnel Syndrome

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In our study we aimed to determine the correlation of between the severity of clinical symptoms and functional status of the patients with carpal tunnel syndrome by using ultrasonographic and electrophysiological data.

96 wrists of 52 idiopathic people with carpal tunnel syndrome that were diagnosed on the basis of palmar and motor latency values of median nevre were taken into consideration in our study. The symptom severity and functional status of these occurences were evaluated on the basis of Boston Carpal Tunnel Syndrome Questionnaire (BCTSQ). The ninety six wrists were measured at three different levels by using ultrasonographic means and based on these measurements the median nerve cross section area and the flattening ratio have been calculated.

In the symptom severity score of BCTSQ and electrophysiological examination, a statistical correlation between the motor ($p<0,001$) and palmar ($p<0,001$) latency values was found. In the ultrasonographic examination further statistically significant correlation between the median nerve cross section area values at carpal tunnel proximal ($p<0,001$) and entrance ($p<0,01$) was determined. However, no significant correlation was determined between the symptom severity score of BCTSQ and carpal tunnel exit median nerve cross section as well as flattening ratio ($p>0,01$). In the same manner, a significant correlation could not be determined between the functional status score of BCTSQ and electrodiagnostic and ultrasonographic findings ($p>0,01$).

Our study has revealde that the electrodiagnostic and ultrasonographic examinations are both effective in objectively determinig and following up thesymptom severity of patients with carpal tunnel syndrome. It can be concluded that ultrasonography can be an alternative method to electrodiagnostic study with its non-invasive methodology, low cost, and reduced examination times in showing carpal tunnel and median nerve morphology in real time, and in a dynamic manner.

Our Experience Concerning The Interferential Medium Frequency Electrostimulation In The Treatment Of Post Sci Neurogenic Bladder

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PURPOSE:

Considering the few therapeutic options available for the management of neurogenic (including post SCI) bladder, we tested the efficiency of a new method of physical therapy,

METHODS:

184 patients with neurogenic post SCI bladder, admitted In our clinic between June 2006-January 2008, were divided in two groups - study/witness - with similar distribution of age, gender, functional impairment. The physical therapy method chosen was an interferential Medium Frequency Electric Stimulation (IMFES), unique formula, with an ambivalent potential: to improve the bladder control, no matter if there is incontinence or retention type. There were ten applications for each studied patient, additionally to standard therapy/care. Controls, consequently to objective reasons (including assessments), were not submitted to IMFES.

RESULTS:

33.69 % patients regained complete voluntary bladder control 15.21% a partial one and 51.08% had no significant improvement (most cases with complete medullar lesion). Conversely, in the control group, 8.69% patients regained complete voluntary control and 7.60 % a partial one, resulting in significant difference between the two groups, regarding improvement (*2= 0.00393, Q-21.42 Cohran).

CONCLUSION:

Based on the exposed statistical results, we propose this method to be included in the standard protocol/therapy for the management of (incomplete) SCI neurogenic bladder.

Peripheric Densitometry As A Screening In Male Osteoporosis In Extremadura's (Spain) Primary Care

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Background:

Osteoporosis (O) is a diminishing in bone endurance, and is the most frequent disease that affects the bone system. It represents a great problem in public health because fractures, which are the clinical expression of the disease, are responsible for its high morbi-mortality level. O is not only a female disease 20% of men over 65 years old are also affected and in these cases, the mortality rates of a fracture are doubled than in those cases of women. It is necessary to adopt some measures in order to prevent and cure this problem in men.

Objective:

to know if the peripheral densitometers are good instruments for detecting male O in primary care services.

Material and Method: This is a transversal study done in a primary care center in the village of Zafra (Badajoz, Spain). 250 male patients were studied, all over 65 years of age. The bone mass density was measured using: ultrasounds in phalanges (UBV), an absorbtional dual phalange (DMOf) and also a calcaneous ultrasound (BUA).

Results:

The Osteoporosis-osteopenia prevalence was: DMOf: 16.5%-3.5% respectively UBV: 44.7%-16% BUA: 49, 43%-33,14%.

Discussion and Conclusions:

Our results, similar to others found through evidence-based medicine, permit us to conclude that it is necessary to adopt screening procedures for male O in primary care services and to consider the peripheral densitometry as a useful technique to carry it out.

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The Evaluation Of The Osseous Loss On Womens Who Are In Precocious Menopause And In Normal Menopause Too.

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THE PURPOSE OF THE STUDY :

' The comparison of the osseous loss between the women in precocious menopause and those in normal menopause leads to the fact that the estrogenic deficiency causes a rapid osseous loss. The osseous loss accelerates afterward menopause.

The same thing happens to the young women after the ovariectomy and after the syndrome of ovarian insufficiency, a thing that causes osteoporosis on young women.

Estrogenity has an admonitory action in placing the postmenopausal fractures. The density of osseous has been measured with the dexa apparatus, which is a searcher, and also serves to diagnose the evaluation of the osteoporosis.

Dexa-the newly method for the measurement of the osseous density. The principal of this method is similar to that of absorbing gadolinium, but the primacy of this technique is the time of agranunim that is shorter (5-15 min). This technique provides more detailed images and reduces the time of radiation (1-3 mren).

Dexa -measures the osseous mineralization in the axial osseous L1-L4, on the articulations coxo-femoral, radio-carpal articulations and in all the body. The osseous size is given in terms of osseous mineral material and it is given in gramme. The density of the osseous size is given in gramme/cm².

Through the student's test for the two independent samples, it is noticed that there is a statistical important difference between the age of the women ($p = 0.001$), and between the difference of the points ($p = 0.001$), while there is not noticed an important statistical difference between t-score ($p = 0.204$) for the two groups.

CONCLUSIONS:

The post menopause women suffer from osseous loss. Ispite of the time of menopause, the women are at risk of osseous loss.

Tecar-Therapy In Hemiplegic Shoulder Pain: A Randomized Single Blind Study.

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Introduction:

Hemiplegic shoulder pain (HSP) is not uncommon after stroke results that 70-84% of hemiplegics patients have painful shoulder. HSP may result from a combination of different factors: abnormal tone, adhesive capsulitis, subluxation and other factors such as rotator cuff tears, brachial plexus injury and shoulder-hand syndrome. The aim of this clinical study, (single blind criteria), was to assess the efficacy of capacitive and resistive energy transfer (Tecar®-Hcr 901) on pain reduction for HSP patients.

Methods and Subjects:

Transcutaneous electrical nerve stimulation (TENS) is most commonly used for pain management. The Resistive and Capacitive Energy Transfer (RaCET) can be defined as the application of an RF current (0.45-0.55MHz) that by traversing the different tissues, produces an electrical power in them that creates an internal thermal increase. RaCET consists of two modalities: the capacitive transfer mechanism (electrode coated with ceramic insulating material) and the resistive transfer one (electrode not insulated).

The capacitive transfer modality especially acts on soft tissues: muscles and connective tissue the resistive transfer modality especially acts on deep tissues: bone, joint and tendons.

The using of both the techniques, firstly the capacitive one and afterwards the resistive one, improves results.

The protocol provides for 10 sessions, daily distributed (5/week), 30 patients with HSP of both sex, were treated and were sub-divided random, on three treatment modality groups, 10 patients each group: group A: TENS and Therapeutic Exercise (TE) group B: RaCET and TE, group C: RaCET off (sham therapy) and TE. Exclusion-criteria: patients with cognitive deficit (MMSE<15) Hemiplegic shoulder subluxation, previous neoplasia, pace-maker.

Inclusion Criteria:

Patients with HSP Main Outcome Measure: Shoulder Pain Score (SPS), shoulder passive-ROM at entry (time 0), at end of the treatment phase (time1) and two months later (follow-up).

Results:

The pain relief degree has resulted statistically significant per Time in group B ($p < 0.05$) and in group A group C is resulted not statistically significant $p > 0.05$. At follow-up the pain relief degree has resulted statistically significant in group B ($p > 0.05$) while in group A and group C is resulted not statistically significant ($p < 0.05$).

Conclusions:

In Italy Tecar®-therapy is mainly used to cure sports injuries. We propose its application in the adhesive capsulitis considering its efficiency on deep tissues also.

Monitoring The Antiporotical Treatment Of The Risk Group Of The Population Of The North Part Of Vojvodina

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Short summary:

A new specialized service for patients who are able to walk started work in the Specialized Rehabilitational Spa in Kanjiza in August 2006. Its purpose is to comprise and to demonstrate the monitoring of the osteodensity of the risk group among the population of the north part and the middle of Vojvodina. The educated, specialized doctors of the Spa make axial localized skeleton measurements with DEXA Osteodensitometre (type Hologic Explorer S/N 90674) with the support of Executive Council of Vojvodina.

In the osteoporosis centre patients are examined, they are given advice about the new lifestyle they should respect, they are treated with medicines and with balneo – physiotherapy, and we ensure supervision and laboratory analysis. This elaboration demonstrates and evaluates the results of the period from the 29th of August 2006 to the 29th of February 2008.

The objective of the work:

To evaluate the risk group's osteodensity in the northern part and in middle Vojvodina. This study demonstrates for the first time the frequency of osteoporosis and its disperse among the population, and the efforts to prevent and cure this disease in this region.

Methods and Subjects:

By the last census in 2002 Vojvodina has a population of 2.340.000. There are three osteodensitometres in our province (two of them are in the capital of the province, in Novi Sad) which are used for axial localized skeleton measurements. With the osteodensitometre in the Spa in Kanjiza we are able to estimate the quality of the skeleton of the population of the districts of Kikinda and Subotica and in the region around the Tisa river (about 30.000 people). During the period of our observation the BMD of 971 people has been determined with the presented method, their process of disease differentiated, and we acquaint them with the necessary lifestyle and define the guiding principles of medical treatment.

Results:

firstly, the examined patients who were sorted by their sex and age (the age limit was 50) we demonstrated the BMD results of the DEXA osteodensitometre. After this, we presented the control results of the treated patients: from the measured patients (731 individuals, 679 women and 52 men) by 29th February 23 individuals came with altered BMD to osteodensity control.

Discussion:

The results of the examinations in this project demonstrate that only every 3rd or 4th woman and every 2nd or 3rd man has acceptable quality of skeleton.

Conclusion:

Unambiguously the medical strategy of monitoring the osteoporosis of the population tends to be similar to the attitude of regional screening – even at the slightest signs of suspicion or by

the criteria of AACE and IOF it is justified to measure the mineral content (BMD) of the bones. Because of its health and economical characteristics it is unambiguous that the prevention has an outstanding role. The balneo – physio – kinezitherapy forms a significant part of the treatment without medicines, which are suitable to be used in the osteoporosiscentres.

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Acupuncture And Ngf In Childen With Cerebral Palsy Of Restoration Function Of Plasticity Of Cerebral

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Aim:

To investigate action and value of acupuncture in Cerebral Palsy rehabilitation.

Methods:

100 spasm Cerebral Palsy patients from 2 to 7 years old were randomly divided into two groups. Acupuncture group: 50 patients were treated with head acupuncture and NGF and body acupuncture. Rehabilitation-training group: 50 patients were treated with physical therapy of Bobath and Vojta methods.

Results:

The total effective rate acupuncture and rehabilitation-training group were obvious higher than that of rehabilitation-training group. After treatment the DQ value of rehabilitation-training + acupuncture group were higher than that of rehabilitation group ($p < 0.01$). In acupuncture and rehabilitation-training group were higher than that of rehabilitation group ($p < 0.01$). In acupuncture and rehabilitation-training group, improvement rate of brain dysphasia, brain atrophy in skull CT and recovery normal rate of skull SPECT were obvious higher than that of rehabilitation-training group ($t = 4.731$ $t = 5.971$ $p < 0.01$).

Conclusions:

Acupuncture can obviously increase cerebral blood flow (CBF) and improve cerebral cell metabolism, promote partial or complete compensation of cerebral function and the restoration and function of plasticity of cerebral tissue in children with cerebral palsy.

Luxation Of The Temporomandibular Joint And Treatment

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Introduction:

The temporomandibular joint is a small, but complex joint whose function is of vital importance (nutrition-chewing and grinding of food). Concerning that the mandible is the strongest facial bone, the most common type of injury is luxation or fracture of the mandible.

Anatomy:

The joint consists of: convex joint body head of mandible, concave joint body-temporal bone socket, and in between these two joint bodies-the articular disc. The joint capsule is reinforced with ligaments (lateral, sphenomandibular, stylomandibular).

The range of movement in this joint includes opening and closing of mouth and rotations. In the act of opening the mouth, the force of gravity takes part, as well as platysma, digastric and lateral pterygoid muscle. In the act of closing the mouth, temporal, masseter and medial pterygoid muscle take part. Diagnosis-Based on anamnestic (elbow blow in basketball, ball hit, punch in boxing). Clinical picture (strong pain, swelling, hypersalivation, movement restriction), RTG, CT/MR scan is often required, concerning the joint structure with its small disc and numerous soft tissue structures.

Treatment consists of adequate reposition, immobilization during 48 hours, mushy diet with minimal movement, application of physical procedures (cryotherapy, laser therapy, sonophoresis, electrotherapy, magnetotherapy, IR light) and local infiltration of glucocorticoids.

Case report:

Patient XX, suffered a subluxation of TMJ. The luxation was not diagnosed on time, but a few months later on a MR scan, when a subluxation with joint arthrosis and changes in the disc itself were found.

This patient was treated with physical procedures including acupuncture, but with only a partial subjective and functional recovery. Aim of this study was to analyze the structure and function of the joint, but through a case report.

Conclusion:

The complex structure, function and a dramatic clinical picture all imply a treatment where an adequate and timely reposition is very important, followed by application of physical procedures, with a goal of fast restitution and functional recovery of a joint. Luxation is considered to be one of TMD (Classification by American Academy of Orofacial pain and International Headache Society)

Painless Ankylosing Spondylitis:A Case Report

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Background:

Ankylosing Spondylitis (AS) is a chronic inflammatory rheumatic disease that primarily affects sacroiliac joints and spine. The sacroiliac joint involvement and inflammatory back pain are often regarded as hallmarks of AS, and the presence of radiographic sacroiliitis is obligatory for diagnosis of AS according to New York criteria.

Inflammatory back pain is usually first symptom of AS before the age of 50. It improves by exercise or activity and exacerbates by resting. Starting from early stages of the disease, inflammation of spinal and extraspinal joints and entheses frequently lead to limitation of spinal and joint mobility. Here we discussed a patient who presented with limitation of cervical movements without pain and was diagnosed as AS after a careful physical and radiological evaluation.

We also drew attention to importance of regular exercise program in treatment of AS. Case report: 52 year old male patient presented with limitation of cervical movements lasting for 6 years. He did not have the complaint of back or neck pain. He had worked as a professional football player between 17 and 35 years of age. He was on a regular exercise program as a part of his job. His cervical rotations were limited at 45 degrees, lateral flexions, extension and anteflexion were limited at 20 degrees.

Lumbar lateral bending measurements were 4 cm. His Schober test was 3.5 cm. His chest expansion was 4.5 cm. Occiput to wall distance was 8 cm. He did not have any skin lesions. He did not have any symptoms related to bowel disease. HLA-B27 was negative. Hemogram, C-reactive protein, erythrocyte sedimentation rate were within normal limits. He had grade 4 bilateral sacroiliitis on direct X-ray. His cervical X-ray finding was fusion between vertebrae.

Discussion:

Main clinical characteristics of AS are pain, stiffness, reduced spinal mobility and reduced energy. Physiotherapy is helpful in both relieving symptoms and slowing down the progression of disease. Although painless spinal ankylosis was early described, the existence of a clinical form of AS with silent axial disease has mostly been overlooked. Our patient had limitation of cervical movements without neck pain. He did not also have pain in other parts of spine. Absence of spinal pain was probably related to regular exercise program that he undertook for many years.

Recent researches reveal that exercise is as crucial as drug treatment in the management of AS.

Restitution Of Gait Pattern In Children With Moderate Traumatic Brain Injury

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OBJECTIVE:

To evaluate the recovery of gait velocity and balance in children with moderate traumatic brain injury after inpatient rehabilitation.

DESIGN:

Case-control study.

SETTING:

Tertiary pediatric rehabilitation center in Belgrade.

PARTICIPANT:

Twelve children (age range 8 - 14y) with moderate TBI were examined 30 days and three months post injury. Control data were obtained from ten healthy children and matched for age and gender.

MAIN OUTCOME MEASURES:

Quantitative measures included gait velocity and gait balance on 10m-gait distance with additional support if necessary.

RESULTS:

Gait velocity was significantly smaller in children after TBI than in control subjects (Mann-Whitney U test, $P < .05$). Low level of balance reactions was also present. After one-month therapy, there were no significant changes of observed parameters, while after three months period some of the measures changed significantly.

CONCLUSION:

three months of inpatient rehabilitation might be accepted as “enough-time” period to achieve satisfactory gait velocity for children with moderate TBI. Balance reactions remains more difficult restorative problem and need wider range of rehabilitation modalities.

Physical Therapy In Chronic Vein Insufficiency-The Importance Of Ultrasonic Diagnostics

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Introduction:

The chronic vein insufficiency poses an abnormal function of the vein system caused by the valvular incompetence with or without obstruction of the vein lumen, with affection of the surface vein system, of the deep vein system or of both of them.

The aims of work:

The effects of physical therapy in eliminating of vein insufficiency, reducing of symptoms and signs of the vein duct, preventing from disease progression and from late sequelae, result evaluation by echosonographic recognize, as well as the early diagnostics of vein insufficiency.

Material and Methods:

535 patients suffered from signs of vein insufficiency were treated from 01.01.2006. till 01.07.2007. by physical agents and by balneo therapy. According to the stages of clinical demonstration in accordance with CEAP classification there were: C1 stage - 35 patients(6,5%), C2 stage - 296 patients(55,3%), C3 stage - 53 patients(9,9%), C4 stage - 87 patients(16,2%), C5 stage - 27 patients(5,0%), C6 stage 37 patients(6,9%). Recognizing of morphological and hemodynamic condition of the vein system was performed by duplex echosonographic methods with the results primary varices in 331 patients(with the mouth insufficiency VSM in 189 patients, with the complete stem obstruction VSM in 8 patients, with a thrombosis in sapheno-phemoral mouth in 3 patients).

53 patients with the condition after the deep vein thrombosis. 83 patients with postthrombotic syndrome(with active vein ulcer in 23 patients and with healed ulcer in 16 patients). 68 patients with postthrombotic syndrome with the report of deep vein reflux,insufficiency of perforative veins(with active vein ulcer in 14 patients and with healed ulcer in 11 patients).

The treatment of the patients with chronic vein insufficiency included the application of vacuum, vasomotor, magnet, laser, electro and chinese therapy and the application of thermomineral hot water of 35-36 °C in some patients.

Results:

With the action of physical agents on the reduction of vein capacity, on affecting of deep vein recanalization and on improving of vein microcirculation some benefits were achieved such as: edema reduction, improvement of skin trophic changes and intensity reduction of skin changes, reduction and softening of dermatophlebosclerotic plates, stimulating of ulcer healing up, and with that achieving of better quality of living, preventing from relapses and disabilities.

Conclusion:

Chronic vein disease and its complications poses an overwhelming health and social economic problem. The application of physical therapy plays an important role in solving the problem.

Benefit Of Cardiac Rehabilitation

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Cardiac rehabilitation, as an important component of long-term therapy access to coronary patient, includes physical training, education and perceiving of individual needs for each patient and specific cardiac problems.

Cardiac rehabilitation ACC describes as a combination of physical training and healthy advices that together reduce symptoms or make better cardiac function. U.S. Public Health Service under cardiac rehabilitation defines long-term programs involving medical evaluation, prescribed exercise, cardiac risk factor modification, education, and counselling. Primary this program has been recommended to patients with recover from myocardial infarction after surgical myocardial revascularisation or for patients with stabile angina pectoris.

In next part, U.S. Health Care Financing Administration made conclusion that patients after heart transplantation and after PTCA may have welfare of cardiac rehabilitation. Recommendations for cardiac rehabilitation are also documented welfare of rehabilitation program for patients with heart weakness and left ventricular systolic dysfunction and recommended its use. Cardiac rehabilitation combines physical training with risk factor correction to patients with confirmed heart illness.

Role of cardiac rehabilitation is to make better functional capacity, reduce difficulty frequency, identify and modify risk factor for coronary illness and on that way reduce illness progression and mortality of cardiovascular illness.

Goals of cardiac rehabilitations: physical activity, lipids correction, hypertension control, quitting smoking may decrease mortality of cardiovascular illnesses, make better functional capacity, mitigate myocardial ischemia, decelerate progression of coronary atherosclerotic, and reduce risk of future coronary accidents.

CONCLUSION:

Because of all mentioned above, the cardiac rehabilitation is a standard procedure that should be included in all-inclusive treatment to cardiac patients. Patients with proved coronary illness have the largest disability and death risk, especially those with untreated risk factors. Benefit of cardiac rehabilitation exists for those patients as well as for their physicians, so in the future cardiac rehabilitation programs may have theirs role as centres for primary and secondary prevention of coronary illnesses.

Lymphedema: Case Report

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Background:

Complex therapy (medicamentous and physical therapy support with reduction diet) can improve the impairments and functional limitations that individuals with lymphedema experience.

Objective:

To represent patient with III stage of lymphedema who was treated by complex therapy. Case report: M.M. 55 years old, female patient received on physical treatment and rehabilitation in Institute of Igalo with a 5 years history of chronic edema in right lower leg and plod. Audience state were overweight 175kg, edema right lower leg in gross with skin and morphologic changes (III stage of lymphedema) and ulcerate on the flexor side in size 6x3cm. The volume of right lower leg was measured on 3 positions: 15cm above upper edge, thru middle and 15cm below lower edge of patellae and values were: 78, 58 and 65cm.

The state of peripheral arterial circulation was accurate with signs of chronic veins insufficiency and Cockett's perforator insufficiency according to Doppler sonography. She was treated on multidisciplinary approach (physiologist, angiologist, internist, immunologist) and started with reduction diet (800 Cal/a day), complex treatment and rehabilitation. She received: diuretics, beta blockers, antibiotics, calf blood extract, antiaggregation therapy and local anticoagulances.

Physical treatment included:

Individual kinesis therapy (KT) by Schoop to achieve relieve lymph circulations and to rise muscle pump, tutorials of dosage pace, manual lymph drainage (MLD) 60 minutes 2 times a day, interferent current (IF) on both feet dorsum X procedures 2x15 minutes, 2 times with 15 days rest among. After 45 days of treatment statement was significantly improve: decreased weight for 15kg (on 160kg), fully ulcer recovery, decreased edema right lower leg-repeated measurement values were 75, 55 and 60cm, increased lower legs muscle strength and improvement of laboratory parameters with significant increase levels of circulate immune complexes (from 0.05 to 1.40 g/L).

Conclusion:

Active KT assist with MLD in III stage of lymphedema significant reduced edema, increased joint motions, increased muscle strength, but optimal outcomes should imply complex therapy-medicamentous and physical, with roundly reduction diet.

Crest Syndrome – Treatment Challenge

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CREST syndrome is one of three forms of systemic scleroderma. CREST is an acronym that describes the hallmarks of the disease by its most visible features.

The “C” stands for calcinosis, the “R”, stands for Raynaud’s phenomenon, the “E” represents esophageal dysmotility, which can cause difficulty in swallowing. The “S” is for sclerodactyly, and finally, the letter “T” is for telangiectasia, dilated vessels on the skin of the fingers, face, or inside of the mouth.

However, CREST syndrome is much more than the mere external manifestations of the disease. There are also internal organ manifestations, such as pulmonary hypertension, myocardial involvement, renal crises, and entrapment neurologic syndromes. Arthralgias are common (90% of patients), and proximal muscle weakness can occur, which are the reasons that the rheumatologist or the physiatrist are often the leaders of the health care team for such patients.

We are going to report about a female patient who was hospitalized the first time in 1976. in the Dermatology department of the University hospital in Zagreb because of sclerodactyly of the hands. At that time she was treated with penicillamin, for a short time because she has developed allergy to penicillin. One a year she attended physical therapy.

From 1987 she hasn’t been treated anywhere until 2006 when she was admitted in our Department for Rheumatic diseases and rehabilitation of the Clinical hospital center in Rijeka. During this hospitalization we diagnosed CREST syndrome and included medications and physical therapy. Throughout this case report, we wish to emphasize the treatment challenge we encounter treating patients with CREST syndrome.

Effects Of Bathing In Warm Water With Added Glycerin On Skin Conditions And Prevention Of Skin Disorders In Patients With Severe Motor And Intellectual Disabilities

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Dry skin causes many skin disorders such as dry dermatitis. It requires a lot of time and medication to treat patients with skin disorder that cover a vast skin area. Although glycerin is a component of many skin care creams and cosmetics, there is no report regarding the effects of glycerin alone as a bathwater additive.

We investigated the effects of bathing in warm water with added glycerin on skin conditions and the prevention of skin disorders in patients with severe motor and intellectual disabilities. Two studies were conducted to analyze the effects of a glycerin + warm water bath (GWWB). In study 1, the skin conditions in a total of 18 subjects were compared between the glycerin group (G) and nonglycerin group (NG). In the G group, skin moisture, skin pH, and skin sebum were measured with a skin analyzer noninvasively after GWWB for approximately 6 months. Subjects in the 2 groups had bathed 2 times per week. In the G group, 250 ml glycerin was added in a 1400 l bathtub.

In study 2, a total of 78 subjects were examined retrospectively their medical records after GWWB for approximately 6 months were investigated to gain information about number of diagnoses, drugs areas affected with cutaneous diseases, and days of treatment in order to compare the G and NG groups.

Skin moisture levels at forearm improved significantly ($p < 0.05$) in the G group. The average skin moisture level in other areas was higher in the G group than in the NG group but without significant. Skin sebum levels at the forehead improved significantly ($p < 0.05$) in the G group. The number of diagnosis, drugs, and areas with cutaneous disease were significantly lower in the G group than in the NG group.

Further, the average number of treatment days was lower in case of the G group than in case of the NG group but without significance. The moisturizing effects are produced due a thin film formed by glycerin after GWWB, especially in an area where there is friction between the skin and clothes.

Skin sebum is also maintained due to glycerin-film formation. It is possible that maintenance of skin moisture protects the skin from cutaneous diseases due to xerosis. In conclusion, these results indicate that GWWB maintains skin moisture and sebum and prevents skin disorders.

Body Mass Index As Parameter Of Physical Activity In Children In Belgrade

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Introduction:

Body mass index (BMI) is well known risk parameter for heart disease. Its values are in strong correlation with overall lifestyle where we include among first eating habits and level of physical activity. Aim of this study is to point out distribution of BMI values due to gender in school children population in capital city of Serbia according to NHANES I classification.

Methods and Subjects:

We evaluated 436 children age 15 years, 221 girls and 215 boys. The measurement was taken in the morning after bowel and bladder emptying, without shoes in light clothes. The values were expressed as percentiles according to NHANES I classification.

Results:

In group of girls below 5th percentile we had 6.79% participants, between 5th and 15th percentile 9.05%, between 15th and 50th percentile 37.10%, between 50th and 85th 31.11%, between 85th and 95th 9.50% and above 95th percentile 6.33% of participants. In group of boys below 5th percentile we had 5.12% participants, between 5th and 15th percentile 10.70%, between 15th and 50th percentile 40.47%, between 50th and 85th 30.23%, between 85th and 95th 9.77% and above 95th percentile 3.72% of participants.

Discussion:

As risk parameter for heart and endocrine diseases, BMI is more easily to control than other factors. Since it can be factor to use as preventive measures, standards are needed to be set as well as monitoring of population by control examinations. In our study we found that there is no statistical difference between genders when compared for percentile distribution except for children above 95th percentile, where it is demonstrated that higher proportion of such population are girls.

Conclusion:

Interdisciplinary approach is needed in regulating body weight as well as promoting healthier life style habits. Reduction of weight is also essential especially in younger, because by preventing them from overweight we are acting on other risk factors that can alter health problems.

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The Use Of Wood Stanmore Classification Of Mobility In Patients With Primary Lower Limb Prosthesis

B. Majstorovic¹, S. Novakovic , D. Zivanic , N. Tomic , M. Kopanja , D. Prtina

INTRODUCTION:

Primary prosthetic fitting after the lower limb amputations is always carried out in specialized centre with rehabilitation team which has expertise and experience in prosthetic rehabilitation. The primary aim of the primary prosthetic rehabilitation is that patient with prosthesis achieves the highest possible independence in activities of daily living.

OBJECTIVE:

In this paper authors present the results of the primary prosthetic rehabilitation in patients with lower limb amputations. The success of prosthetic rehabilitation is shown through the degree of mobility which was assessed by Wood Stanmore classification of mobility.

PATIENTS AND METHODS:

In 2007 in our Centre, 108 patients with transtibial or transfemoral amputations were fitted primary prostheses. The Wood Stanmore classification of mobility was used for mobility assessment. According to this classification, patients can be placed in one of five groups, depending on a degree of mobility – starting with prosthetic fitting for cosmetic purposes and ending with total independence in activities of daily living.

RESULTS:

Out of 108 patients who were fitted primary prosthesis 59 (54,36%) were diabetics. 44 patients (40,74) had occlusive changes on blood vessels, 3 patients (2,78%) suffered traumatic amputations, while tumor was cause of amputation in 2 patients (1,85%). As for gender distribution, there were 77 males and 31 females. There were 67 (62,04%), transtibial and 41 (37,96%) transfemoral amputations. The average age was 61,78.

According to Wood Stanmore classification of mobility there were 2 patients (1,85) in the first group, 3 patients (2,78%) in the second group, 45 patients (41,76%) in the third group, 49 patients (45,37%) in the fourth group and 9 patients (8, 33%) in the fifth. Majority of patients were in groups 3 and 4. In group 3 there were 20 (44,44%) patients with transtibial and 25 (55,56%) patients with transfemoral amputation in group 4 there were 38 (77,55%) patients with transtibial and 11 (22,45%) patients with transfemoral amputations.

CONCLUSION:

The mobility assessment following the primary prosthetic fitting significantly contributes to assessment of independence in daily living and quality of life. This paper demonstrates a high percentage of patients with primary prosthesis who achieved high degree of independence in activities of daily living.

The Use Of Wood Stanmore Classification Of Mobility In Patients With Primary Lower Limb Prosthesis

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INTRODUCTION:

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Complement Therapeutic Effect Of Balneophysical And Medicamentous Treatment In Patients With Reduced Bone Density

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INTRODUCTION:

Osteoporosis significantly increases risk of bone fractures. Women in postmenopausal period are in possibility of hip fracture more than 40%, and after the first fracture, the possibility of new fracture is more 20% 12-20% of patients die in the first year after this injury 40% will not be able to walk normally, and even 80% will be dependent on nursing care in daily life activities. Only, every third individual satisfactorily recovers.

OBJECTIVE: To show advantages of combined application of medicamentous and balneophysical treatment in enhancing bone mass and reducing fracture number, i.e. improving quality of life in patients with reduced bone mass.

METHODS AND SUBJECTS: Investigation was carried out in Specialized Hospital for Rehabilitation in Banja Koviljaca between November 2005 – February 2008 with 180 patients having T-score less than -1.7. Bone density measuring was done at distal forearm by DTX 4000 device, at least twice in above mentioned period, the soonest one 1 year after the beginning of the treatment. Information on fractures and quality of life were gathered by a survey. In the treatment group there were 90 patients having at least two 10 days' balneophysical treatments in elapsed period, and all of them taking prescribed medicamentous treatment. In the control group, there were 90 patients not having either physical or medicamentous treatment. Balneophysical treatment included kinesitherapy, peloid, thermo mineral water and Horizontal therapy or low frequency magneto therapy. The results were statistically processed.

RESULTS:

Improvement was noted in the treatment group, i.e. stopping further bone density reducing, quality of life improvement, and only one new fracture in elapsed period. In the control group, there were seven new fractures, worsening in quality of life, and continuing the process of bone mass reducing.

DISCUSSION: Simultaneously applying medicamentous and balneo physical treatment of patients with reduced bone density results in positive, complement therapeutic effect and improvement in all observed items.

CONCLUSION:

Patients with reduced bone mass using medicamentous treatment along with balneophysical treatment have had better bone density enhancing, less fractures and better quality of life.

Marfan Syndrome In A 4-Year Old Child–A Pmr Perspective

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Introduction:

Marfan Syndrome (MfS) is a variable autosomal dominant connective tissue disorder, caused by mutations in the fibrillin-1 gene, characterized by a combination of different clinical manifestations in several organ systems, with particular relevance in skeleton, eyes and cardiovascular system. Its incidence is approximately 1:9800, 26% having no family history. Diagnosis is based on clinical identification of major and minor criteria, and may be a difficult task in young children, in whom the age-dependent criteria may not be fulfilled. Nevertheless, timely diagnosis and adequate multidisciplinary management are essential, since they are related to a significant decrease of morbidity and mortality. Rehabilitation treatment is directed to patient's individual disabilities.

Case Report:

The authors present a 4-year old boy with MfS, without any relevant familiar history. Disease was suspected at birth, when very long fingers and toes and pectus carinatum were observed. Further evaluation showed progressive dilatation of proximal aorta at Valsalva Sinus' level on echocardiographic examination, and absence of ophthalmologic abnormalities. Fibrillin-1 mutation was confirmed at the age of 7 months, completing, at that time, the Ghent nosology for MfS criteria.

When first observed by PRM at the age of 8 months, arachnodactyly, pectus carinatum, lumbar kyphosis and pes planum were confirmed, as well as tall stature, characteristic face, joint hypermobility, high (but not narrow) palate and genu varum. Several rehabilitation treatments were made, according to the disabilities observed at each time of consultation, involving physical therapy, occupational therapy and the prescription of technical aids. During this 3-year period, we observed lumbar kyphosis and genu varum reduction, with progressive independence in gait and daily activities, keeping up with the normal infant development.

Conclusions:

In spite of often being a very difficult task, early diagnosis of MfS allows a better and more effective approach to patient, where disability-targeted rehabilitation treatments can prevent deformity, improve function and quality of life. The lifelong PMR role in MfS is, therefore, an essential one.

The Efficiency And Duration Of Physical Threatment Of Children With Congenital Muscular Torticollis Joined With Pseudotumour Of Sternocleidomastoid Muscle

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The timely making of diagnosis of CMT with the mSCM pseudotumour enables an early start of treatment, avoids structural changes and improves the success of physical treatment. The ultrasonography (US) with high resolution is important diagnostic method which has its own important place in making a diagnosis of CMT.

Aim:

To realise and analyse the success and duration of therapy, related to the age of a child and the limitation of passive head rotation at the beginning of therapy, also the relation between the location and size of the mSCM pseudotumour.

Methods:

The examination took place at the Dispensary for Children Health Care in Krusevac, 2001-2007. At the first presentation of children, according to their age and passive neck movement, they were classified in two groups. The results of physical treatment were marked from 0-3. The duration of therapy was period between the beginning of physical therapy and getting the complete passive neck rotation.

We used the US at the beginning, after 30 days of treatment and after getting the complete neck and face rotation. The

Results:

The smallest US size of the pseudotumour was 16,9 mm and the biggest was 37,6mm. There was no statistically important difference between the localisation of the pseudotumour ($p > 0,05$). The limitation of passive neck rotation existed at the beginning of treatment of all children, but it was much smaller at the first month presentation ($p < 0,01$). The duration of therapy depended on the age of a child at the beginning of treatment and the passive neck rotation ($p < 0,001$). It did not depend on the size of the SCM pseudotumour ($p > 0,05$).

The therapy of the CMT with the SCM pseudotumour was successfully finished in 98,08% of children. The success mark of the physical treatment was statistically improved for the children with the first month presentation ($p < 0,001$) and in those cases where the limitation of passive neck rotation was less than 30±16.

Conclusion:

The results of this research confirmed the success of the physical treatment of children with CMT joined with the mSCM pseudotumour. An early presentation, regular usage of the appropriate exercise programme is important for the successful physical treatment. The age of a child and the limitation of passive neck rotation at the first presentation are important for the duration of treatment of CMT with mSCM pseudotumour. The duration of treatment does not depend on the size of the mSCM pseudotumour.

Effect Of Supervised Exercise Interventions In Obese Children: Preliminary Results

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Introduction:

Obesity among children is increasing and presents numerous problems for the child: increases the risk of obesity in adulthood, paediatric hypertension, type II diabetes mellitus and coronary heart disease, increases stress on the weight-bearing joints, affects self-esteem and relationships with peers. Early and appropriate intervention to achieve normal weight is important. Adopting a formal exercise program is valuable to burn fat, increase energy expenditure, maintain lost weight and decrease blood lipid and blood pressure and should be coupled with another interventions, such as nutrition education or behaviour modification.

Methods and Subjects:

In Oporto, in August, we've started an individualized exercise program with obese children addressed to us by Pediatric Department. It involves obese children with metabolic and cardiovascular associated conditions.

The Exercise Program begins with an initial evaluation where we use a protocol specially created for this purpose including an exercise test (McMaster protocol). After that, depending on the medical conditions and risk factors we establish an individualized supervised exercise program. We had an initial group of 3 children, with ages between 14 and 16 years old. 2 female and 1 male. BMI over Percentile 97. They integrated the program for 10 to 12 weeks. Results Boy, 15 years old, BMI 36,7 Pre-hypertension. After a program of 12 weeks he lost 4 Kg and tolerated longer exercise (McMaster protocol) with less perceived effort (Borg scale). Girl, 16 years old, BMI 39,5 Hyperlipidemia and insulin resistance.

After a program of 10 weeks she didn't loose weight, but tolerated longer exercise (McMaster protocol) with less perceived effort (Borg scale). Girl, 14 years old, BMI 32,6 Hypertension and insulin resistance. After a program of 11 weeks she lost 5 Kg and tolerated longer exercise (McMaster protocol) with less perceived effort (Borg scale).

Discussion:

All patients had achieved a better exercise tolerance (increased exercise time and decreased perceived effort). In two of them there was also a weight loss.

Conclusion:

Although the relationship between physical activity and body fatness needs to be better understood in physiological terms, as do the metabolic effects per se of physical activity in childhood, in this work we concluded that a formal exercise program is valuable mainly to increase exercise tolerance and motivation in these patients.

We shall follow with this investigation to strengthen the significance of these positive results.

Post-Tetanus Infection Gait Rehabilitation Based On Gait Analysis Data

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Introduction:

Cerebral palsy is the most common cause of disability in childhood. Spasticity is one of the frequent symptoms and can be a function,

Aim:

To describe a rare case of sequelae of generalized tetanus, and emphasize the utility of gait analysis in evaluating deficits and outcomes of rehabilitation.

Methods and Subjects:

The subject is a 40 year old, who had survived generalized tetanus infection, and presented for rehabilitation with tetraparesis, different signs and symptoms of muscle hyperactivity, which interfered with his overall functionality and quality of life. We present a case review of clinical data and gait analysis performed in our laboratory (including video, kinematics, kinetics and telemetric dynamic EMG) prior to treatment and at regular intervals during the treatment period, as a way of monitoring the therapeutic intervention and quantifying outcomes.

Results and Discussion:

The case studied had incomplete tetanus vaccination and reported a bite injury during a scuba diving session 15 months previously. Two months later, he noticed progressive onset of symptoms. He was submitted to an extensive diagnostic workout, including blood tests, spinal fluid tests, spinal cord and brain MRI and CT scans, electromyography, electroencephalography and videonistagmography, which were normal.

The diagnosis of tetanus infection was finally established and treated 1 month later. He presented to us one year post-infection, with generalized hypertonia, predominantly affecting the lower left limb, as well as a moderate decrease in muscle strength and impaired balance in the orthostatic position. He required two crutches to walk, with increased effort and fatigue. The main treatment goals were: to improve muscle hyperactivity, balance and gait pattern, as well as safety and endurance.

Conclusion:

Gait analysis allowed us to characterize the patient's gait deficits and compensation strategies, and to provide an objective baseline, from which to design specific procedures, tailored to the individual needs of the patient. On the other hand, it proved to be a very helpful tool, that made it possible for us to monitor the outcomes and helped us keeping the patient motivated and compliant.

Living With Spinal Muscular Atrophy

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Introduction:

Spinal muscular atrophy (SMA) is inherited as an autosomal recessive trait, caused by a deletion of the SMN gene on chromosome 5 and is a progressive neuromuscular disorder characterized by degeneration of certain motor nuclei within the brainstem and anterior horn cells. Typical symptoms are a slowly progressive muscle weakness and atrophy. SMA is divided into subtypes based on age of onset of symptoms and maximum function achieved.

Patient:

The authors report the case of a four year-old girl, born after a supervised term gestation with no neonatal medical problems. By the age of one and a half months the patient began to overcome several bacterial lower respiratory tract infections, having Spinal Muscular Atrophy type II been diagnosed, by molecular studies, by the age of seventeen months.

The generalized muscular atrophy determines several pathological manifestations. In the musculoskeletal system, the main manifestations are secondary scoliosis and limb multiple joint retractions, which allied to the generalized and extreme muscle weakness lead to a motor underdevelopment, making autonomous gait impossible.

After several trials to adapt to an orthosis, she went to the neuromuscular consultation at Hopital Raymond Poincaré, where a custom-made CTLS orthosis was fabricated, which she uses 23 hours a day (Garchois corset) and that has effectively reduced her scoliosis. After several lower tract infections and to oppose the restrictive respiratory insufficiency and consequent pulmonary hypoplasia, she began to use a bi-level pressure ventilator, by nasal mask, at variable periods during day or night, according to the clinical status. Her chest physical therapy includes the use of a mechanical in-exsufiator whenever there's the need. Her nutritional status is under surveillance. The osteoporosis of the lower limbs is a present problem and needs further intervention.

Conclusions:

SMA treatment is generally supportive. The goals are to improve the patients' quality of life and to minimize disability, particularly in patients with slow progression. A multidisciplinary approach is essential and encompasses physical, occupational, speech, and respiratory therapies.

The use of splints, bracing, and spinal orthosis should be customized to each patient. The goals are to maximize the patient's independence and quality of life at each stage of the disease. Specific pharmacologic therapy is not available. Gene-specific therapy is not yet available.

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The Effects Of Diclofenac-Sodium Spray On Shoulder Movements In Patients After Thoracic Surgery Due To Lung Cancer

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Recently, the number of thoracic surgery procedures due to lung cancer is in constant raise. The main task of rehabilitation in these pts is to return these patients in normal level of functioning by early rehabilitation treatment. Unfortunately, shoulder and chest pain significantly influences efficiency of rehabilitation program.

Aim:

To investigate effects of diclofenac-sodium (DiclofenacDuo) spray on shoulder movements amplitude in postoperative period.

Material and methods:

Forty seven pts (29 males, 18 females) who underwent thoracic surgery due to lung cancer were postoperative treated with standard protocol of early rehabilitation. First group (A, n= 30) was also treated with Diclofenac-Duo spray locally twice daily, while the control group (C, n=17) was not. In all pts magnitude of shoulder movements was measured on third postoperative day.

Results:

There was no significant difference in male/female ratio and mean age between groups. On 3rd postoperative day there was no significant difference in anteflexion up to 90 degrees and retroflexion between groups, but significantly enhanced anteflexion over 90 degrees, abduction up to 90 degrees and abduction over 90 degrees was found in group A.

Discussion:

Early rehabilitation is of most importance in patients who underwent thoracic surgery, because improvement of their motility significantly reduces appearance of postoperative lung complications. Reduction of shoulder and chest pain facilitate rehabilitation treatment, thus local application of diclofenac-sodium spray showed great beneficial effect in postoperative treatment of our pts.

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Evaluation O Lifestyle Parameters In Children Of Cacak City Region

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Introduction:

Physical activity as health parameter is important in prevention of various medical conditions. With advances in technology, there is increase of population with sedentary lifestyle habits. The first sign of such behavior is significant increasement of overweight. Aim of this study is to estimate average time children spent been physically active and average time of been inactive.

Methods:

Our study included 358 children age of 11 years during one year's period from 2006 to 2007. The parameters that were measured included: physical activity less than one hour, physical activity between 2 and 4 hours and physical activity more than 4 hours, the other parameter was: sedentary activity less than one hour, sedentary activity between 2 and 4 hours and sedentary activity more than 4 hours.

Results:

Less than one hour 87 children were active, between 2 and 4 hours 223 children and more than 4 hours 48 of them. Less than one hour 83 children, between 2 and 4 hours 232 children and more than 4 hours 45 of them.

Discussion: Recent studies suggest that physically active child is healthier and has lower risk of developing cardiovascular, metabolic and oncological diseases. Majority of children are physically active between 2 and 4 hours, while same proportion is for those with sedentary life style.

Conclusion:

Active engagement of healthier lifestyle habits should be thought to children with interdisciplinary approach of different population structures.

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Developmental Follow-Up Study Of Children In Leskovac

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Introduction:

Growth and development are under influence of both genetic and environmental factors. There are reports suggesting increase in developmental delays in children in recent years. Aim of our study was to present diagnoses of children that were referred at our department for developmental follow-up.

Methods:

We evaluated 100 children referred at local hospital in Leskovac in Serbia at department of Physical medicine and Rehabilitation. All children were divided into 3 groups: group of children that required only follow-up, group of children that were hypotonic and group of children that were hypertonic. The diagnosis was made upon complete clinical and diagnostic assessment.

Results:

From 100 children that were evaluated, 89 were classified into first group, 5 of them were hypotonic and 6 patients were hypertonic. From those from first group, 10 of them had head inclination toward left or right side and 18 children were with foot deformities.

Discussion:

It is important to stress out that normal physiological development of children is essential for both social and academic development. Since younger children have greater developmental capacity, early diagnostics and implementation of physical therapy protocols is of significant importance to help them to accelerate its delay. Our study pointed out that 11% of children are with some kind of motoric delay.

This is suggesting that the role of physical therapy and regular check-ups are very important.

Conclusion:

Since developmental delay is more complex state, multidisciplinary approach is desirable when diagnosing such condition. With early beginning of rehabilitation there is greater possibility of improvement in children's developmental status.

Effect Of Aerobic Exercise Program In Patients With Ankylosing Spondylitis Stabilized With Anti-Tnf-Alpha Therapy

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Introduction:

To determine the effects of an aerobic exercise program on disease activity, disability in a group of patients with ankylosing spondylitis (AS) stabilized with anti-TNF-alpha therapy. Subjects and Methods 5 patients with AS treated with infliximab for at least 12 months and with persistent response to the biologic treatment were admitted to an aerobic rehabilitation program. The exercise regimen was performed twice weekly (twice under the supervision of a physical therapist and once individually at home) for six consecutive weeks (T0-T1).

After that the patient repeat the exercises individually at home 3 times weekly for next 4 months (T1-T2). The rehabilitation program included a warmup followed by 30' of mobilization and respiratory exercises (RE).

The 2nd phase composed of 25 minutes of aerobic exercises. 3rd phase was characterized by 10' stretching and RE. Patients were evaluated at T0, T1, and T2. The primary outcome measure was an improvement of BASDAI defined as the difference between 2 measurements (T0 and T1 for the supervised rehabilitation program T1 and T2 for rehabilitation program done at home).

Results:

A significant improvement expressed as at least 50% improvement of BASDAI (T1) compared to BASDAI (T0) was observed in all patients. This result was maintained in 3/5 of patients at T2, that means after 4 months of individually treatment at home.

A persistent improvement of BASFI was noticed in 3/5 patients at T1 and T2. VAS pain was reduced in 4/5 patients at T1 and in 3/5 pt at T2.

Discussion and Conclusions:

The aerobic exercise program seems to improve at short-term disease activity and disability in patients with AS stabilized with anti-TNF-alpha therapy. The anti-TNF-alpha therapy enables patients to carry out an aerobic treatment, that's usually impossible for patients with active disease. The lack of maintenance of the results at long term (T2) in 2/5 patients can be explained as the failure of compliance in practicing individually exercises at home.

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Juvenile Idiopathic Arthritis: The Role Of Physical Medicine And Rehabilitation Treatment Dealing With Complications.

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(JIA), formerly known as juvenile rheumatoid arthritis, is the most common form of persistent arthritis in children.

JIA is sometimes referred to as juvenile chronic arthritis (JCA), a term that is not precise as JIA does not encompass all forms of chronic childhood arthritis.

Arthritis is the inflammation of the synovium (the lining tissues) of a joint. JIA is a subset of arthritis seen in childhood, which may be transient and self-limited or chronic.

We report you a case of a 56 year old woman diagnosed with JIA from the age of 16. As consequence of the disease she was submitted to a bilateral knee arthroplasty (age of 25 and 33) and bilateral total hip arthroplasty (age of 35 and 36).

On the development of the disease she had to do a revision of the hip arthroplasty, being now with none surgical material.

She has a surgical arthrodesis of the left knee and a natural arthrodesis of the right knee. Dealing with this challenging situation (pain and mobility issues) is difficult. We proposed a therapeutic program that included hidrobalneotherapy and pharmacologic therapy.

The patient is able now to walk in the therapeutic pool, and is in much lesser pain, which has improved her mood, and her coping ability.

Conclusion:

This case report highlights the importance of physical medicine and rehabilitation treatment modalities on dealing with Juvenile idiopathic arthritis.

Coronary Disease And Peripheral Arterial Disease: Implications For Cardiovascular Rehabilitation Services

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It is long well known the high overlap that exists between peripheral arterial disease (PAD) and coronary heart disease.

Not infrequently PAD manifests itself the first time in the course of a rehabilitation program implemented after a coronary event.

This will lead to functional limitations and alterations in the applicability of the predesigned CV program.

The authors briefly describe the literature data concerning the association between these two manifestations of vascular disease and bring out some practical questions about the diagnostic and therapeutic management in a cardiovascular rehabilitation facility.

Prosthetic Use After Rehabilitation

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Introduction:

A Rehabilitation Programme for Lower Limb Amputees, before and after the prosthesis prescription, plays an important role for functional improvement. However some patients, for several reasons, abandon prosthetic use which leads to activity limitation and participation restriction.

Aims:

To study the outcome after the Prosthetic Training at a PMR Department in a Portuguese Hospital.

Patient and Methods:

One hundred of major lower limb amputees which underwent a Rehabilitation Programme in a PMR Department are being assessed through phone interview, in what concerns to prosthetic use/non use.

The reasons for Prosthetic non use were also assessed.

Results/ Discussion/Conclusions:

This is an ongoing study. The knowledge of the reasons which led to non prosthesis may play an important role in prosthesis prescription decision and prosthetic training.

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Demographic And Clinic Characteristics Of Patients With Cerebral Palsy In Istanbul-Turkey: A Multicenter, Cross-Sectional Study

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Introduction:

The objective of this study is to identify epidemiological characteristics of the patients with Cerebral Palsy (CP) who live in Istanbul, including demographic information, clinical types, risk factors and some clinical features.

Methods and Subjects:

Demographic and clinical data of the patients with CP presenting to university and training hospitals in Istanbul between 2005 and 2007 were recorded by 'Istanbul Cerebral Palsy Working Group' using a 'Cerebral Palsy Evaluation Form' which is standardized again by our group. Our study was conducted as a cross-sectional and multicenter study, with the participation of training hospitals in Istanbul. In this study, some demographic and clinical data obtained are provided.

Results:

730 patients with a mean age of 7.27 ± 4.63 (0-22 years) were enrolled to the study. Of patients, 429 (58.8%) were male and 301 (41.2%) were female. During the clinical typing, it was seen that 91% of the patients was spastic, 3.6% was mixed, 3.1% was dyskinetic and 0.7% was ataxic. When an evaluation for known risk factors was performed, 35.1% showed natal, 22% showed postnatal and 14.5% showed prenatal risk factors.

While 21.4% of the patients had consanguineous marriage between their parents, 78.6% had no consanguineous marriage between their parents. 18.9% of the patients' mothers had an history of abortus and 7.4% had an history of stillbirth and mean maternal age during deliverance was 26.06 ± 5.99 .

While 51.9% of the patients had a diagnosis of CP during 0-6 months, 24.6% had the diagnosis during 6-12 months and 23.5% in Month 12 or later. Of the cases, 32% had paraphrasia, 23.1% had mental retardation, 20.9% had epilepsy, 22.8% had visual disturbances, 10.7% had growth and developmental retardation, 7.4% had swallowing disorder, 4.9% had behavioral disorders and 9.8% had dental problems.

Discussion and Conclusion:

In the literature, there is a slight male dominance with the ratios of 1.4/1-1.9/1 in the gender distribution of patients with CP in our group, this ratio was found to be 1.4/1, consistent with the literature. The ratios of 91% for spastics and 3.1% for dyskinetic form found during clinical typing were consistent with information from literature.

In contrast with the literature showing the predominance of natal and prenatal risk factors, this study showed that natal and postnatal factors were more frequent.

Medical Wellness- The Best Practical Holistic Approach To The Human Population

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Introduction:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. There is a transformation of health care and health systems in the 21st century leading to specific policy reforms and interventions, necessary to transform health care to a more holistic, people-centred approach. Medical wellness is an approach for delivering health care where the People are at the Centre of Health Care, that considers the multiple influences on a person's health.

Discussion:

Accordingly, there are multiple options for treating and preventing disease. Provides a balanced, appropriate application of wellness practices within the clinical setting that are based on evidence-based practices. Promotes multi-disciplinary approach to patient care, based on informed consent and decision support between the practitioner and patient.

Business plan for medical wellness should start with the project goals, target market and site selection.

Specifically it should include some technical analysis of the following components:

Define Project Mission and Goals, Market Analysis, Member and User Profile, Demographic Analysis, Competitive Analysis, Comparison of Successful Centers, Program Plan, Facility Space Program, Wellness Center Model and Profile, Financial Proforma and Schedules. Components of medical wellness program:

Weight management, stress management, reduction of anxiety, stress, tension, and depression, decreasing risk of death, injury, or disability from disease, reduction of cholesterol and blood pressure levels, increased energy, general vitality, and mental sharpness, improved mobility, balance, and coordination, sleep management.

Conclusion:

Medical wellness is the best practical holistic approach to the human population

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Physical Therapy Of Chronic Recurrent Multifocal Osteomyelitis In Children- Case Raport

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Chronic recurrent multifocal osteomyelitis (CRMO) in children represent an inflammatory disease that mainly affects metaphyses of long bones. The pathogenesis of CRMO is unclear, with entesitis related arthritis and psoriatic arthritis as causal factors.

No infectious agents have been found microbiologically. Epidemiology of CRMO is not defined. It's incidence is estimated to be 1: 1 000 000. Clinical diagnosis is difficult mainly because of variable presentation.

Cilj rada je ukazati na značaj rane dijagnoze i rehabilitacije ovih pacijenata.

Pacijentkinja stara 16 god., prve simptome u vidu hramanja na desnu nogu zadobila u 12 god. Nakon 6 meseci javio se bol u desnom kuku bez ograničene pokretljivosti, kada je po prvi put hospitalizovana. Dijagnoza CRMO postavljena 10 meseci od pojave prvih simptoma, kada je u kliničkom nalazu dominirala kontraktura desnog kuka, slabost grube motorne snage pelvifemoralne muskulature desno.

Tada je po prvi put upućena dečjem fizijatru. Nakon sprovedene fizikalne terapije (hidro-kinezi, lasero, elektro i radne) dolazi do statistički značajnog poboljšanja pokretljivosti u desnom kuku, kao i grube motorne snage.

U radu je prikazano četvorogodišnje praćenje navedenih parametara, tokom kontrola i povremenih fizikalnih terapija.

Ovim radom želimo da istaknemo značaj prepoznavanja ove bolesti, kao i ulogu rehabilitacije, koja je terapija izbora ovih pacijenata.

Rehabilitation Treatment For Spastic Right Hemiplegia Post-Viral Encefalitis (Case Report)

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Introduction:

Sudden hemiplegia in childhood need a quick and complete neurological assessment, laboratory tests, and special imaging tests: head radiography, EEG, CT, IRM. Encephalitis are inflammatory diseases of the brain, due to various infections (viruses, ricketsia, bacteria, fungus, etc).

The most frequent viruses that produces encephalitis and meningitis are herpetic viruses, arboviruses, paramyxoviruses, enteroviruses, adenoviruses. In clinical practice the diagnostic of acute viral encephalopathies is based upon the clinical assessment and eliminating other causes (intracranial infections, Reye syndrome, hypoxia, ischemia, toxic, metabolic and vascular disorders of the encephal, brain injuries, hemoragic disorder. Encephalitis may present fever, meningism, altered behavior, depressed conscious level, seizures, focal neurological deficits.

Methods:

We present a 13 year-old child, with recent acute spastic hemiplegia after viral encephalitis, that had early rehabilitation treatment and occupational therapy over 4 weeks .

The patient was assessed from two domains of the World Health Organization International Classification of Functioning, Disability and Health:

body structure (Modified Ashworth Scale) and activities participation (Pediatric Quality of Life Inventory).

Self-perception and neurosensorial integration was also measured (modified questionnaire).

Case particularity:

- Acute spastic hemiplegia in a child with no pathological history background
- The epidemiological and laboratory findings suggest an acute hemiplegia postencephalitis with varicelozosterian virus.

Conclusion:

- early rehabilitation treatment has a significant effect in reducing the motor deficits
- The patient will be in a follow-up program of rehabilitation till the recovery of neurologic deficit
- Acute hemiplegia in children is not a common cause of hemiplegia at this age, international incidence of acute hemiplegia in children is 2 cases per million population per year

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Study Regarding The Combined Effect Of Radon Thermal Waters In Degenerative Diseases Of Spine

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Introduction:

The most common indication for Radon thermal waters is the inflammatory and degenerative pathology of the locomotors system. The antialgic and decontracturant effects of thermal waters is reinforced by the anti-inflammatory effect of Radon (similar with topical steroid application), which adds the antioxidant action at cellular level.

Method and Subjects:

Our study included 100 patients with chronic degenerative diseases of spine, who performed a medical rehabilitation program in Felix Spa. The patients were randomized in 2 groups. The first group followed 18 sessions of hidrothermotherapy (36 0 thermal water with Radon) for 20 minutes twice daily. The second group followed only one session daily. The duration of our study was 6 months, meanwhile the patients were assessed at baseline, at the end of the treatment, at 3 months and at 6 months. We evaluated the intensity pain on a visual analogue scale (10 mm VAS) and the quality of life (HAQ).

Results:

Both groups presented identical results at the end of the treatment meaning a significant clinical improvement comparing with baseline. The assessment after 3 months showed the persistency of the benefic effects only in the first group. The second group experienced a regression towards baseline. After 6 months we noticed a statistically significant difference between the two groups regarding both pain and quality of life.

Discussion:

The statistical analysis of the data revealed a positive effect of Radon both on short and long term. The results of our study are similar with the data found in bibliography, which underlines the beneficial effects of Radon thermal waters on pain and mobility.

Conclusions:

Our study conducted in Felix Spa (Romania) confirms evidence-based Radon as a therapeutical agent useful in degenerative pathology of the spine. The effect of Radon correlates with the thermal water effects. Felix Spa represents one of the most important spa in Central Europe, which successfully uses these two natural resources as therapeutical agents.

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Spa Therapy With Radon In Lumbar Herniated Disc Recently Operated

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Introduction:

Low back pain with or without sciatica represents a major health problem in developed countries. Among patients with positive anamnesis for low back pain only one percent needs surgical intervention for lumbar herniated disc.

The aim of our study is to analyse the possible advantages of a rehabilitation treatment done using thermal water with radon in Felix Spa (Romania) for patients with recent laminectomy.

Method and Subjects:

We present a prospective study one year long, including 40 patients with herniated disc at levels L4-L5-S1. The age of the subjects was between 30-50 years. The time interval between the surgical intervention and the thermal therapy was 4-12 weeks. The patients attended a 20 minutes session of hydrothermotherapy in water with radon in a quantity of 0,36 mm³ Currie at 36°. The assessment was done initially, at the end of the treatment and after 6 months. The parameters that we registered were pain and spine functionality using visual analogue scale (VAS), Oswestry index and HAQ.

Results:

Among the whole group at the end of the treatment, 27 patients didn't show any pain and presented a significant improving of functionality, 7 patients presented a regression of pain and improving functionality, for 7 patients the clinical status showed no improvement. None of them did experience any worsening of symptomatology regarding pain or functionality.

Discussions:

The rigidity of lumbar spine before surgery and the immobilization after surgery predispose for local adhesions, which determine a consequently limitation in range of motion and the appearance pain. Hydro-thermotherapy with radon contributes to reeducate the mobility of lumbar spine because its anti-inflammatory effect.

Conclusions:

We consider that the rehabilitative program of operated herniated lumbar disc, focused on hydro-thermotherapy in thermal water with radon, must begin early after surgery and be done carefully. The results obtained during the initial hydro-thermotherapy must be maintained by help of a daily kinetic program exercised at home. The kinetotherapeutic program has to be reevaluated at 6 months and has to be followed by another hydro-thermotherapy cure.

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Study Regarding The Efficacy Of Massage And Kinetotherapy For Treating Low Back Pain In Pregnant Woman

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Introduction:

Low back pain represents a frequent phenomena manifested mainly during the last 2 quarters of pregnancy, affecting not only women with pre-existent lumbar pathology. The symptomatology affects the functionality in daily life and the therapeutical solutions are difficult to be found because they exclude medication. In this purpose it is recommended that the treatment should be oriented towards physical medicine.

Methods and Subjects:

We conducted a prospective one year study, including 20 pregnant women with low back pain manifested during the 2nd and 3rd quarters of pregnancy. For choosing the treatment intervention we relied on the data found in bibliography which describes massage techniques and kinetic programs on one hand and the rachialgia during pregnancy on the other hand. Results and discussions: All the 20 pregnant women with low back pain succeeded to improve the painful symptomatology, the outcome being evaluated using a visual analogue scale (VAS). The efficacy of therapeutical massage was significant in the context of applying this procedure in a session of 20 minutes three times weekly. The kinetic program was applied three times weekly taking into account the particularities of each pregnancy. Besides massage and exercises, we recommended muscle relaxant postures to be maintained daily at home.

Conclusions:

Massage and kinetotherapy have a benefic effect during pregnancy because of a local muscle relaxant action concomitant with a general sedative action. The usefulness of kinetic exercises for pregnant women represent an important gain aimed to support pregnancy, birth and a more rapid return of the body to the previous state. By minimizing the pain and dysfunctional symptomatology at the lumbar level, massage and kinesitherapy contribute to improving the quality of life in pregnancy.

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The Rehabilitation Approach In The School Educational Process Of Two Children

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Introduction:

We decided to present rehabilitation approach in two pupils, since the two chosen cases may give us answers on common questions about optimal beginning and meaning of the school educational programs in rehabilitation process.

Subject:

KE A 11 years pupil developed muscle weakness, atrophies and sensory disturbances with paresthesias, in the autumn 2007. The diagnostic and treatment started in out-patient manner. The girl was included in the mainstream school from September 2007, without special contents and adjustments, developed in the team. Her condition worsened. At the December 2007 she was admitted at Neurological Department of Children Hospital. Clinical estimations showed motor and sensory polyneuropathy with demyelination. Hospital school programs in rehabilitation conditions were subsequent, started from March 2008. Psychological tests showed mild cognitive changes in visual and sound memory process. Fluctuating of emotional, cognitive and physical abilities persisted. Alterations in physical abilities resulted in more complex individual responses and tendency to social isolation. Subject GT A 9 years old girl after thromboembolic accident in region of left middle cerebral artery, dated on June 2006. One month later, she was included on rehabilitation in our institute. The hospital school programs started early, from September 2006. Rehabilitation assessments showed moderate but complex sequels. She developed right side hemiparesis with hypoesthesia and deficits in somatosensory integrated functions, moderate cognitive impairment including dysphasia, difficulties on divided attention and executive function consequences. Insufficient self correction.

Methods and work:

General principles in methods which we applied were: Adaptation to altered learning conditions and usage of resource. Specific and modified sensorimotor based learning process. Repetitive activities progressed in difficulty and reinforced with feedback. Manipulation of complex learning variables used to solve problems and attain educational goals. Facilitation of positive learning expectations. General adjustments within the educational process were in environment, didactic resources, specific learning phases, assessments of knowledge, individual help with learning.

Results and Conclusions:

At the discharge and one month later performed, control assessments suggested some answers. Despite of moderate but complex sequels after CVA in pupil TG, control analyses showed better results in functional learning, emotional changes and social skills. Early and individual modified learning process, developed in rehabilitation team in the cooperation with hospital school pedagog, resulted in higher functional level of knowledge. According to literature, positive learning experiences probably maximized performance and facilitated restoration.

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The Effect Of Peloidotherapy On Patients With Osteoarthritis Knee

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Peloidotherapy for patients with osteoarthritis is one of the oldest forms of therapy

The aim of this study is to show the effects of peloidotherapy in patient treatment with osteoarthritis knee and to compare with effect of physical therapy.

A prospective randomized controlled study was conducted in 2002. in 60 patients with osteoarthritis knee.

Treatment was either spa therapy at Rusanda spa of 3 weeks duration (peloid group) or physical therapy (control group). Assessment criteria WERE PAIN (Latinnen score) and function knee.

Assessment criteria were collected before spa therapy and 3 and 12 weeks thereafter. After 3 weeks of therapy statistically significant difference were observed in pain and function of knee between groups.

Changes in the assessment criteria after 3 months follow-up period showed improvement in terms of pain.

This study suggests that spa therapy has prolonged, beneficial, symptomatic effects in osteoarthritis knee.

Effectiveness Of Low Level Laser Therapy On Pain And Functional Status In Ankylosing Spondylitis

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The effectiveness and reliability of low level laser therapy (LLLT) is already known in osteoarthritis, rheumatoid arthritis, fibromyalgia and various local musculoskeletal problems. In the literature, there is no trial on the effectiveness of LLLT in ankylosing spondylitis (AS). The aim of this study is to evaluate the effects of LLLT on pain, functional status and disease activity in patients with AS.

A total of 37 patients who had a diagnosis of AS according to the modified New York criteria were included in the study. The patients were randomly assigned to two groups. In Group 1 (n = 19) the patients received LLLT for 10 sessions (1.2J, 30 mW), group 2 received placebo laser. Patients were evaluated before the study, at the end of the treatment (2nd week) and after 2 months. Evaluation parameters were visual analogue scale (VAS) at rest and during movements morning stiffness, the patient's global assessment and the physician's global assessment the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), Bath Ankylosing Spondylitis Functional Index (BASFI), Ankylosing Spondylitis Quality of Life (ASQoL) questionnaire, Schober test (ST), modified Schober test (MST), finger to floor distance in antero-posterior flexion and lateral flexions.

There were no statistically significant differences between laser treatment and placebo for any measures of pain, functional status and disease activity ($p>0.05$). LLLT group showed significant improvements for parameters of VAS at rest, finger to floor distance in antero-posterior flexion and left lateral flexion at 2 weeks ($p<0.05$), but only for the parameters of VAS during movement, ASQoL, patient's global evaluation and physician's global evaluation at the end of the treatment and at the second month ($p<0.05$).

In this first trial that investigated the effects of LLLT on AS, positive effects on pain, disease activity and functional parameters were found. However beneficial effects were also seen in the control group. There is a need for further studies investigating different durations of treatment with different wavelengths and dosages of LLLT in AS patients.

Chronic Fatigue Syndrome In A Twelve-Year-Old Girl

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Introduction:

Chronic fatigue syndrome (CFS) is poorly defined in children. Recently formulated diagnostic criteria from the Centers for Disease Control and Prevention (CDC) as apply for adults, which can with certain limitations also be used for children, state:

- 1) Severe chronic fatigue of six months or longer duration with other known medical conditions excluded by clinical diagnosis
- 2) concurrently four or more of the following symptoms: substantial impairment of short-term memory or concentration sore throat tender lymph nodes muscle pain multi-joint pain without swelling or redness headaches of a new type, pattern or severity unrefreshing sleep and post-exertional malaise lasting more than 24 hours.

CFS is not life-long. The prevalence in children and adolescence is around 0.05%, with a mean age of onset between 11 and 15 years.

Case description:

A twelve-year-old girl was referred to our Pediatric clinic with a gradual onset of fatigue, muscle and multi-joint pain, headaches and impairment of concentration. The symptoms had almost a one year duration and she had twice visited a pediatrician without having a definite diagnosis. During the first months she experienced post-exertional malaise, while gradually she faces significant functional limitations (frequent absences from school, disruptions in social activities), withdrawal and inactivity. Her sleep is unrefreshing and she feels more anxious than depressed. She had a BMI between 75th and 85th percentile.

Medical history, physical examination, and laboratory testing yielded little helpful information. On the basis of the clinical observations, our patient fulfilled the diagnostic criteria of the CFS formulated by the CDC. Treatment included physical therapy and modest aerobic or anaerobic exercise, stress management with a referral to a therapist. After being followed-up by our clinic for almost 20 months, she considered herself markedly improved and she returned to school if even in a limited capacity.

Conclusion:

Diagnosing Chronic Fatigue Syndrome (CFS) in children and adolescence can be challenging and more difficult than in adults. It is important that physicians are aware of this, because the prognosis is good if physicians make a diagnosis. Outpatient rehabilitative treatment offers significant potential to improve the prognosis of CFS (Wellness score and school attendance) in childhood and adolescence.

Vasculitis And Rheumatoid Polyneuropathy

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Objectives:

Neuropathy is a frequent complication of rheumatological diseases. Carpal tunnel syndrome is the commonest neuropathy. However almost any nerve can be compressed from oedemas, cysts, anatomical deformities of the joints, or from the use of orthotics. On the other hand mononeuropathy is common in such patients due to obstruction in the vasa nervosum.

Aim:

To determine criteria of early diagnosis in patients with vascular rheumatological mono and polyneuropathies.

Material and Method:

9 patients with vascular rheumatoid polyneuropathy were included in the study. In all patients a medical history was completed, were clinically examined and electrodiagnostic (EMG) and blood tests were performed.

Results:

7 out of 9 patients clinically were expressed as mono neuropathy and 2 as asymmetrical polyneuropathy. In all patients the initiation of the disease was acute with sudden deep embarrassing pain. EMG test revealed axial lesion.

Discussion:

Rheumatoid polyneuropathy of vascular aetiology, that must not be underestimated, can be recognised by: The clinical presentation of acute initiation (days or even hours), contrary to the usually long lasting history in compression lesions. Electrodiagnostical features of axial damage, block in conductivity, or even features of aponeurosis. Many times coexists other tissues' vascular lesion. Nerve biopsy (in case of suspicion of vascular polyneuropathy, of a chronic progressive type), is often helpful, after a muscle biopsy. Nerve must be clinically or neurografically affected. Vascular inflammatory lesions can be revealed in muscle biopsy as well which is preferable than the nerve biopsy.

In the differential diagnosis, diabetic, pharmaceutical, infectious polyneuropathy and malignancy should be excluded. Vascular neuropathy will be cured as systematic vasculitis.

Results Of Repeated Botulinum Toxin Injections On Serebral Palsy

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Introduction and Objective: Cerebral palsy (CP) is a permanent motion and posture disorder due to a non-progressive damage of incompletely developed brain

(1). For the treatment of spasticity which is a peripheral outcome of the disease, injection of botulinum toxin-A (BTX-A) is known as a reliable and effective method

(2). In this study we aimed the evaluation of outcomes of recurrent BT injections

Material and Method: Clinical and functional outcomes of more than one BT injections in both lower extremities of two cases with diplegic type CP between 2005 and 2008 were reviewed. Evaluation parametres were spasticity (with Ashworth scale), passive joint range of motion (PROM) and functional status (WeeFIM). After injections, home exercise program and AFO were prescribed.

The first case was a 8 year-old male patient who was unable to walk on his heels. BTX-A injections at 0.,8. (into m. gastrocnemius and hamstrings 300 IU in all) and 32. months (into m.gastrocnemius, m. adductor magnus and hamstrings 200IU in all) were repeated thrice. When he came back delayed for a control visit at 22 months after the second BTX-A administration, increase in bilateral spasticity of m. gastrocnemius, more prominent at the left side prompted surgery (on right operation vulpius and left achiloplasty).

Approximately 2 months postoperatively, third injection of BTA (into m. gastrocnemius, m. adductor magnus and hamstrings totally 200IU) was administered, the results were summarized in Table 1.

The second case was also a 6 years-old female patient brought with complaints of walking on her toes. She received 3 injections of BTX-A at 0.,13. and 35. months (into m.gastrocnemius and hamstrings bilaterally 200 IU in all) The results were summarized in Table 2. In both cases, after repeated injections, any decrease in the effectiveness of BTX-A was not observed and dose escalation was not required. Any side effect was not seen.

Conclusion: The outcomes of our cases were in accordance with the literature (3,4) which demonstrated that repeated applications of botulinum toxin in cases with cerebral palsy were effective and reliable for the treatment of spasticity. Regular application of exercises, and compliance with follow-up visits will in our opinion sustain effectiveness of therapy and diminish the requirement for surgical intervention.

Table 1

Right/left (range of motion)	Popliteal angle	Ankle DF (knee extension)	Ankle DF (knee flexion)	Ashworth Scale	Adductors	Hamstring	Gastrocnemius	WeeFIM
25.04.2005	80/80	-20/-30	-10/-15	25.04.2005	Grade 2	Grade 3	Grade 3	60
09.06.2008	10/20	20/20	30/30	09.06.2008	Grade 1	Grade 2	Grade2	100

Table 2

Right/left (range of motion)	Popliteal angle	Ankle DF (knee extension)	Ankle DF (knee flexion)	Ashworth Scale	Adductors	Hamstring	Gastrocnemius	WeeFIM
25.04.2005	70/70	- 20/-20	-10/-10	25.04.2005	Grade 2	Grade 3	Grade 3	78
09.06.2008	0/0	10/20	20/30	09.06.2008	Grade 1	Grade 2	Grade2	124

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Tarsal Coalition (Child Or Adolescent “False Sprain”) – A Clinical Report”

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Tarsal coalition is a condition in which 2 or more bones in the hindfoot or midfoot are joined by a fibrous (syndesmosis), cartilaginous (synchondrosis) or bony (synostosis) fusion. It is a rare condition and often asymptomatic but usually presents as recurrent sprains, chronic pain and gait disorder (1,2).

The talocalcaneal and calcaneonavicular joints are the most affected (1,2), but other tarsal joints can be involved. The disorder can be isolated or occur in a general malformative context (3). It may be congenital (autosomal dominant with low penetration) (3) or acquired, secondary to trauma, infection, tumor or others disorders (1,2).

The a.a. present a clinical report of a 8-years-old girl, with a 12-months clinical history of recurrent left ankle sprain and tarsal mechanical pain, gait disorder, daily life activity and sport impairment.

She had history of 3 cast immobilizations, used crutches, and took analgesic and anti-inflammatory medication without clinical remission.

Pes planus, with calcaneus valgus, sub-talar stiffness, fibularis muscles spasm, and severe pain on compression of the tarsal sinus were observed on physical examination.

The foot radiographs and CT scan demonstrated talocalcaneal synostosis.

Surgery was performed followed by cast immobilization (4 + 8 weeks) and a rehabilitation program.

Progressive functional improvement has been observed with a reduction in pain and better gait control.

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Preclinical Indicators Of Atherosclerosis In Persons With Spinal Cord Lesions

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Aim:

To compare the preclinical indicators of atherosclerosis between a group of asymptomatic persons with spinal cord lesions and a group of healthy volunteers. In persons with paraplegia, the presence of preclinical indicators of atherosclerosis was expected due to the known higher risk of cardiovascular diseases.

Methods:

The research included 20 paraplegics with complete spinal cord lesions (A and B according to the ASIA scale) at least 10 years after the spinal cord injury, aged from 40 to 60. The control group included 20 'healthy' volunteers who were of the same age and sex as the subjects in the test group. A common criterion for both groups was the absence of symptoms and clinical signs of cardiovascular diseases. The preclinical signs of atherosclerosis were tested by measuring the thickness of the intima-media complex (IMC) on the common carotid artery and the ankle-brachial index (ABI). The IMC thickness was measured by a linear ultrasound probe (7.5MHz) on both carotid arteries at three most visible 1cm-long spots and the average thickness values were calculated. The ankle index was calculated on the basis of the relation between the systolic blood pressure above the posterior tibial artery and on the upper arm. The systolic blood pressure was measured by a Doppler ultrasound device.

Results:

The research included 20 paraplegics with complete spinal cord lesions, 14 men and 6 women, aged on average 46.5 ± 8.1 . The subjects in the control group were of the same sex as those in the test group, aged on average 47.1 ± 8.0 . On the average, the subjects were 23.2 ± 9.7 years after the injury. Paraplegics have significantly thicker intima media complex (6.8 ± 0.12 mm) than healthy controls (0.56 ± 0.12 mm, $p < 0.01$). Many paraplegics had lower ankle index.

Conclusion:

Two most frequent, researched and available indicators for monitoring the preclinical signs of atherosclerosis were selected for the study, the ABI test and the IMC measurement on the common carotid artery. As opposed to other risk factors, statistically related to the possibility of the development of atherosclerosis, the two selected indicators predict such events for each concrete individual. Thus they enable prevention, treatment and follow-up of the disease. Statistically significant differences in the measurement of the IMC thickness between the two groups were identified. In a large percentage of cases, the pathologic ABI can result from the changes in the hemodynamics in the peripheral arteries. A detailed analysis was used to identify a linear relation between the values of IMC and ABI and the presence of the classic risk factors.

Case Report: Botulinum Toxin Injection In People With Spastic Cerebral Palsy By Intrathecal Baclofen Pump

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Background:

Spasticity is involuntary, velocity-dependent, muscle tone increase that results in resistance towards movement. This contraction causes stiffness or tightness of the muscles and may interfere with the activities of daily life and lead to huge complications. Real-world cases of spasticity are often more complex than classical textbook descriptions, this is frustrating for both patients and clinicians and so it is important to make an appropriate diagnosis and to plan a challenging treatment.

Aim of the study:

Our aim is to evaluate the effectiveness of a clinical programme which combines botulinum toxin injections with ITB for the treatment of spasticity in CP patient with quadriplegia. In this study we focused on the possibility of achieving pain reduction, focal spasticity reduction, ROM improvement, improved ease of care.

Case report:

A 30 years old patient, male, with quadriplegia from cerebral palsy. He needs complete assistance for postural changes, main transfers and care. He has strong spasticity and so the Baclofen pump was implanted in 2002 with a daily dose of 850mcg and monthly refill. Despite the improvement of the Baclofen he continued to have a focal spasticity with strong pain in radial extensor muscle region along the left carpus, insomnia and irritability and considerable difficulties for hygiene by the caregiver. So Botulinum toxin was injected (380UI Botox) into the spastic muscles of the upper limb identified by clinical examination. Standardised clinical assessments were made before injections, 1, 2, 3 to 6 months after the injections.

Methods:

The Pump is placed in SC under fascia abdominal pocket. Botulinum effect is focal by stopping the release of acetylcholine from the nerve endings, on muscle tone usually lasts 3-4 months. The peak effect is reached in 2-4 weeks.

Outcome measures comprised:

MAS, PROM and VAS for pain assessment.

Conclusion:

On the MAS, there is a significant reduction in tone at 2 weeks, with a return to baseline by 6 months and there is a resolution of pain and insomnia for 4 months with a improved ease of care.

Determine The Prevalence Of Pes Planus With Several Measurement Methods In Hospital Workers

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One of the most widely used methods for the study of the medial longitudinal arch is the footprint. Several measurement methods and footprint parameters have been proposed to classify the foot into lower, normal and higher arch types but their efficacy and validity are considered controversial.

The purpose of our study was to determine the prevalence of pes planus and investigate the relationship between radiologically measured angles and the arch index obtained from footprint analyses in 338 individuals. Moreover, the role of different foot type (Egypt, Greek and square shape) and high body mass index (BMI) in development of adult pes planus were studied. The assessment of the foot forms was based on three different classification systems of static footprints obtained using the footprint map of Harris and Beath: 1- Staheli index, 2- Chippaux-Smirak index and 3- Grivas classification system. From the lateral weight (kg) by square of the height (m). The prevalence of adult pes planus is 18,6% for Staheli index, 34,9% for Chippaux-Smirak index, 2,6% Grivas classification system, 3,5% for calcaneal pitch, 4,1% for talohorizontal angle and 10% for talo-first metatarsal angle.

The significant correlations between Grivas classification system-calcaneal pitch and calcaneal pitch-talohorizontal angle was found. But there was no correlations between the others parameters and there was no significant relationship between the BMI and foot shape with adult pes planus. Our study showed that footprint analysis is a simple, readily available, low cost and non-invasive technique that can be used as guide for describing the shape of the medial arch of the foot. The Grivas classification system with the 6 different foot types makes a detailed classification possible.

The diagnosis of pes planus according to this system includes severe grades of the pes planus with structural bone changes. The Staheli index is an easy measurement method which is applicable in epidemiological studies of adult pes planus.

The use of the Chippaux-Smirak index in the diagnosis of adult pes planus is limited.

The Use Of PEDI In Children & Adolescents Following Sci

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Background:

The incidence of spinal cord injury in children and adolescents secondary to traumatic and non traumatic causes is low in comparison to adults. The injury's primary effects are on the voluntary motor control, sensation, muscle tone, bowel and bladder disfunction and breathing disturbances. The sub-acute rehabilitation process is intended to maximize the functional capabilities with special emphasize on independent mobility and self care. Despite the importance of evaluation of participation and function, there is little or no standard test for children. The PEDI (Pediatric Evaluation of Disability Inventory) is an accepted test to assess children in rehabilitation program.

Goal:

To evaluate the level of activity, Functional capabilities and caregiver assistance during the rehabilitation process in a group of children and adolescents with SCI, in relation to the age and severity of injury.

Methods:

Retrospective study of 15 children & adolescents after SCI mean age 11 years (4-18years) who were admitted to our department in the last 3 years. The ASIA scale served as measurement for severity and level of injury. Potential capabilities were assessed using 2 sub-test of the PEDI - Functional skills and caregiver assistance. The assessments were conducted twice during hospitalization in admittance and discharge. It took place in the treatment room, conducted by skilled physical therapist or occupational therapist. In the patients' room by the nursing stuff.

Results:

At discharge most of the children showed difficulties functioning according to their age. The gap was greater in the complete lesions compared to incomplete, and the young age more than the adolescents.

Conclusions:

The PEDI assessment is suitable to assess the capability of motor functioning and participation in children after SCI during the sub-acute stage. It can assist the team members and the family to maximize the results of the rehabilitation

Music Therapy In Parkinson`S Disease: A Prospective, Randomized Study

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Introduction:

The music therapy is almost a recent created discipline which by means of music or musical elements search to facilitate the communication skills, relationship, motility, comprehension, expression and therefore satisfies the physical, emotional, cognitive and social requires.

The literature review demonstrates that musical stimuli could activate specific brain areas such as the insular and cingulate cortex, hypothalamus, hippocampus, amygdala, and prefrontal cortex. The music therapy seems to be effective in patients with neurodegenerative disorders, such as Alzheimer's dementia and Parkinson's disease.

The aim of our study is to improve the motor performances obtaining a rigidity and equilibration disorders decrease, improve the respiration, enhance the cognitive abilities such as attention and concentration in the patients with Parkinson`s disease and post-vascular parkinsonism owing to the therapeutic effects of the Music therapy.

Methods and Materials:

The music therapy sessions are performed for the groups of 4-6 patients recovered with I-III grade of Hoehn and Yahr scale. The session team is composed of music therapist, psychologist, occupational therapist to perform 1 hour sessions twice a week for six week. The patients pre-and post-treatment evaluation with validated scales: MMSE, Barthel Index, FIM, Beck, UPRDPS, PDQ-39 is performed by medical doctors.

The video registrations are also included. The exclusion criterias: MMSE<14, gait incapacity, severe co-morbidity.

Discussion:

The music therapy is an efficient therapeutic strategy which complements the multifunctional rehabilitation of Parkinson`s disease but not replace the therapeutic exercise.

Hospital And Home Physical Therapy Of Parkinson'S Disease Assessed By Spes/Scopa Scale

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Different tests are used in evaluation of patients with Parkinson's disease. SPES/SCOPA scale is short, conceptually clear, and displays good reliability and validity. In order to compare the effect of physical therapy of patients with Parkinson's disease in hospital and home environment we analyzed two groups of patients the first treated in Clinic for Physical Therapy and Rehabilitation Nis, and the second group in home environment, totally 28 patients. They were divided in groups according to Hoehn and Yahr stage of disease.

A modified SPES scale consisting of three sections: motor impairment, activities of daily life and motor complications was used. SPES/SCOPA scale was filled in on the first day, after 15 days of therapy, and after three months.

Physical therapy resulted in improvement of all analyzed parameters, both for hospital and home rehabilitation. Significant values were confirmed for postural stability, gait, and for activities of daily life, especially in earlier stages of Parkinson's disease.

This study confirms that short, practical and reliable SPES/SCOPA scale can be used to compare different therapeutical procedures in patients with Parkinson's disease. Application and development of home physiotherapy program was proven efficient. Key words: Parkinson's disease, rehabilitation, physiotherapy, motor impairment, ADL, SPES/SCOPA scale.

The Autonomic Dysfunction In Patients With Ankylosing Spondylitis: A Clinical And Electrophysiological Study

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Introduction:

The aim of this study was to determine ANS functions by using clinical and electrophysiological tests of ANS in AS patients.

Material-Methods:

Clinical measurements including the heart rate variation with deep breathing (HRV), heart rate response to standing (HRS) were used to assess the parasympathetic functions. The systolic blood pressure response to standing (SBP) and diastolic blood pressure response to isometric exercise (DBP) were obtained to assess sympathetic nervous functions of the subjects. The electrophysiological assessments of ANS were performed by sympathetic skin response (SSR) and R-R Interval variation (RRIV) measurements for the sympathetic and parasympathetic functions respectively. Patients with AS were subdivided into two groups depending on the activity of disease. The difference between the groups and relationship between ANS variables and clinical entities were determined.

Results:

Fifteen male, 5 female AS patients with a mean age of 38 ± 8.05 years and 14 male, 6 female healthy control subjects with a mean age of 40 ± 9.8 years were included to the study. The levels of HRV, HRS and the mean RRIV values were significantly lower in AS patients than in control subjects. The clinical ANS parameters of the patients having more active disease were statistically different than in subjects with mild disease in regard to HRV values and SSR latencies and amplitudes. The HRV values were found to be correlated with the mean scores of BASDAI and CRP levels, and the mean latencies of SSR were correlated with BASDAI scores and CRP levels as well as with physical subscales of NHP.

Discussion:

There are only two studies in the literature evaluating the ANS in patients with AS with contradictory results. There have been a number of studies showing ANS dysfunction in chronic inflammatory joint disease and connective tissue disorders with different degrees of impairment.

Conclusion:

Our study indicates a subclinical parasympathetic dysfunction of ANS in patients with AS which can be related with disease activity.

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The Autonomic Dysfunction In Patients With Rheumatoid Arthritis: A Clinical And Electrophysiological Study

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The aim of this study was to determine autonomic nerve system (ANS) functions by using clinical and electrophysiological tests of ANS in rheumatoid arthritis (RA) patients.

Material-Methods:

Twenty-five RA patients and 25 healthy control subjects were recruited to the study. Clinical and electrophysiological assessments of ANS were performed in all subjects. Clinical measurements including the heart rate variation with deep breathing (HRV), heart rate response to standing (HRS) were used to assess the parasympathetic functions. The systolic blood pressure response to standing (SBP) and diastolic blood pressure response to isometric exercise (DBP) were obtained to assess sympathetic nervous functions of the subjects. The electrophysiological evaluation of ANS were performed by sympathetic skin response (SSR) and R-R Interval variation (RRIV) measurements for the sympathetic and parasympathetic functions respectively. Patients with RA were subdivided into two groups depending on the activity of disease. The difference between the groups and relationship between ANS variables and clinical entities were determined.

Results:

Nineteen female, 6 male RA patients with a mean age of 48.3 ± 13.1 years and 10 male, fifteen female healthy control subjects with a mean age of 42.4 ± 14.8 years were included to the study. All the subjects were totally symptom free for ANS involvement and subjects in both groups and had normal neurological examination findings. The levels of HRV, HRS and the mean RRIV values were significantly lower in RA patients than in control subjects. The clinical ANS parameters of the patients having more active disease were statistically different than in subjects with mild disease in regard to HRV values and R%, D% (6.1 ± 2.9 vs 9.3 ± 3.5 , 9.4 ± 9 vs 27.1 ± 25.1 , 23 ± 21.1 vs 42.6 ± 25 , respectively, $p < 0.05$)

Discussion:

There have been a number of studies showing ANS dysfunction in chronic inflammatory joint disease including RA with different degrees of impairment. Some of the previous studies reported impaired autonomic cardiovascular reflexes, indicating an involvement of sympathetic, parasympathetic or both pathways in RA patients.

In conclusion our study indicates a subclinical parasympathetic dysfunction of ANS in patients with RA which may be related with disease activity.

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