

12th

MEDITERRANEAN
CONGRESS OF

PHYSICAL AND
REHABILITATION
MEDICINE

9-12 NOVEMBER 2017 MALTA



CONGRESS ABSTRACTS BOOK



Rehabilitation: Evolution in Practice

**MEDITERRANEAN
CONGRESS OF**

12th PHYSICAL AND REHABILITATION MEDICINE

9-12 NOVEMBER 2017 MALTA



Malta Physical and
Rehabilitation Medicine
Association



Mediterranean Forum
of Physical and
Rehabilitation Medicine

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Mertiba WELCOME!

Dear colleagues and friends,

It is with enormous pleasure that I welcome you in Malta for the 12th Mediterranean Congress of Physical and Rehabilitation Medicine and the 1st Maltese Rehabilitation Congress. Malta has hosted numerous international activities in various spheres in the past but it is the first time that Malta is hosting an international Rehabilitation Congress and we are very excited and looking forward to the four days of the Congress.

The hosting of this Congress is the fruit of the efforts that our local Association, the Malta Physical and Rehabilitation Medicine Association has made, especially in the international sphere, as we truly believed that hosting the Congress in Malta would also continue to bring Rehabilitation Medicine further into the limelight in our country. Throughout the last few years our National Association, has worked hard to push rehabilitation medicine to a higher level and has managed to convince our policy makers to give the specialty its deserved place in the clinical pathway. I am also glad to reaffirm that our Government has embarked on a Public Private Partnership agreement which should see a radical change in the infrastructure of our Rehabilitation Hospital and in the way we deliver our services. In this Public Private Partnership agreement, the private investors, Vitals Global Healthcare, have agreed to give MPRMA generous support in order to ensure a very successful Congress also through their clinical partners, namely, Partners Healthcare International of Boston, USA.

The theme chosen for the Congress
“Rehabilitation: Evolution in Practice”



Dr. Stephen Zammit

President

Malta Physical & Rehabilitation
Medicine Association

demonstrates, not only the gross improvement in the sector in the recent years, but also developed from a local feeling in our current scenario where we are witnessing a dual evolution: clinically, as well as in the environment in which our patients will be managed. Moreover, one must also emphasise the importance of the continuous drive to intensify the collaboration between the PRM societies, especially in our region, in order to experience, share and improve the quality of our Rehabilitation services together. The Mediterranean Forum of PRM was set up with the motto of “Rehabilitation without frontiers”. The scope of this motto is more than ever evident today, with an intense feeling that we must bring all the diversity in the region much closer together than before. We are really delighted to be able to welcome representatives from more than 30 countries and especially of having representatives from Mediterranean countries which are not regularly present in such congresses. The latter’s presence can serve to be an opportunity for greater collaboration of Rehabilitation services between the representatives from the Mediterranean region irrespective of the different cultures, as well as a wonderful occasion to meet and exchange knowledge and experiences. Physical and Rehabilitation Medicine is rapidly becoming a dynamic area in the field of Medicine with frequent innovative programmes and ever increasing research. Such innovations are

leading to a rapid improvement in the daily lives of those suffering from disabling conditions leading to more independence and better quality of life. Therefore, we definitely need to share such experiences even more! Through this Congress, we are also aiming to attract rehabilitation specialists, trainees, nursing and allied health professionals to come together and share this experience which should help to broaden their vision of Rehabilitation Medicine.

I would like to take this opportunity to thank all the invited lecturers who have accepted to come over to Malta without reservation in order to share their experience and knowledge with us. A big thanks also goes to those participating with their abstracts and posters and all the participants in general. Of course this would not be possible without the support of the sponsors, especially our main sponsors, Vitals Global Healthcare. I simply cannot close without mentioning the Mediterranean Forum of PRM for giving us this opportunity as well as both the organising and scientific committees for their sterling work and dedication throughout the preparations for this Congress which is helping the process of evolution in practice of the Physical and Rehabilitation specialty.

I sincerely wish all the participants a fruitful Congress and an enjoyable stay in Malta.

Merħba f 'Malta... Welcome to Malta!



Prof Gulseren Akyuz

President

Mediterranean Forum of Physical
& Rehabilitation Medicine

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TABLE OF CONTENTS

PLENARY LECTURES	14
PL-01: THE COST-EFFECTIVENESS OF SPECIALIST REHABILITATION.....	14
PL-02: REHABILITATING AND HARNESSING INNOVATION SUCCESSFULLY	15
PL-03: LATEST UPDATES ON AMPUTEE REHAB	15
PL-04: NEUROLOGICAL SPEECH DISORDERS: TECHNOLOGICAL ADVANCES IN DIAGNOSIS AND ASSESSMENT	16
PL-05: TBI CLINICAL TRIALS: WHAT HAVE WE LEARNED?	16
PL-06: LOWER LIMB ROBOTIC ASSISTED GAIT REHABILITATION: CURRENT EVIDENCE AND FUTURE PERSPECTIVES.....	16
PL-07: PRM - WHAT IT IS AND WHAT IT ISN'T	17
PL-08: NEUROMODULATION UPDATE IN CLINICAL USE.....	18
PL-09: REHABILITATION OF THE COMPLEX BLAST CASUALTY	18
PL-10: THE ROLE OF THE PRM PHYSICIAN IN BREAST CANCER.....	18
PL-11: TRENDS IN SELECTION AND USE OF OUTCOME MEASURES IN PRM CLINICAL PRACTICE	19
PL-12: 19 REASONS WHY PHYSICIANS SHOULD PERFORM MUSCULOSKELETAL ULTRASOUND DIAGNOSTICS.....	20
PL-13: REHABILITATION APPROACH TO CARDIAC COMORBIDITY IN RHEUMATIC DISEASE.....	20
PL-14: ENABLING TECHNOLOGY AND EMPLOYMENT OUTCOMES FOR DISABLED PERSONS.....	21
PL-15: OLD AND NEW CHALLENGES IN DOCTOR-PATIENT COMMUNICATION: DELIVERY OF NON-POSITIVE NEWS TO PATIENTS	22
INVITED LECTURES	24
INV-01: EVIDENCE TO REHABILITATION AND REHABILITATION EXPERTISE TO COCHRANE	24
INV-02: HOW TO READ A SYSTEMATIC REVIEW.....	24
INV-03: KNOWLEDGE TRANSLATION: COCHRANE STRATEGY TO DISSEMINATE EVIDENCE	25
INV-04: EXPERIENCE WITH THE LOKOMAT AND VIRTUAL REALITY	25
INV-05: OVERVIEW OF ROBOTIC TECHNOLOGIES AND VIRTUAL REALITIES	26
INV-06: WEARABLE EXOSKELETON.....	27
INV-07: CHRONIC STROKE, NEUROPLASTICITY AND PLATEAU IN REHABILITATION MEDICINE.....	27
INV-08: PROSTHETIC SOCKET DESIGN: MEETING THE NEEDS OF A DIVERSE AMPUTEE POPULATION	28
INV-09: INNOVATIVE TECHNOLOGIES: A CHANGE IN THE FUNCTIONAL REHABILITATION PARADIGM	28
INV-10: INTRATHECAL BACLOFEN FOR THE MANAGEMENT OF SEVERE SPASTICITY	29

INV-11: NEW FES TECHNOLOGIES AND RENEWAL OF ITS CLINICAL APPLICATION TO STROKE PATIENTS	29
INV-12: APPROACH TO LOWER LIMBS SPASTICITY PATTERNS AFTER BRAIN INJURY	30
INV-13: MANAGEMENT OF NEUROPATHIC PAIN	30
INV-14: REHABILITATION GOAL SETTING IN THE AGED	31
INV-15: HOW BALANCE TASKS SPECIFIC TRAINING CONTRIBUTES TO IMPROVING PHYSICAL FUNCTION IN OLDER SUBJECTS UNDERGOING REHABILITATION AFTER HIP FRACTURE	31
INV-16: THE ROLE OF THE PRM SPECIALIST IN THE TREATMENT PROGRAMME OF CARDIOVASCULAR PATIENTS	32
INV-17: TREATMENT OF PSORIASIS AND PSORIASIS ARTHRITIS BY USING BALNEOTHERAPY-CLIMATOLOGICAL: FACTORS AND RESOURCES AT THE DEAD SEA	33
INV-18: RATING OF HETEROTROPIC CLASSIFICATION IN THE HTP: I SAY HO AROUND THE HIP, YOU SAY HOW MUCH?	33
INV-19: ANTICIPATORY SYNERGY AND POSTURAL ADJUSTMENTS IN PERSONS WITH AND WITHOUT LBP SUPPORT	34
INV-20: PATELLOFEMORAL BIOMECHANICS AND DISORDERS MANAGEMENT	34
INV-21: VIBRATION THERAPY IN PRM	35
INV-22: RESPONSIVENESS AND MINIMAL IMPORTANT CHANGES OF THE FEAR AVOIDANCE AND BELIEFS QUESTIONNAIRE IN ITALIAN SUBJECTS WITH CHRONIC LOW BACK PAIN UNDERGOING MOTOR AND COGNITIVE REHABILITATION	35
INV-23: EFFECT OF RUNNING ON FEMORAL BONE DENSITY IN PRM	36
INV-24: REHAB HEALTH STRATEGY FOR THE 21ST CENTURY	36
INV-25: WHAT IS NEW IN THE PRM BRANCH?	37
INV-26: DIAGNOSTIC AND TREATMENT OF PAIN CONDITIONS IN CHILDREN WITH SPINAL DEFORMITIES	38
INV-27: TREATMENT OF CONGENITAL IDIOPATIC TALIPES EQUINOVARUS WITH PONSETI METHOD	38
INV-28: VERTEBROPLASTY IN THE TREATMENT OF FRACTURES AND VERTEBRAL COLLAPSES	39
ORAL PRESENTATIONS	40
O-01: A SYSTEMATIC REVIEW EXPLORING THE RELATIONSHIP OF CORTICAL ACTIVITY AND RECOVERY OF UPPER LIMB SENSORIMOTOR IMPAIRMENTS AFTER STROKE	40
O-02: PREDICTION OF REHABILITATION OUTCOME USING BIOMECHANICAL ASSESSMENT IN POST-STROKE HEMIPARESIS	40
O-03: WHAT HAPPENS TO SWALLOWING MUSCLES AFTER STROKE? A PROSPECTIVE RANDOMIZED CONTROLLED ELECTROPHYSIOLOGICAL STUDY	41
O-04: POST STROKE FATIGUE: POINT PREVALENCE, CHARACTERIZATION, ASSOCIATIONS AND RADIOLOGICAL CORRELATION IN A REHABILITATION HOSPITAL	42

O-05: PERSONS WITH STROKE-INDUCED COMMUNICATION DISORDERS: ARE WE IDENTIFYING THEM?	42
O-06: CONSIDERING APHASIA IN STROKE REHABILITATION	43
O-07: VALIDITY AND RELIABILITY OF ACCELEROMETER DATA IN THE ASSESSMENT OF UNILATERAL TRANSTIBIAL AMPUTEE GAIT PATTERNS – A CORRELATIONAL STUDY.....	44
O-08: FOREARM REPLANTATION AFTER TRAUMATIC AMPUTATION – HOW TO ACHIEVE BETTER OUTCOMES: CLINICAL CASE	44
O-09: USE OF PROSTHESIS IN A CONSECUTIVE COHORT OF LOWER LIMB AMPUTEES AND ITS RELATIONSHIP WITH THE PRESENCE OF STUMP AND PHANTOM LIMB PAIN	45
O-10: THE NATIONAL AMPUTEE DATABASE: AN OVERVIEW	46
O-11: A SYMETRICAL WALKING OF PEOPLE WITH TRANS TIBIAL AND TRANS FEMORAL AMPUTATION: A BIOMECHANICAL ANALYSIS WITH A SINGLE WEARABLE SENSOR	46
O-12: THE EFFECTS OF DUAL TASK ON GAIT IN PEOPLE WITH TRANSFEMORAL AMPUTATION	47
O-13: PHYSIATRIC MANAGEMENT OF DYSPHAGIA IN PATIENTS WITH BRAIN INJURY	48
O-14: OBJECTIVE PROGNOSTIC PARAMETERS FOR MANAGEMENT OF SPASTICITY: CLINICAL, ELETROPHYSIOLOGICAL AND SURGICAL STUDY.....	48
O-15: DOES AGE INFLUENCE THE FUNCTIONAL OUTCOME AFTER A SPINAL CORD INJURY?.....	49
O-16: ALANINE AMINOTRANSFERASE BLOOD LEVELS AND REHABILITATION OUTCOME IN OLDER ADULTS FOLLOWING HIP FRACTURE SURGERY.....	49
O-17: EVALUATING HOW INFORMATION SESSIONS GIVEN TO CARERS OF PEOPLE WITH DEMENTIA AFFECT THEIR CONVERSATION SKILLS, WHEN COMMUNICATING WITH INDIVIDUALS WITH DEMENTIA	50
O-18: THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY LEVEL AND FUNCTIONAL PERFORMANCE IN GERIATRICS.....	51
O-19: THE RELATIONSHIP BETWEEN DIABETES MELLITUS AND FALLS	51
O-20: QUALITY OF LIFE AFTER HIP FRACTURE SURGERY IN OLDER PERSONS	52
O-21: DARIER SYNDROME A NEW IDENTITY IN PHYSICAL MEDICINE AND REHABILITATION? WHAT WE CAN DO? – A REVIEW AND CASE REPORT.....	53
O-22: REHABILITATION HEALTHCARE PROVIDERS, MINDFULNESS AND COMPASSION TRAINING, AND PERCEIVED STRESS: A PILOT STUDY	54
O-23 HOW CAN DANCE HELP EXPRESS EMOTIONS WITH SPECIAL REFERENCE TO PEOPLE WITH PARKINSON'S DISEASE.....	54
O-24: DEVELOPING AN INTEGRATED CARE PATHWAY FOR INFRAINGUINAL BYPASS SURGERY	55
O-25: THE EFFECT OF ALPHA LIPOIC ACID ON THE RECOVERY OF TRAUMATIC SCIATIC NERVE INJURY IN RATS	56
O-26: CLINICAL AND ULTRASOUND EVALUATION OF THE EFFICACY OF EXTRACORPORAL SHOCK WAVE THERAPY ON CALCINOSIS – A CASE REPORT OF PATIENT WITH SCLERODERMA.	56

O-27: PROLOTHERAPY IN MUSCULOSKELETAL CONDITIONS: A SINGLE-CENTRE ONE-YEAR ANALYSIS	57
O-28: WIDESPREAD CHRONIC MUSCULOSKELETAL PAIN SYNDROME IN SECONDARY OSTEOPOROSIS AND PRIMARY HYPERPARATHYROIDISM	57
O-29: THE USE OF BOTULINUM TOXIN IN THE MANAGEMENT OF LOW BACK PAIN	58
O-30: ACUPUNCTURE AND FIBROMYALGIA: PERSONAL EXPERIENCE	59
O-31: THE POTENTIAL OF THERAPEUTICAL CANNABINOIDS FOR THE TREATMENT OF FIBROMYALGIA	60
O-32: HOW DOES A STANDING EXERCISE PROGRAMME FOCUSING ON HIP ABDUCTION STRENGTH AFFECT ANTERIOR KNEE PAIN IN RUNNERS?	60
O-33: DO SHOULDER ULTRASOUND FINDINGS RELATE TO PHYSICAL PERFORMANCE IN QUADRIPELEGIC ATHLETES? PRELIMINARY RESULTS OF THE PADUA STUDY ON ITALIAN WHEELCHAIR RUGBY TEAM	61
O-34: INJECTABLE COLLAGEN ON ACHILLES TENDINOPATHY – A SOLUTION?	61
O-35: EFFECTS OF DYNAMIC TAPE IN UNIPED HORIZONTAL JUMP AND DYNAMIC BALANCE IN YOUNG HANDBALL MALE ATHLETES	62
O-36: PERFORMANCE AFTER ANTERIOR CRUCIATE LIGAMENT RUPTURE IN ELITE ATHLETES.....	63
O-37: HOW MUCH IS TOO MUCH? TWO CROSSFIT CLINICAL CASES	63
O-38: LONG-TERM OUTCOME AFTER ULTRASOUND THERAPY FOR CALCIFIC TENDINITIS OF THE SHOULDER: RESULTS OF THE TEN YEARS FOLLOW UP OF AN RCT	64
O-39: WHAT IS THE IMPACT OF INTRODUCING STATIC PROGRESSIVE SPLINTING EARLY IN THE TREATMENT PROCESS ON THE RESTORATION OF FOREARM PASSIVE RANGE OF MOTION AFTER A DISTAL RADIUS FRACTURE?	65
O-40: CORRELATION BETWEEN MRI AND EMG FINDINGS IN THE LUMBOSACRAL PART OF THE SPINE IN PATIENTS WITH CHRONIC LOW BACK PAIN.....	66
O-41: OUTCOME AFTER A COMPREHENSIVE OUTPATIENT REHABILITATION PROGRAMME IN CHRONIC LOW BACK PAIN PATIENTS	66
O-42: VIRTUAL REALITY REHABILITATION IN PATIENTS WITH TOTAL KNEE REPLACEMENT: PRELIMINARY RESULTS.....	67
O-43: ASSESSING THE VALIDITY, RELIABILITY AND USABILITY OF A NEWLY DEVELOPED SMARTPHONE BASED APPLICATION IN MEASURING CHRONIC LOW BACK PAIN.....	68
O-44: CAN THE TOILET SITTING POSITION INFLUENCE THE DEVELOPMENT OF KNEE OSTEOARTHRITIS?	68
O-45: IMPORTANCE AND ROLE OF PSYCHO-BEHAVIOURAL ASPECTS IN REHABILITATION IN THE REFERENCE FRAME OF ICF	69
O-46: PATIENT IN A PRM FACILITY: CAN WE RELY ON REFERRAL DIAGNOSES?	70
O-47: THE ESTABLISHMENT OF THE NEW REHABILITATION DEPARTMENT IN SOROKA UNIVERSITY MEDICAL CENTER: CONCEPTIONS AND EXPECTATIONS OF STAFF AND MANAGEMENT	70

O-48: MANAGEMENT OF PATIENTS WITH MULTI DRUG RESISTANT ORGANISMS IN REHABILITATION FACILITIES THROUGHOUT EUROPE	71
O-49: INTERNATIONAL EDUCATION EXCHANGE FOR PHYSICAL AND REHABILITATION MEDICINE TRAINEES WITHIN MEDITERRANEAN FORUM OF PHYSICAL AND REHABILITATION MEDICINE	72
O-50: TRAUMA REHABILITATION IN ENGLAND – THE JOURNEY SO FAR	72
O-51: PHYSIOTHERAPY STUDENTS ARE NOT AWARE OF THE PRM ROLE IN HEALTHCARE	73
O-52: ADOLESCENT IDIOPATHIC SCOLIOSIS: RELEVANCE OF EARLY DIAGNOSIS AND ADEQUATE TREATMENT.....	73
O-53: THE EFFECT OF LYCRA BASED COMPRESSION ORTHOSIS ON TRUNK, SITTING AND GROSS MANUEL DEXTERITY IN CHILDREN WITH CEREBRAL PALSY: A RANDOMISED CONTROLLED STUDY	74
O-54: TO BRACE OR NOT TO BRACE? EFFICACY OF BRACING IN ADOLESCENT IDIOPATHIC SCOLIOSIS	74
O-55: ADOLESCENT IDIOPATHIC SCOLIOSIS: WHAT KIND OF EXERCISE FOR BETTER OUTCOMES ...	75
O-56: CASE REPORT CHILDHOOD LEUKAEMIA SURVIVOR: A GROWING CHILD WITH MUSCULOSKELETAL DISABILITY	76
O-57: MUSCULOSKELETAL DEFORMITIES AND ORTHOPAEDIC SURGICAL TREATMENT TRENDS BY CEREBRAL PALSY SUBTYPE AND GMFCS LEVEL IN CHILDREN AND ADOLESCENTS - DATA DERIVED FROM THE GREEK CERBRAL PALSY REGISTRY, MEMBER OF SCPE NETWORK	76
O-58: MUTUAL CARE APPROACH IN REHABILITATION – FINDINGS OF THE “MUTUAL CARING-FROM KNOWLEDGE TO ACTION” PROJECT	77
O-59: THE ROLLERCOASTER RIDE: THE LIVED EXPERIENCE OF PEOPLE ACQUIRING A PHYSICAL IMPAIRMENT IN YOUTH	78
O-60: MORTALITY IN REHABILITATION DEPARTMENT	79
O-61: VISUALLY CONNECT – OLDER ADULTS' REFLECTIONS AROUND A PROGRAMME OF VISUAL ART DIALOGUES	79
O-62: DETERMINANTS OF QUALITY OF LIFE IN TUNISIAN STROKE SURVIVORS	80
O-63: SOCIAL PARTICIPATION: THE PERCEPTION OF FOUR PEOPLE WITH STROKE-INDUCED APHASIA	81
O-64: SEX AFTER BEING DIAGNOSED	82
O-65: GROWTH AND NUTRITIONAL STATUS OF TUNISIAN MULTIDISABLED CHILDREN	82
O-66: NEWS IN DEGENERATIVE PATHOLOGIES OF THE KNEE.....	83
O-67: NON-SURGICAL CONSERVATIVE TREATMENT IN DEGENERATIVE HIP AND KNEE PATHOLOGY.	83
O-68: THE EFFECT OF KINESIO TAPE ON STRENGTH, FLEXIBILITY, PROPRIOCEPTION IN HAMSTRINGS IN FOOTBALL PLAYERS.....	83
O-69: IRREPARABLE MASSIVE POSTEROSUPERIOR ROTATOR CUFF TEARS: LATISSIMUS DORSI TRANSFER PRO ROTATOR CUFF	84

O-70: BALANCE EVALUATION AND PROPRIOCEPTIVE TRAINING ON BALLERINAS – PART I: QUESTIONNAIRE DESIGN AND PROPRIOCEPTIVE TRAINING PROGRAMME FOR BALLET DANCERS	84
O-71: FUNCTIONAL RESULTS OF ANTERIOR CRUCIATE LIGAMENT-RECONSTRUCTED KNEES WITH HAMSTRING TENDON AUTOGRAFT: A PROSPECTIVE SIX-MONTH FOLLOW-UP STUDY	86
O-72: DISABILITY AND SPORT: THE EXPERIENCES OF ATHLETES AND THEIR COACHES	86
POSTER PRESENTATIONS	88
P-1: WHY PATIENTS AFTER FRACTURES OF THE DISTAL PART OF THEIR LOWER LIMB ASK FOR IN-HOSPITAL REHABILITATION?	88
P-02: WHEN THE CLINIC DOES NOT MATCH THE IMAGE	88
P-03: NEMALINE MYOPATHY: CASE REPORT	89
P-04: EFFECTS OF SPECIFIC EXERCISES AND RELAXATION TECHNIQUES ON PERICRANIAL SENSITIVITY AND CERVICAL MOBILITY OF PATIENTS WITH TENSION HEADACHE	89
P-05: TRENDS IN REHABILITATION: SUMMARIZING THE FIRST 18 MONTH OF ACTIVITY IN THE NEW DEPARTMENT IN THE SOUTH OF ISRAEL	90
P-06: AN EXPLORATION OF THE LIVED EXPERIENCES OF PARENTS WITH MULTIPLE SCLEROSIS	91
P-07: THE USE OF VIRTUAL REALITY IN REHABILITATION OF PEOPLE WITH LOWER LIMB AMPUTATION: A REVIEW	91
P-08: PELVIC FLOOR PATHOLOGY	92
P-09: THE IMPLEMENTATION OF THE CANADIAN MODEL OF OCCUPATIONAL PERFORMANCE – ENGAGEMENT IN THE MALTESE ISLANDS	92
P-10: THE EFFECTS OF THE CONTINUOUS PASSIVE MOTION MACHINE ON KNEE RANGE OF MOTION FOLLOWING A TOTAL KNEE REPLACEMENT	93
P-11: EFFECTIVENESS OF PHYSICAL REHABILITATION IN PATIENTS WITH PERIPHERAL ARTERY OCCLUSIVE DISEASE	94
P-12: THE EFFECT OF LOW MAGNETIC FIELD ON SELECT PARAMETERS AS CONSERVATIVE TREATMENT MODALITY IN PATIENT WITH DIABETES POLINEUROPATHY (DPN)	94
P-13: THE IMPORTANCE OF VITAMIN D IN THE DEVELOPMENT OF OSTEOPOROTIC FRACTURES	95
P-14: BASILAR ARTERY OCCLUSION DUE TO FACTOR V LEIDEN MUTATION: PAEDIATRIC CASE REPORT	96
P-15: OSTEOGENESIS IMPERFECTA AND CENTRAL CORE DISEASE: A CASE REPORT	96
P-16: FLUDROCORTISONE TREATMENT FOR ORTHOSTATIC HYPOTENSION DUE TO SPINAL CORD INJURY: A CASE REPORT	97
P-17: PROGRESSIVE PSEUDORHEUMATOID DYSPLASIA: IS IT ALWAYS PROGRESSIVE? PRESENTATION OF FOUR CASES WITH SLOW AND RAPID PROGRESSION AND EFFECTS OF EARLY REHABILITATION PROGRAMME	98
P-18: VOCATIONAL REHABILITATION: CASE STUDY	98
P-19: THEMED GROUP PROGRAMME ON GERIATRIC REHABILITATION WARDS	99

P-20: BALNEOTHERAPY IN TREATMENT OF PERSONS WITH POLYTRAUMA.....	99
P-21: FATIGUE ASSOCIATED FACTORS IN TUNISIAN POST-POLIO PATIENTS	99
P-22: SEXUAL DYSFUNCTION (SD) AMONG PATIENTS SUFFERING FROM SPINAL CORD INJURY IN A TUNISIAN POPULATION.....	100
P-23: A BIDIRECTIONAL HAND PROSTHESIS WITH TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION SENSORY FEEDBACK	100
P-24: CARDIAC REHABILITATION IN A PATIENT WITH ANKYLOSING SPONDYLITIS: SINGLE PROGRAM, DOUBLE EFFECT	101
P-25: MECHANICAL PROPHYLAXIS – THE IMPORTANCE IN THE PREVENTION OF VENOUS TROMBOEMBOLISM IN SURGERY OF THE KNEE AND HIP.....	102
P-26: EXTRACORPOREAL SHOCKWAVE THERAPY FOR FRACTURE NON-UNIONS.....	103
P-27: THREE YEARS FOLLOW UP OF NEW FRACTURES IN ELDERLY WOMEN WITH OSTEOPOROSIS AND VERTEBRAL FRACTURES	103
P-28: STRUCTURAL DIABETIC NEUROPATHIC FOOT ULCER RISK FACTORS ASSOCIATED WITH ELEVATED FOREFOOT PEAK PLANTAR PRESSURE.	104
P-29: EFFECTS OF MOBILIZATION WITH MOVEMENT, ACCORDING MULLIGAN CONCEPT, IN TENNIS ELBOW (LATERAL EPICONDYLITIS): A SYSTEMATIC REVIEW.	105
P-30: ENDURANCE EXERCISE, HIGH-IMPACT ACTIVITY AND RESISTANCE TRAINING TO PROMOTE BONE HEALTH IN POSTMENOPAUSAL WOMEN: A REVIEW.....	105
P-31: BROWN–SEQUARD SYNDROME DUE TO STAB INJURY: A CASE REPORT.....	106
P-32: MEDICAL COMPLICATIONS IN ACUTE SPINAL CORD INJURED UNDERGOING REHABILITATION AT A SPINAL TREATMENT CENTRE IN THE UNITED KINGDOM.....	106
P-33: EFFECTIVENESS OF REHABILITATION IN MULTIPLE SCLEROSIS RELAPSE ON SELF EFFICACY	107
P-34: AN INVESTIGATION OF THE PATIENT’S PERSPECTIVE ON THE PHYSIOTHERAPY TREATMENT RECEIVED FOLLOWING A TOTAL KNEE REPLACEMENT SURGERY	107
P-35: EVALUATION OF PAIN, QUALITY OF LIFE AND PATIENT’S SATISFACTION IN PARENTERALLY TREATED PATIENTS WITH POSTMENOPAUSAL OSTEOPOROSIS.....	108
P-36: TOEWALKING IN AUTISM SPECTRUM DISORDER (ASD): TREATMENT BY BOTULINIC TOXIN INJECTION.....	108
P-37: THE VALUE OF PROVOCATIVE TESTS IN DIAGNOSIS OF CERVICAL RADICULOPATHY AND CARPAL TUNNEL SYNDROME	109
P-38: EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVES BASED ON EVIDENCE	109
P-39: THE IMPORTANCE OF PHYSICAL THERAPY FOR IMPROVING THE BALANCE IN PATIENTS WITH KNEE OSTEOARTHRITIS.....	110
P-40: THE OVER-TIME CHANGES OF KNEE MUSCLE STRENGTH AND PAIN PERCEPTION IN RECREATIONAL ATHLETES AFTER KNEE INJURY	110
P-41: ONCOLOGICAL REHABILITATION AFTER STROKE. CAN IT BE SUCCESSFUL?	111

P-42: IMPACT OF PHYSICAL THERAPY ON SERUM MAGNESIUM CONCENTRATION AS MARKER OF METABOLIC DEPLETION MYOCARDIAL CELLS IN PATIENTS SUFFERING ACUTE MYOCARDIAL INFARCTION.....	112
P-43: EFFECTIVENESS OF PROPRIOCEPTIVE TRAINING AFTER ACUTE GRADE II SPORT INVERSION ANKLE SPRAINS.....	112
P-44: COMPARISON OF LIFE QUALITY, PAIN INTENSITY AND FATIGUE WITH PATIENTS SUFFERING FROM RHEUMATOID ARTHRITIS AND KNEE OSTEOARTHRITIS.....	113
P-45: NEURO-ORTHOPAEDIC DISORDERS IN CHILDREN WITH CEREBRAL PALSY	113
P-46: WORK-RELATED SPINE PAIN AMONG PHYSIOTHERAPISTS.....	114
P-47: TIME OF REHABILITATION IN CHILDREN WITH OBSTETRIC UPPER TRUNK BRACHIAL PLEXUS PALSY	115
P-48: THE VALUE OF HYDROTHERAPY IN THE TREATMENT OF FIBROMYALGIA IN MALTA.....	115
P-49: THE IMPORTANCE OF CARDIAC REHABILITATION, RISK FACTORS FOR ACUTE MYOCARDIAL INFARCTION.....	116
P-50: CORRELATIONS BETWEEN FUNCTIONAL STATUS, DISEASE ACTIVITY AND QUALITY OF LIFE IN PATIENTS WITH MODERATE ACTIVE RHEUMATOID ARTHRITIS AFTER BALNEOPHYSICAL THERAPY	117
P-51: NEUROPSYCHOLOGICAL DISORDERS, FUNCTIONAL OUTCOMES AND QUALITY OF LIFE IN TUNISIAN TRAUMATIC BRAIN INJURY (TBI) PATIENTS	117
P-52: NEUROPSYCHOLOGICAL AND BEHAVIORAL DISORDERS OUTCOMES AFTER TRAUMATIC BRAIN INJURY AND THEIR CORRELATIONS WITH RADIOLOGICAL ASPECTS.....	118
P-53: INITIAL MANAGEMENT AND ORIENTATION POST RESUSCITATION CHARACTERISTICS IN TBI VICTIMS	118
P-54: URINARY AND BLADDER DISTURBANCES IN PARKINSON'S DISEASE	119
P-55: ANKLE SPRAIN IN VOLLEYBALL FEMALE PLAYERS.....	120
P-56: THE EFFECT OF REHABILITATION IN A PATIENT SUFFERING FROM DIABETES MELLITUS TYPE II	120
P-57: LOSS OF BODY WEIGHT AS A RISK FACTOR FOR COMPRESSIVE NEUROPATHY NERVUS PERONEUS	121
P-58: EFFECTIVENESS OF ELECTRICAL STIMULATION IN UPPER LIMB SPASTIC SYNDROME OF CEREBRAL PALSIED CHILDREN.....	121
P-59: BALNEO AND HYDRO THERAPY IN MANAGEMENT OF FIBROMYALGIA	122
P-60: THE ROLE OF INTERFERENTIAL ELECTRICAL STIMULATION AND DIAPHRAGMATIC BREATHING EXERCISES IN CHRONICALLY CONSTIPATED CHILDREN WITH DYSFUNCTIONAL VOIDING	122
P-61: THE EFFECTS OF THE PHYSICAL THERAPY ON THE ELECTRODIAGNOSTIC PARAMETERS OF PATIENTS WITH DISTAL SYMMETRIC SENSORIMOTOR DIABETIC POLYNEUROPATHY	123
P-62: DIABETIC AMYOTROPHIC NEURALGIA – A CASE REPORT	124
P-63: PAINFUL HEMIPLEGIC SHOULDER: CAUSES AND MANAGEMENT	124

P-64: THE ROLE OF “MEMORY HARNESS” FOR SCOLIOTIC POSTURE IN ADOLESCENTS: A RANDOMIZED CLINICAL TRIAL.....	125
P-65: MORPHOPHYSIOLOGICAL EVALUATION OF PATIENTS WITH DIFFERENT CLINICAL EXPRESSIONS OF OCCULT SPINAL DYSRAPHISM.....	125
P-66: ENURESIS IN CHILDREN AS A SYMPTOM OF OCCULT SPINAL DYSRAPHISM	126
P-67: ELECTRODIAGNOSTIC STUDIES IN CHILDREN WITH TYPE 1 DIABETIC POLYNEUROPATHY ...	126
P-68: THE PRESENCE OF PAIN AT THREE MONTHS FOLLOW UP AFTER DISTAL RADIUS FRACTURE OF FEMALE AGED GROUP PATIENTS	127
P-69: REHABILITATION GUIDELINE FOR OSTEONECROSIS OF THE FEMORAL HEAD.....	127
P-70: THE EFFECTS OF BALNEO-PHYSIOTHERAPY IN PATIENT WITH ANKYLOSING SPONDYLITIS IN THE INSTITUTE ‘DR SIMO MILOSEVIC’ IGALO- MONTENEGRO	128
P-71: THE MANAGEMENT OF LUMBAR SPINAL STENOSIS IN PHYSICAL AND REHABILITATION MEDICINE	129
P-72: COMPARISON OF HAMSTRING AND QUADRISEPS FUNCTIONAL TORK RATIOS IN KNEE OSTEOARTHRITIS	129
P-73: THE COMPLEX MANAGEMENT OF FIBROMYALGIA FEMALES – A RANDOMIZED CONTROLLED TRIAL	130
P-74: HETEROTOPIC OSSIFICATION	131
P-75: IMPORTANCE OF ULTRASONOGRAPHY IN CARPAL TUNNEL SYNDROME DIAGNOSTICS IN PATIENTS WITH RHEUMATOID ARTHRITIS.....	131
WORKSHOPS.....	132
W-01: WORKSHOP 1 - RECENT IMPROVEMENTS IN DIAGNOSIS OF RADICULOPATHIES FROM IMAGING AND ELECTRODIAGNOSIS PERSPECTIVE.....	132
W-02: WORKSHOP 2 – MANAGEMENT OF CHRONIC PAIN SYNDROMES AND NEUROPATHIC PAIN: HOW TO MANAGE?	132
W-03: WORKSHOP 3 – MUSCULOSKELETAL ULTRASOUND IN INTERVENTIONAL PHYSIATRY.....	133

PL-01: THE COST-EFFECTIVENESS OF SPECIALIST REHABILITATION**Prof Anthony B. Ward***Stoke-on-Trent, UK*

Demonstrating cost-effectiveness is a necessity in modern healthcare planning to ensure that limited resources are used optimally and that there is equity of funding. A number of papers have recently highlighted the efficacy of rehabilitating severely disabled people in terms of useful outcomes, but have struggled to demonstrate cost-effectiveness. This is perhaps not surprising, as these individuals may never restore their pre-morbid function or, importantly, return to work, as they are too disabled. In addition, the benefits do not necessarily show a reduced burden of care and any benefits are seen in non-healthcare budgets. As a result, rehabilitation services have been tasked to demonstrate cost-efficiency (i.e. how efficient is the process of rehabilitation) as well as the cost of achieving certain levels of competence, i.e. a cost-effectiveness model.

If rehabilitation is, in theory, to reduce the cost of disability by facilitating functional recovery, it has to have a good cost-efficiency ratio. Recently, two studies of cost-efficiency of inpatient rehabilitation - one for complex neurological disabilities in the UK and the other for brain injury in Ireland - clearly demonstrated substantial ongoing care-cost savings produced by rehabilitation with mean weekly cost reductions of approximately £760 for each highly dependent patient. The cost-recovery of rehabilitation was achieved in 14.2 or 15.6 months. A residential neurobehavioral rehabilitation programme during the post-acute phase of brain injury led to cost-benefits of £1.13 million for those receiving rehabilitation in the first year following brain injury and reaching to £0.86 million for those receiving rehabilitation later after injury (> one year). These findings extend the benefit of rehabilitation services (including PRM programmes) over and above just functional improvement, but also to important cost-savings to both families and third-party payers as well as to society in general. In addition, two studies revealed the benefits of multidisciplinary pain rehabilitation on cost savings of 42.98 fewer days of sickness absence at one year when compared with patients receiving standard care. There are also benefits in terms of perceived disability, significantly lower hours of sickness absence, when a coordinated and tailored vocational rehabilitation programme is delivered by a multi-disciplinary team when compared to controls in those with musculoskeletal disorders.

This presentation highlights some of the essential factors in considering the economics of health care. These are:

- Service effectiveness of evidence-based treatments and identifying relevant outcomes
- Service efficacy, using practice-based evidence and good use of resources
- Cost-utility, measuring quality of life and service quality issues
- Cost-effectiveness

There is now good evidence that specialist rehabilitation, as delivered by PRM programmes work with well-recognised benefits for early rehabilitation, providing a prompt response on the ill-effects of immobility and its complications and educating staff in acute settings of the areas where rehabilitation is of major benefit. It is also known that the money spent on rehabilitation recovered with 5-9 fold savings, rehabilitation in all phases of health condition is effective and cost-effective and that community based programmes are also effective. Some examples of these will be given during the presentation, which will also include the evidence for cost-efficiency of rehabilitation.

PL-02: REHABILITATING AND HARNESSING INNOVATION SUCCESSFULLY

Prof Ian Curran

Duke-NUS Graduate Medical School, Singapore

Professor Curran will explore the key concepts and principles associated with successfully leading innovation and transformation in healthcare. He will explore the natural history of innovations and seek to highlight the unique characteristics of and challenges faced by innovators. He will make a case for how clinicians with appropriate insights and understanding of innovation, particularly disruptive innovation, can be developed to better harness and translate innovative ideas into meaningful benefits for patients. Professor Curran will share and develop key concepts such as his 'ice-man fallacy', the 'value paradox' and 'the diamond arrow' to explore how busy practising clinicians and their teams can use these insights to help frame and identify pragmatic improvements for their patients and clinical services. Using practical examples from healthcare and beyond he will illustrate the opportunities and challenges of promoting transformation in general and in healthcare in particular. He will share his personal experience of successfully leading innovation in healthcare across a wide range of contexts and share some of the strategies, pitfalls and barriers to innovation. He will seek to contrast the various merits and weaknesses of transactional and transformational leadership styles and explore the importance of clinical leaders in creating innovative cultures and promoting innovative behaviour whilst maintaining patient safety. Hopefully this will provide attendees with fresh insights and opportunities to reform and so 'rehabilitate' the clinical services they might offer and provide for their rehabilitation patients.

PL-03: LATEST UPDATES ON AMPUTEE REHAB

Dr. Iuly Treger

Rehabilitation Soroka University Medical Center, Israel

Amputees is one of the biggest challenges in orthopedic rehabilitation. Amputation risen from an injury or a disease, creates a need for prosthetics to substitute for the lost limb part, to achieve restitution for an optimal level of functional abilities. Most of the amputations are performed on the lower extremity with the predominant causes being of a vascular nature, with 82% accountable to diabetes. Rehabilitation of limb amputees is a demanding process, but challenging as it may be – it should be approached with a positive frame of mind both by rehabilitation professionals and the patient.

The course of amputee rehabilitation may be divided into several stages: the preoperative stage; the postoperative stage; the preprosthetic stage; the prosthetic stage; and long-term follow-up. Guidelines for amputee rehabilitation are available nationally and internationally, however, there is no clear clinical recommendation for the determination of prosthetic candidacy, especially in elderly patients with lower limb amputation of vascular origin.

During the last decades we can see huge technological development in the field. Modern prosthesis can be fitted in a very precise way, and can use not only a classic mechanical power – but also electricity, managed by computers. New materials are being used that are strong and elastic, withstanding a long period with minor damage to the prosthetic or the stump. Although modern technology can help achieve a comfortable and functional use for today's prosthesis, it is still a great challenge for the patient to use this new device to relearn the basics of locomotion and to preserve it for a long period of time.

A walking outcome with long-term use of prosthesis, the influence of locomotion and physical activity on the quality of life, and the protection of the non-amputated leg in elderly with diabetes, are still unclear and demand future research.

PL-04: NEUROLOGICAL SPEECH DISORDERS: TECHNOLOGICAL ADVANCES IN DIAGNOSIS AND ASSESSMENT

Prof Jordan Green

MGH Institute of Health Professions, Harvard Medical School, Boston, USA

Although most neurologic assessments include speech motor testing, current best practices for assessment have remained unchanged for decades relying primarily on patient reports and clinician observations. Recent findings from studies on speech deterioration due to amyotrophic lateral sclerosis (ALS), however, have demonstrated the limitations of these approaches regarding their poor sensitivity, specificity, and reliability relative to recently developed computer-based analyses of speech. This presentation reviews recent technological advances in speech diagnostics including automatic speech recognition (ASR) and 3D movement analysis. Data from ongoing studies will be presented that demonstrates the clinical efficacy of these approaches for (1) documenting the natural history of bulbar motor decline due to ALS, (2) improving early diagnosis of bulbar motor deterioration due to ALS, and (3) for evaluating the efficacy of behavioral and pharmacologic interventions designed to improve speech. The goal of this research is to develop a minimally invasive yet comprehensive speech motor assessment instrument that is readily adaptable to clinical settings.

PL-05: TBI CLINICAL TRIALS: WHAT HAVE WE LEARNED?

Prof Ross Zafonte

Department of Physical Medicine and Rehabilitation, Harvard Medical School, Boston, USA

This lecture will focus on lessons learned from neuroprotective and Neurofaciliatory trials. In specific the results of the hypothermia will be explored, PROTECT III and DeTECT/ RESCUE ICP Craniectomy studies. Lessons and caveats will be discussed. A detailed discussion of the COBRIT trial will be undertaken including the mechanisms of action and surprising results. The role of pharmacotherapy in exploring enhanced recovery will be discussed. Several examples of pharmacologic interventions that have targeted behavior will be reviewed. These will include phenotypic targets such as behavior, disorders of consciousness and memory. Specific clinical trial interventions with amantadine, methylphenidate and sertraline will be presented. Lastly the role of placebo and no placebo response will be discussed. The potential large role of placebo in post acute trials and clinical interventions will be reviewed. A discussion of the placebos and genetic bias in placebo response will be included. In closure a proposal for moving clinical trials forward will be proposed.

PL-06: LOWER LIMB ROBOTIC ASSISTED GAIT REHABILITATION: CURRENT EVIDENCE AND FUTURE PERSPECTIVES

Dr. Rocco S. Calabro'

IRCCS Neurolesi "Bonino-Pulejo" Messina, Italy

The robot-assisted rehabilitation is definitely the technology that has shown the greatest advances in the last two decades. A robot is defined as a re-programme able, multi-functional manipulator designed to move material, parts, or specialized devices through variable programmed motions to accomplish a task. In particular, the robotic rehabilitation devices are typically based on the so-called phenomenon of motor learning, resulting from intensive, repetitive, and task-oriented motor activities that require patient's effort and attention.

Gait abnormalities following neurological disorders are often disabling, negatively affecting patients' quality of life. Therefore, regaining of walking is considered one of the primary objectives of the rehabilitation process. To overcome problems related to the conventional physical therapy, robotic rehabilitation has proved to play a major role in improving one's ability to walk.

The robotic rehabilitation systems for the lower limb can be classified into stationary (such as Lokomat and Geo-System, which are an exoskeleton and an end-effector, respectively) and overground walking systems (such as Ekso-GT, Rewalk and Indego).

Several studies have demonstrated their usefulness in patients after severe acquired brain injury, spinal cord injury, Parkinson's disease, stroke, multiple sclerosis and other neurological diseases, without clear differences in functional outcomes when using the different devices.

This presentation will highlight the most widely used devices today for gait neurological rehabilitation, focusing on their functioning, effectiveness and challenges.

The novel and promising combined approaches, also using virtual reality, are eventually discussed, so as to furnish a brief but complete overview on lower limb robotic rehabilitation.

PL-07: PRM - WHAT IT IS AND WHAT IT ISN'T

Prof Liugi Tesio

Department of Biomedical Sciences for Health, Università degli Studi, Milano; Department of Neurorehabilitation Sciences, Istituto Auxologico Italiano, IRCCS, Milano, Italy

Physical and Rehabilitation Medicine (P&RM) is not organ-bound. Rather, it is aimed at contrasting difficulties the whole person meets, due to motor and/or cognitive impairments, while interacting with the environment, inclusive of other persons. The dominant medical model, however, is bio-medical: medicine is more and more considered as a form of biology (hence: of its subtended chemical-physical sciences) applied to man. The smaller the parts considered (ideally: molecular, or even sub-atomic entities), and the more universal deterministic laws can substitute for individual and unpredictable peculiarities, the more "true science" is at work. Having not a clearcut "part" of the person as a target, and being targeted instead at whole-person behaviours (such as mobility), cognition (such as communication skills), and perceptions (such as pain), P&RM is rapidly drifting outside the science perimeter. This drift is, actually, decadence: promotion-demotion. P&RM is more and more seen as a Specialization for the good-hearted, not for the clever. Even worse, it does not even appear, *tout-court*, as a scientific Specialization with precise contents. Perhaps it is credited with being "more than science", i.e. art, ingeniousness, philanthropy: whatever "more than" can stand for "not".

The lecture strives to summarize the historical path leading to this over-reductionist medical model, its underlying logical fallacies and the consequences it has on P&RM in terms of loss of scientific prestige, resources allocation and professional identity. In the effort to contrast its decline, P&RM often makes a strategic error, i.e. it refuses specificity: it prefers asserting what it is, rather than what it is not. This attitude often takes the form of an exalted "holistic" model, closer and closer to "alternative medicines" but little sustained by scientific rigorousness. A corollary is the claim for a universal competence of "Rehabilitation" on any pathologic condition, from stroke to cardiac failure, from bone fractures to tumours. The more these claims are generic, the more they lead to vagueness rather than to identity.

Suggestions for strengthening the specificity of the scientific model of P&RM without renouncing to its person-oriented mission are provided. Specificity can and must mould the specialist's curriculum, on the educational side, and outcome variables, trial designs, and statistics, on the experimental side.

PL-08: NEUROMODULATION UPDATE IN CLINICAL USE

Prof Felipe Fregni

Harvard Medical School, Spaulding Rehabilitation Hospital; Massachusetts General Hospital; Boston, USA

Current advances in the techniques of brain stimulation have improved its clinical efficacy. The use of non-invasive brain stimulation has significant advantages, such as cost, safety profile and also possibility to combining it with behavioral interventions. In this talk, I will review the use of 2 non-invasive brain stimulation techniques, repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS), as therapeutic approaches in rehabilitation medicine. Although the outcomes of initial trials with these techniques include some conflicting results, the evidence supports that rTMS and tDCS might have a therapeutic value in rehabilitation medicine especially for stroke and chronic pain. Recent studies have examined new approaches of stimulation, such as longer intensities of stimulation, new electrode sizes for tDCS, novel coils for stimulation of deeper areas, and new frequencies of stimulation for rTMS. These new approaches need to be tested in larger clinical trials in order to determine whether they offer significant clinical effects.

PL-09: REHABILITATION OF THE COMPLEX BLAST CASUALTY

Prof Paul F. Pasquina

Uniformed Services University of the Health Sciences (USUHS), Department of Rehabilitation at Walter Reed National Military Medical Center (WRNMMC), USA

Whether as a result of military combat, acts of terrorism, industrial accidents or other disasters, blast related injuries often lead to complex multi-system impairment, with ongoing medical, surgical and behavioral health needs. Successful recovery from blast injury requires coordinated inter-disciplinary efforts, where rehabilitation experts often play a key role in restoring functional independence, dignity, and quality of life. Aggressive rehabilitation programmes that incorporate novel therapeutic interventions, advanced technology, pharmacological and non-pharmacological interventions, comprehensive pain management, and holistic care, can promote improved outcomes and successful community reintegration.

PL-10: THE ROLE OF THE PRM PHYSICIAN IN BREAST CANCER

Prof Raquel Valero

Physical and Rehabilitation Medicine Department at University Complutense, Madrid.

Introduction: Worldwide, breast cancer (BC) is the most frequently diagnosed life-threatening cancer in women and the leading cause of cancer death among women. Although the incidence of mortality due to BC has declined in recent years due to early detection and improved treatments, the majority of patients have a high number of side effects such as fatigue, pain, limited range of motion, psychosocial needs, anxiety, and lymphoedema of the affected arm can result from primary surgical treatment which may negatively influence QoL

Objective: The objective of this work is to present a protocol of rehabilitation treatment based on a review Pub Med, Cochranne, guidelines of breast cancer, to improve complications treatments

Results: The MD treatment goals were individualized for each participant, based on need and survivorship issues (such as fatigue management, coping, adjustment, self-image and self-worth, driving, work).

Early patient education programme lowers the risk of lymphedema occurrence following breast cancer surgery

Early physiotherapy rehabilitation programme and therapeutic education programme able to advice important improvements in joint mobility and also in pain perception reduction and benefits in terms of quality of life

Exercise is an effective intervention to improve quality of life, cardiorespiratory fitness, physical functioning and fatigue in breast cancer patients and survivors. Recommendations from American College of Sports Medicine (2010): aerobic exercise – At least 30 minutes a day of exercise between moderate and intense, and preferably 45 or 60 minutes daily. Intensity 40-85% of maximal heart rate. Flexibility exercises and stretching that involve the greatest number of muscle groups and joints.

Early postoperative exercise improves shoulder range of motion in women with breast cancer compared with delayed exercise, but increases wound drainage volume and duration.

The exercises should be done progressively and without causing pain. A 2-stage programme, avoiding raising the arm beyond 90° during the first 7-10 days postoperatively (1st phase) seems the safest and most effective alternative.

PL-11: TRENDS IN SELECTION AND USE OF OUTCOME MEASURES IN PRM CLINICAL PRACTICE

Prof Franco Franchignoni

School of Specialization in Physical and Rehabilitation Medicine, Tor Vergata University, Rome, Italy

Outcome measures (rating scales and patient-reported questionnaires) must provide information that allows valid inferences and clinical decisions. The most analyzed psychometric characteristics of an outcome measure examined according to Classical Test Theory (CTT) methods are: a) reliability, i.e. the extent to which a measurement is reproducible and internally consistent; b) validity, i.e. the extent to which an instrument measures what it is intended to measure; and c) responsiveness, i.e. the ability to detect changes or differences over time that are clinically or individually meaningful. In addition, the investigator has primarily to consider in selecting a measure its appropriateness, i.e. how well the content of the instrument matches the purposes and questions which the specific clinical trial is intended to address.

Furthermore, there are important pragmatic issues to take into account, such as: a) acceptability, i.e. a test's ability to minimise avoidable distress to patients and to obtain high response rates; b) feasibility, i.e. the impact of the outcome measure upon staff and researchers in collecting, processing and analysing information; c) interpretability, i.e. The measure's ability to give results which are meaningful and easily understood by others; d) cross-cultural adaptation i.e. procedures to maximise the attainment of semantic, idiomatic, experiential and conceptual equivalence between the source and target measures.

Unfortunately, CTT methods neglect a series of other important metric criteria for testing a measurement tool that can be analysed just by Rasch analysis (RA), a more recent statistical model increasingly used for building or refinement, and validation of scales. RA mainly examines: a) dimensionality; b) functioning of rating scale categories; c) internal construct validity of the measure; d) reliability of the rating scale, in terms of 'separation'; e) analysis of the stability of item hierarchy across classes of observations (the so-called "differential item functioning").

The main purpose of the present lecture is to describe the main features of RA in assessing outcome measures, in order to provide insights for the appropriate selection and use of these outcome measures in clinical practice. Indeed, physiatrists have a responsibility to ensure that measures used in clinical settings are psychometrically sound, and that they are administered thoughtfully and analysed correctly. Thus, the final users have to critically inspect each outcome measure and the related literature before adopting it for clinical practice, decision making, or policy development.

PL-12: 19 REASONS WHY PHYSICIANS SHOULD PERFORM MUSCULOSKELETAL ULTRASOUND DIAGNOSTICS

Prof Levent Özçakar

Hacettepe University, Medical School, Department of PRM, Ankara, Turkey

After "seeing is believing", the second rule in musculoskeletal ultrasound is "if you see, you can have access to it". Considering the fact that a wide range of interventions is commonplace in the daily clinical practice of physiatrists, the use of ultrasound guidance is -for sure- paramount in our realm.

The process starts with optimal imaging (for better diagnosis and clinical decision making), then comes precise targeting and lastly ends up with close monitoring of treatment outcome.

In this sense, this workshop is planned to give an overall idea as regards the aforementioned issues and to also provide some hands-on practice using different skills of interventional ultrasound.

PL-13: REHABILITATION APPROACH TO CARDIAC COMORBIDITY IN RHEUMATIC DISEASE

Prof Ilker Yagci

Marmara University School of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey

Mortality ratios in patients with chronic inflammatory rheumatic diseases (IRD), including rheumatoid arthritis (RA), ankylosing spondylitis (AS), and psoriatic arthritis (psA) are higher when compared to general population. The main reason of premature mortality in IRD is cardiovascular diseases (CVD) (1). The spectrum of CVD includes myocardial infarction, sudden death, stroke, venous thrombosis, heart failure, diastolic dysfunction, peripheral vascular disease, subclinical atherosclerosis and endothelial dysfunction. A meta-analysis shows that overall increased relative risk of CVD event in patients with RA of 1.48 (95% CI 1.36 to 1.62), mainly caused by an increased risk of myocardial infarction, cerebrovascular accidents and congestive heart failure. These CVD events were predominantly of atherosclerotic origin (2).

The management of cardiac comorbidity is a hot topic for rheumatologists. The management includes estimation of CVD risk and also treatment. Therefore, the main efforts are given for the assessment of altered risk in rheumatic diseases. Currently, there are no IRD-specific CV risk prediction models with a validated performance. For RA, EULAR recommends use of the SCORE algorithm with a multiplication factor of 1.5 (3). Modified SCORE (mSCORE) risk assessment profile is 10-year risk of fatal cardiovascular risk which is was obtained by using age, gender, smoking, systolic blood pressure, total cholesterol / HDL cholesterol ratio. However, there may be several additional factors altering CVD risk in patients with IRD. These factors can be divided in to two main categories; traditional risk factors and disease specific risk factors. Smoking, decreased physical activity, dyslipidaemia, increased blood pressure, body weight, insuline resistance and diabetes are conventional risk factors. All of these factors are increased in patients with IRD when compared to general population. However, IRD is independently associated with CVD. The chronic inflammatory burden of IRD enhances endothelial dysfunction and consequently induces or accelerates atherosclerosis. Moreover, atherosclerosis itself is regarded as an inflammatory process with inflammatory cells involved in all its stages. Additionally, the drugs that have been used in these diseases have complicated effect on CVD risks.

Despite the risk is well understood, the management of risks can not be clearly defined in the literature. About the risk reduction; controlling of the inflammation and disease activity are the most important factors and assessment of general cardiovascular risk factors, such as hyperlipidemia, obesity, and smoking, is suggested (3). The role of a physiatrist starts from this point. Cardiac rehabilitation is generally described as medically supervised programme that helps improve the health and well-being of people who have heart problems. Cardiac rehabilitation programmes include exercise training, education on heart healthy living, and counseling

to reduce stress and help you return to an active life. Physiatrists are key medical staff for organizing these activities in many countries.

The main activity of cardiac rehabilitation programmes is exercises. Patients with RA have less physical activity and lower aerobic capacity when compared with healthy individuals with similar demographic data. RA patients spend more time for low and moderate activities and physical inactivity is a well-known risk factor for cardiac diseases. In a meta-analysis of Baillet et al., it was shown that aerobic exercises were safe in RA patients and these exercises made significant improvements in VAS, quality of life, HAQ and number of involved joints (4). A relation between increased fitness and cardiovascular risk decrease has been demonstrated. In study of Myers et al., 12% increase in survival was reported with an increase of 3.5 ml/kg/minute for VO2 maximum in healthy adults (5). In another study, an increase of 1 ml/kg/minute in VO2 maximum was related with a decrease of 15% cardiovascular mortality risk (6). It has been shown that fitness of patients with rheumatoid arthritis is low and these patients have sedentary lifestyle despite their knowledge for the benefits of physical activity. In these patients, supervised exercise programmes seemed to have positive effects on fitness, blood pressure, lipid profile and inflammation (7). Additionally, cardiac rehabilitation programme is found to be effective for reducing the levels of disability. In a study, patients with RA were divided into two groups in which 20 of 40 patients made individual specific planned high intensity aerobic workouts 3 days a week for 6 months and other 20 patients only had recommendations for exercise and lifestyle changes. It was detected that VO2 maximum levels of patients in aerobic exercise programme had an increase of 10% and 17% at third and sixth months, respectively. HAQ scores reduced from a level of 1.4 to 1.0 values in three months time with high-intensity aerobic exercise programme for 6 months (8). Overall supervised exercise programmes such as in cardiac rehabilitation group provided improvements in physical fitness, disease activity, functional outcomes and systolic blood pressure and resting heart rate. These improvements may reduce the cardiovascular risk, however the screening tools that reflect the risk cannot be used for the aim of follow up. Therefore, the literature cannot demonstrate the risk reduction. Apart from these beneficial effects, aerobic exercise programme can lower CRP levels. The exercises may also lower the disease activity. This is also very important for reaching the target of the treatment.

Despite the effects of regular aerobic exercises which have been demonstrated, it seems that physiatrists and also rheumatologists are not aware of these benefits. Therefore, fewer amounts of patients can be recruited for these activities. Physiatrists should be more active in this field.

PL-14: ENABLING TECHNOLOGY AND EMPLOYMENT OUTCOMES FOR DISABLED PERSONS

Ms. Vickie Gauci

University of Malta, Malta

Disabled people's participation in the world of work is enshrined as a human right within the United Nations Convention on the Rights of Persons with Disabilities (UN, 2006). This means that disabled people now have the right to request for reasonable accommodations and the support required to enable them to carry out their work on a level playing field with their non-disabled colleagues. Among the various forms of support offered, enabling technology has been indicated as fundamental in transcending issues of space, place and time at the workplace. Research in the field of disability, technology and employment, is generally led by rehabilitation professionals and rarely by service users. It is typically based on a deficit model of disability. Recent disability studies and rehabilitation literature have, however, called on health and social care professionals to have an appreciation of the concept of disability from the viewpoints of disabled people. Being a disabled occupational therapist has driven me to steer my PhD research in this direction. This qualitative study aims at exploring the journeys, the processes, the networks and the influences that disabled people face in their access and use of enabling technologies in their place of work in Malta. In this speech I will be sharing some of the findings that are related to one of the research questions which asks: From disabled people's perspectives, to what extent, if

any, do rehabilitation professionals mediate, influence and shape disabled employees' perceptions and use of enabling technologies in their job?

PL-15: OLD AND NEW CHALLENGES IN DOCTOR-PATIENT COMMUNICATION: DELIVERY OF NON-POSITIVE NEWS TO PATIENTS

Prof Pina R. Frazzica

The National Institute for Health Migration and poverty, (INMP), Rome, Italy

COMMUNICATION CHALLENGES IN STAFF-PATIENT RELATIONSHIP DURING THE REHABILITATION PHASE

Communication is a process by which people exchange information, feelings, and meaning through verbal and non-verbal messages. Effective communication is an important resource tool in rehabilitation as it can lead to a better physical and psychosocial outcome and it can improve compliance. If it is used ineffectively, it can have detrimental effects on the rehabilitation process because it may create fear, confusion and resistance on the part of the patients. Often, these negative emotions affect family members as well. Key elements of effective communication in rehabilitation are verbal and nonverbal communication - including appropriate use of physical distance - active listening, empathy and a consideration of patients' needs and expectations, professional and relational. Skilled and appropriate communication is the foundation of effective practice and is a key professional competence particularly in rehabilitation as it encompasses collaborative teamwork with many professional disciplines working together. Effective communication among team members is essential in order to deliver quality services. However, team members may have differing perspectives and approaches: professionals with a physical background (e.g. physiatrists, and physical therapists) may differ from those with a psychosocial background (e.g. psychologists and social workers). If this happens and it is not solved, it can result in ineffective communication among staff, patient and their families, it can degenerate in a conflict and it can even lead to medical error. Effective communication among members of the various rehabilitation disciplines is considered an essential component of the modern team approach and can be strengthened through a "patient centered" approach, since there is evidence that it can produce better outcomes in terms of patient involvement and compliance and, ultimately, better health outcomes. The road to recovery may be uphill, charged with physical as well as emotional pain: an empathic communication, which is respectful of the patient's uniqueness, rights and dignity, can make the difference in staff relationship, patient satisfaction and ultimately, in rehabilitation results.

DELIVERING THE BAD NEWS TO PATIENTS FOLLOWING THE ACUTE PHASE AND DURING THE REHABILITATION

One of the most difficult duties for health professionals is to give patients bad news about their health or prognosis. For bad news we intend "any information that drastically and negatively alters the patients view towards his/her future". Conveying bad news is part of the art of medicine and, though it is a complex task, it is one that healthcare professionals carry out almost on a routine basis. Despite this, according to many physicians, delivering bad news is not only a difficult task but it can be also a stressful experience, since they often feel incompetent in carrying out the task and fear negative reactions from patients or from their relatives. In fact, various skills are needed in order to deliver effectively bad news for which they may have had no formal training.

Communicating bad news is particularly challenging also following the acute phase and during the rehabilitation process, during which this type of information must be conveyed clearly, honestly and in a way that patients understand what is being communicated and feel supported in an accurate yet sensitive manner. Therefore, in addition to verbal and nonverbal communication skills, there is a need to understand and respond to patients' emotional reactions, involve them in decision-making, deal with the stress created by their expectations for cure, involve the family members, and manage the dilemma of how to give hope when the situation may be close to hopeless.

There is evidence that the way bad news is delivered can have a significant impact on patients' perspective of illness, their long-term relationships with clinicians, and both patient and provider satisfaction. Poorly communicated diagnosis can generate feelings of mistrust, anger, fear and blame, if not be the cause of conflicts and litigations. Though there is no single best way to deliver effectively bad news, a number of frameworks and guidelines have been developed containing key principles and communication strategies to help health professionals carry out this delicate task as best as possible. However, no matter how effectively bad news is conveyed, it remains bad news. On the other hand, the manner in which bad news is delivered can have a profound effect on both the patient and the physician delivering it.

INV-01: EVIDENCE TO REHABILITATION AND REHABILITATION EXPERTISE TO COCHRANE

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Based on an initiative of the European Society of Physical and Rehabilitation Medicine (ESPRM), the idea of a Cochrane Rehabilitation Field was supported by a number of organisations, including the International Society of Physical and Rehabilitation Medicine (ISPRM). After approval by Cochrane Steering Group, Cochrane Rehabilitation has been launched on December 2016. The aim of Cochrane Rehabilitation is to bridge between Cochrane and Rehabilitation stakeholders, systematically identifying and spreading evidence, but also improving its quality and quantity production per clinical needs.

Cochrane Rehabilitation is a network of individuals, coming from all continents. Up to now 272 people from 52 countries expressed their willingness to collaborate. The organization chart comprises the following functions. The field director is directly responsible for the Knowledge Translation strategy and will be assisted by the executive committee. The field coordinator ensures the implementation of the networking strategy, daily planning, organisation and coordination of activities between the committees (communication, education, methodology, publication and rehabilitation reviews), units and individual members. The Advisory Board include 32 key persons from different international stakeholders as well as recognised opinion leaders in the rehabilitation field.

Cochrane Rehabilitation is working to drive evidence and methods developed by Cochrane to the world of Rehabilitation and to convey priorities, needs and specificities of Rehabilitation to Cochrane.

INV-02: HOW TO READ A SYSTEMATIC REVIEW

F. Grubišić

Croatia

Clinical decisions should be based on the totality of the best evidence and not the results of individual studies. Systematic reviews (SR) answer a defined research question by collecting and summarising all empirical evidence that fits pre-specified eligibility criteria. Furthermore, these also support clinicians in making well-informed decisions about health care and researchers in deciding which topics are the most relevant for new research. Credibility depends on whether the review addressed a sensible clinical question; included an exhaustive literature search; demonstrated reproducibility of the selection and assessment of studies; and presented results in a useful manner. SR require comprehensive literature search to identify all published studies relevant to the specific research question. The Cochrane Collaborations Methodological Expectations of Cochrane Intervention Reviews (MECIR) guidelines state that searching MEDLINE, EMBASE and CENTRAL should be considered mandatory. A meta-analysis is the use of statistical methods to summarise the results of these studies and the results of meta-analyses are often presented in a forest plot (each study is shown with its effect size and the corresponding 95% confidence interval). The Cochrane library provides a collection of full-text systematic reviews developed using rigorous reporting standards and methods with each review prepared in plain language summary and a structured abstract, which includes a section for the authors' conclusions.

INV-03: KNOWLEDGE TRANSLATION: COCHRANE STRATEGY TO DISSEMINATE EVIDENCE

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It is always difficult to apply in everyday life what we think we would like to do and this is even truer for the application of scientific knowledge. This phenomenon is called the “know-do gap”. One of the main reasons is that evidence is usually not focused on (or written for) the consumers.

A solution to this problem is the so-called “Knowledge Translation” (KT), defined as “a dynamic and interactive process that includes the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system” (1). KT has been recognised as essential in achieving Cochrane’s vision and maximising the benefit of the work of Cochrane contributors (2), according to the Strategy to 2020’s fundamental commitment to the dissemination, use and impact of Cochrane evidence.

Last April, during the Cochrane mid-year meeting in Geneva the Cochrane KT Framework (3) was approved. An Advisory Group has been created, bringing together leaders in Cochrane who have an interest and experience in KT to advice on effective implementation and leadership of this KT Framework and Cochrane Rehabilitation. Director, Prof. Stefano Negrini, has been included in this Group.

Cochrane Rehabilitation efforts to meet the KT strategy would consist in helping Cochrane Review Groups to produce evidence relevant to the world of rehabilitation (Methodology Committee); to spread the knowledge to the world of rehabilitation (Communication and Publication Committees) and to increase the knowledge inside the world of rehabilitation while improving the climate (Education Committee); and trying to be cost-effective.

INV-04: EXPERIENCE WITH THE LOKOMAT AND VIRTUAL REALITY

R. S. Calabro

Italy

To regain walking after a neurological disorder is considered one of the primary goals of the rehabilitation process, given that gait abnormalities are often disabling, negatively impacting patients’ quality of life. In the last years there has been an intense technological development of robotic devices to overcome such problems. The robotic rehabilitation tools are typically based on the so-called phenomenon of motor learning, resulting from intensive, repetitive, and task-oriented motor activities that require patient's effort and attention. Such robotic devices can be classified into stationary and overground walking systems: *stationary systems* (treadmill gait trainers such as Lokomat, and programmable foot end-effector trainers including Geo-System) and *overground walking systems* (e.g. Ekso-GT). Stationary devices may be equipped with virtual reality, to further improve functional outcomes. Virtual reality is conceived to put the patient in a situation to generate the augmented feedback towards his central nervous system (augmented feedback) through exercises performed in a virtual environment which help to develop knowledge of results of the movements (knowledge of results) and knowledge of the quality of the movements (knowledge of performance). Thanks to this the central nervous system can activate a physiological key learning mechanism called “reinforcement learning” which implies an increase of the specific information of a movement to produce an effective improvement of performance quality.

Thus the combined use of robotics and VR may lead to better functional outcomes in patients with neurological disorders.

INV-05: OVERVIEW OF ROBOTIC TECHNOLOGIES AND VIRTUAL REALITIES

C. Melegari

Italy

The beginning of the third millennium was a turning point in the history of rehabilitation, advanced robotic device and virtual technologies allowed us to experience new approaches and new pathways to major cognitive and motor disorders resulting from CNS injury. These tools have flanked the main classical re-education methodologies, first confirming their effectiveness and then becoming strategic in many phases of the rehabilitation programme.

The rhythm of publications regarding their therapeutic effectiveness since 2000 has been exponential with exciting results and reasonable criticisms.

The latest systematic reviews of the literature show that these technologies are more effective in recovering movement than conventional treatments, especially when employed in the early stages of rehabilitation.

In these years, the development of rehabilitation robots has followed similar but also deeply different scientific assumptions. These systems have assumed very different technical characteristics, and are reasonably occupying quite specific moments of the rehabilitation path.

At the same time, we have witnessed the advent of virtual reality, recognizing the differences: from the simplest feed-backs to the most complex virtual semi-immersive realities; to get to full immersive virtual realities with haptic interfaces, used almost exclusively for experimental activities.

It is certainly difficult to provide solid evidence regarding the use of such complex technologies, but we can state that robots used in rehabilitation can be used during all phases of rehabilitation from acute to home therapy.

The most useful and recommendable, in the early stages of recovery, when the motor skills are small and the levels of collaboration not yet optimal, are the most complex ones: non-portable exoskeletons with class I control systems. Because these robots can control the patient's joints accurately with better adaptation to low or absent motility levels, their kinematic and kinetic parameters are controllable and provide axial control and balance.

With recovery of mobility and collaborative potential, these robots can give way to simpler, lightweight and portable technologies, which are useful for recovering coordination, balance control and selective movements. These technologies can be easily and directly used by the patient, responding to the need of intensity that characterizes these learning phases.

Virtual reality behaves in an almost opposite way. The simplest ones are more useful in the most acute phase of rehabilitation, since their constructive simplicity (augmented feedback) results as easy interpretation and coincides with the necessary simplicity of the tasks required during these early moments.

The most advanced (semi-immersive virtual reality) are, however, more useful in the late recovery phases, when the patient has more cognitive and motor skills solutions and he is able to perform more complex tasks of attention, balance and coordination.

INV-06: WEARABLE EXOSKELETON

S. Filoni

Italy

A robotic exoskeleton is a very sophisticated device, the result of robotics progress in recent years.

A wearable exoskeleton is a robust robot that can be applied in different areas: from military applications to motor rehabilitation.

In rehabilitation, robotic exoskeletons are used to restore the ability to walk in cases of paraplegia, tetraplegia or hemiplegia.

The robotic wearable exoskeletons are for use in people with weak or paralysed legs caused by stroke, spinal cord injury or other neurological conditions. It is placed over the legs to help with standing and walking, using battery-powered motors to drive the legs. As the user shifts their weight, sensors are activated that initiate steps. Functional gait training using powered exoskeletons helps people to relearn step patterns and weight shifts, with the ultimate aim of helping them regain as much of their natural gait as possible.

A physiotherapist initially supports the user to help prevent falling. The robot is fully weight-bearing, which can reduce the physical load on the physiotherapist who is supporting the user. Physiotherapist support becomes less necessary over time with the use of the robot.

Regaining a natural gait helps people to overcome the practical and social issues related to not being able to stand or walk. Moreover, regular walking may also lead to an improvement in secondary medical problems associated with a lack of weight-bearing activity, such as osteoporosis, cardiovascular disease, respiratory problems and pressure ulcers.

INV-07: CHRONIC STROKE, NEUROPLASTICITY AND PLATEAU IN REHABILITATION MEDICINE

J. Lains

Portugal

Stroke is a major limitation for the patient and a major health problem. After a stroke most of the motor improvement happens up to 6 months. Although there are many reports about motor and functional recovery in “later stages”, it is a clinical belief that stroke patients after a certain time window don not benefit from motor rehabilitation. Actually, if it must happen a terminus for recovery, on the individual level it is difficult to give a precise time window for recovery terminus.

The brain has an enormous capacity to respond to functional need. Sensory stimulation and practice shapes neural representations. Donald Hebb, 1949, introduced the word “brain plasticity”, based on the principles that “learning is a behavioral adaptation, a change of function at the level of the synapse...” Brain plasticity is the property of the brain to adapt to environmental pressure, experiences, and challenges including brain damage. Human (motor) learning operates growth of dendrites, increase in dendritic spines, synaptogenesis and changes in the strength of connections within primary motor cortex. In sustained, widespread functions (e.g. hunger) it is demonstrated that also there is nonsynaptic diffusion of neurotransmitters, as acetylcholine and norepinephrine, the “volume transmission” (VT). VT may play an important role in the organization and regulation of behaviour, augmenting cognition and the state of vigilance, demonstrating the importance of psychosocial factors on recovery. So, based on the EBM principles, for better results, the rehabilitation programmes must not only be repetitive, task-specific and intensive, but also that the patient is high vigilant, actively involved and are based on the interests of the patient.

“Plateau” is defined as failure to ameliorate. In stroke motor therapy the various combinations of exercise conditions may go unchanged from one session to the next, which can lead to “Performance Plateau”. Performance plateau may not be indicative of the individual losing capacity to experience additional gains. Chronic stroke patients can exhibit motor improvement participating in novel rehabilitation protocols who have supposedly plateaued. Multisensory approaches to motor, somatosensory, and cognitive rehabilitation may be more effective. These approaches must follow the global rules for learning, e.g. adaptation a series of neuromuscular processes whereby the human body becomes accustomed to progressively greater workloads in response to repeated overloading, usually via physical exercise; shaping, with immediate feedback concerning movements, individualized tasks, prompting, cueing, and progressive increase in the difficulty of the tasks; and periodization, a variation of the training regimen, breaking it into smaller training phases, during which are used different skills, regimen session durations and/or intensities, changing the routine itself.

Motor control is a complex behavior. There is a need for a significant shift in theoretical perspective, conceptualizing rehabilitation of motor function as changing motor behavior, rather than improving motor ability, which may allow to extend the window for functional gains.

INV-08: PROSTHETIC SOCKET DESIGN: MEETING THE NEEDS OF A DIVERSE AMPUTEE POPULATION

I. Fothergill

USA

In many prosthetic facilities the standard of care for major lower limb amputees could be described best as a conservative step-by-step approach, the use of less functional and more cost-effective foot and knee systems for example is common for the initial prosthesis, and a second more functional prosthesis would be deemed necessary only if the user shows the ability to progress beyond the capabilities of the initial device.

Many services take the same fiscally conservative approach to the provision of a custom prosthetic socket, selecting traditional materials and techniques for the primary prosthetic device. This approach is fraught with clinical issues that can cause harm, reduce the rehabilitation outcomes and increase the burden on the patient, family and prosthetics service, all of this while the initial goal of financial prudence is not being achieved.

This presentation defines an approach that utilizes a standardized approach and state of the art techniques and materials with regards to the prosthetic socket and is specifically developed to address many of the factors that can cause injury, rejection and in the end rejection of prosthetic use.

This presentation will outline the common treatment options and identify the secondary issues and co-morbidities related to each. The audience will be informed on how to better evaluate the needs of the patient and the impact, value and shortcomings of the alternative approaches. Focussing primarily on prosthetic socket design, we will discuss how socket fit goals have not changed and the basic rules apply to all amputees. Simple to Don and Doff, Comfortable, minimize movement and most importantly to protect the residual limb tissues through all activities and environments.

INV-09: INNOVATIVE TECHNOLOGIES: A CHANGE IN THE FUNCTIONAL REHABILITATION PARADIGM

L. Baranzelli

France

Today's technologies enable us to go faster, communicate easier. Our mindset has changed over the past years and those who still did not change will slowly come to it.

In rehabilitation, we depend on human nature, neurologic pathways but soon those who were told "you will not walk again" will get complete different goals when spinal cord tissue regeneration and other breakthroughs will be made available by the industries.

This presentation will give you an overview of three technologies that should be implemented in ICU departments, rehabilitation departments and home care use as a continuum of care for the best of our patients.

INV-10: INTRATHECAL BACLOFEN FOR THE MANAGEMENT OF SEVERE SPASTICITY

A. Nene

Netherlands

Spasticity is defined as 'Disordered sensori-motor control resulting from the upper motor neuron lesions, presenting as intermittent or sustained involuntary activation of muscles' (Spasm Workgroup, 2005). It is common in Multiple Sclerosis – 85% (Rizzo et al. 2004), Spinal Cord Injury – 65% to 78% (Maynard et al. 1990), Stroke – 35% (Somerfield et al. 2004), Traumatic Brain Injury and Cerebral Palsy. It is a multidimensional problem. Spasticity may have negative effects on function of the patients such as interference with transfer activities, make wheelchair activity almost impossible and contribute to decubitus formation and mask or prevent retained motor activity progressing to contractures. Sometimes it may have positive effects such as improving vascular flow, maintain muscle bulk and aid in maintaining an upright posture. Spasticity needs treatment when negative effects are predominant.

Management of spasticity consists of basic techniques such as physiotherapy, posture correction etc, oral spasmolytic medications, local or focal interventions and general interventions such as neurosurgical procedures or Intrathecal Baclofen therapy (ITB). Intrathecal baclofen therapy should be considered when other interventions have inadequate effect or there are intolerable side effects of oral medications. It is a method when baclofen is directly delivered into the intrathecal space and thereby increasing the effectiveness and simultaneously reducing the side effects.

The presentation will explain the advantages, indications, inclusion and exclusion criteria, patient selection, test procedure, implant procedure and post implant rehabilitation in detail.

INV-11: NEW FES TECHNOLOGIES AND RENEWAL OF ITS CLINICAL APPLICATION TO STROKE PATIENTS

P. Gireaux

France

Functional Electrical Stimulation (FES) has been long proven to be useful in post-stroke rehabilitation, both for lower limb and upper limb deficiency. But its lack of reliability and usefulness, made difficult its implementation for daily clinical routine, as an adjunct therapy during the rehabilitation stage. FES was also not mature enough to be used as a reliable assistive technology. Recent technological progresses have made available new devices that overcome these limitations. FES devices are more and more reliable and convenient. These technological progresses, supported by recent clinical studies, have changed the way of how PMR physicians can implement the use of FES in the rehabilitation of stroke patients. This presentation will explore these technological progresses and propose a framework for its use in post-stroke rehabilitation, with a continuum from early rehabilitation to chronic assistive technology.

INV-12: APPROACH TO LOWER LIMBS SPASTICITY PATTERNS AFTER BRAIN INJURY.

K. Grabljevec

Slovenia

Purpose: Spasticity is an expensive, often undertreated condition, with heavy economic burden for patients, caregivers and society and a cause of disability due to decreased mobility, weakness, and fatigue.

Spasticity results in increased dependence on family and institutional caregivers for activities of daily living. It consequently ends in costly complications such as joint contractures and pressure sores with decreased quality of life.

Method: Rehab clinicians are often pre-occupied with treating functional problems linked to the consequences of UMN lesion, using common terminology as “spastic gait” or “spastic equinovarus”. Evaluation and treatment of spasticity demands broader dimensions, including interest in particular patterns of motor dysfunction that produce functional disability.

Results: Rehabilitation clinician should be able to see spastic phenomena within the larger context of impaired motor control in order to fulfill the primary duty to his/her clients: to identify appropriate treatment methods for a patient’s functional problems resulting from a brain injury.

Conclusion: Patterns of LL dysfunction in the UMN syndrome have a huge impact on gait. Clear identification of the muscles that contribute dynamically and statically to UMNSy deformity is an important key to clinical management of resulting gait dysfunction. Clinical evaluation / observation contributes to the analysis of gait dysfunction.

Gait laboratory with dynamic EMG, kinetic and kinematic data is often necessary to identify the particular contribution of offending muscles with a certain confidence. Correct selection of target muscles that contribute to any pattern of dysfunction, may serve as a rational basis for intervention.

Keywords: brain injury, gait pattern, spasticity

INV-13: MANAGEMENT OF NEUROPATHIC PAIN

A. Nene

Netherlands

Pain following Spinal Cord Injury (SCI) is one of the common complications. It is also one of the most difficult conditions to treat, mainly due to complexity of its origin. There may be several types of pain existing simultaneously. Neuropathic pain is one of them. It is divided into 3 groups, pain at the level of SCI, pain below the level of SCI and others. The characteristics of the pain include sensory deficits in region of pain, allodynia or hyperalgesia and pain described as burning, tingling, pricking, sharp shooting or electric-shock like.

Better understanding of the pathophysiology and proper assessment are essential to manage pain effectively. In addition to pharmacological treatment, multidisciplinary approach to pain management including cognitive behavior therapy, psychological therapy, physical and occupational therapies improve the management and treatment of patients with pain following SCI.

If the medications and other forms of therapies do not improve the pain, or the side effects of medications are intolerable then the invasive interventions such as pump implantation for intrathecal therapy or spinal cord stimulation should be considered.

The presentation will outline these aspects of management of neuropathic pain following SCI.

INV-14: REHABILITATION GOAL SETTING IN THE AGED

Y. Berner

Israel

Purpose: An aging of the population is a worldwide phenomenon; persons over 75 years make up about 5% in many developed countries. Rapid increase in vascular, infectious, malignant, traumatic, and psychiatric morbidity is the most important result of the decrease in functional reserves with aging. Therefore, elderly compromise more than half of the consumers of acute care in General Hospitals with many events, which are acute exacerbations of chronic conditions with diversity of clinical presentations. Nevertheless, the presentation of disease is different with aging and its course is slower. The main presentation as well as the main problem during the course of sickness may present the weakest organ of the patient and not always the diseased site, leading to over treatment of certain symptoms and under treatment of the disease itself. Confusion with or without neurological deficit may be the sole presentation of a cardiac event as well as the early manifestation of infection. The high morbidity with aging is leading even to more confusion and the need to treat more components during the disease. Decline in function secondary to medical or surgical event is defined as deconditioning of the elderly patient. Recondition of his function is an important task of geriatric medicine and the main subject of Geriatric Rehabilitation.

Method: A comprehensive geriatric assessment, and a multi disciplinary approach in evaluation of the elderly patients are the main tools that Geriatric Medicine is using for setting goals of treatment in acute care, chronic care, community care and of course rehabilitation. The assessment consists of precise medical evaluation with special attention to background morbidity pharmacological treatment, cognitive and mood assessment concentrating on reversible conditions and the functional and support evaluations mainly derived from Rehabilitation Medicine.

Results and Conclusion: Rehabilitation of the elderly patient starts at the acute medical or surgical service, consisting of comprehensive evaluation and active treatment. Rehabilitation treatment in the community and in many cases a period of special hospitalization in rehabilitation facility makes the difference between either dependent or independent functioning of the elderly patient. The decision of eligibility and the planning as well as the running rehab program is the major challenge of Geriatric Rehabilitation.

Keywords: geriatric rehab, comprehensive geriatric assessment, goal setting

INV-15: HOW BALANCE TASKS SPECIFIC TRAINING CONTRIBUTES TO IMPROVING PHYSICAL FUNCTION IN OLDER SUBJECTS UNDERGOING REHABILITATION AFTER HIP FRACTURE

M. Monticone, E. Ambrosini, A. Capone, C. Secci, S. Ferrante

Italy

Purpose: To evaluate the efficacy of a rehabilitation programme including balance task-specific training in improving physical function, pain, activities of daily living (ADL), balance, and quality of life in subjects after a hip fracture.

Method: Randomised controlled trial. Setting: In-hospital. Subjects: 52 older subjects selected for internal fixation due to extra-capsular hip fracture were randomised to be included in an experimental (n=26) and a control group (n=26). The experimental group underwent balance task-specific training, task-oriented exercises were also performed. The control group underwent general physiotherapy, including open kinetic chain exercises in the supine position. Both groups individually followed programmes of 90-minute sessions five

times/week for three weeks. Outcome measures: The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), a Pain Numerical Rating Scale (NRS), the Berg Balance Scale (BBS), the Functional Independence Measure (FIM), and the Short-Form Health Survey. The participants were evaluated before and after training, and after twelve months.

Results: Significant effects of time, group and time by group were found for all outcome measures in favour of the experimental group. A clinically important between-group difference of 25 points was achieved after training in terms of the primary outcome (WOMAC-function) and maintained at follow-up. After training NRS improved by 77% and 28%, BBS by 158% and 54%, and FIM by 57% and 32% for the experimental and control group, respectively.

Conclusion: An in-patient rehabilitation programme based on balance task-specific training is useful in changing the course of physical function, pain, ADL and quality of life in older patients after hip fracture.

Acknowledgements: Subjects and physiotherapists involved in the study.

Keywords: hip fracture, internal fixation, rehabilitation, balance, task-oriented exercises.

INV-16: THE ROLE OF THE PRM SPECIALIST IN THE TREATMENT PROGRAMME OF CARDIOVASCULAR PATIENTS

M. Lazovic

Serbia

Purpose: European Society of Cardiology and American College of Cardiology, Cardiac rehabilitation recommend the treatment of cardiovascular patients (Level I A recommendation). The beneficial effects of cardiac rehabilitation (CR) based on exercise training (ET) are reflected in the reduction of cardiovascular risk factors, improving functional capacity, increasing tolerance to effort, improving quality of life and reducing morbidity and mortality in patients with coronary artery disease (CAD). However, there are still many controversies about optimal ET, which would have the greatest effect in this group of patients.

Method: In order to achieve the positive effects of CR, it must be team-based, where the task of a PRM specialist is first of all in the design of ET. Based on currently available evidence and literature, recommendations for the implementation of ET have been formulated based on intensity, frequency, time and type of physical activity, as well as safety aspects during exercise of CAD patients.

Results: ET must include a dynamic work where predominantly isotonic contractions of flexors and extensors involving large muscle groups are predominant, and is based on everyday physical activities such as walking, stair climbing, bicycle riding, swimming, using treadmill or ergometer bicycles. Durability training in patients with CAD affects the reduction of cardiovascular risk factors, metabolism, cardiovascular function, and quality of life, without increasing the risk of cardiovascular events during exercise. Dynamic strength training also leads to an increase in muscle mass and muscle strength, as well as to improved coordination of movement and balance, which is of particular interest to elderly and females.

Conclusion: Recommendations for conducting ET in patients with CAD indicate that they must be adapted to individual capacity and risk in order to achieve and maintain the highest possible individual level of physical fitness, with at least 30-60 minutes of endurance training 3-4 times a week, combined with strength training 2 times a week. The relationship between training frequency and exercise intensity should help to find a sufficiently high intensity of training, in line with existing risks and limitations.

Keywords: cardiac rehabilitation, exercise training, specialist PRM

INV-17: TREATMENT OF PSORIASIS AND PSORIASIS ARTHRITIS BY USING BALNEOTHERAPY-CLIMATOLOGICAL: FACTORS AND RESOURCES AT THE DEAD SEA

K. Alabbadi

Jordan

Background: In the PMR field the Balneotherapy is well known for its therapeutic and recreational purposes in treating various diseases and physical disorders.

Objective: To explore the effect of using different Dead Sea minerals (i.e: Water, mud, tar, Radon-222), Thalassotherapy, and sun rays Solarium in the treatment of people with Psoriasis and Psoriatic Arthritis.

Methods: 219 patients were divided into two groups: first group consisted of 146 Psoriasis patients in the age range of 20-60 years, who received different Dead Sea minerals therapy. The second group consisted of 73 Psoriatic arthritis patients in the age range of 40-60 years, who received different Dead Sea mineral therapy and physical therapy. The duration of treatment for the two groups was 4 weeks.

Results: Both groups showed improvements of the dermatological symptoms (almost disappearing of the squam, softening and elasticity of the skin). In addition the second group showed a decrease of pain during movement, a decrease of pain at night time, a decrease of morning stiffness, an increase in ROM, an increase in muscle power, and almost stopped the use of analgesics.

Conclusion: There are advantages using the special characteristics of the Dead Sea region which proved positive effectiveness in the treatment of Psoriasis and Psoriatic arthritis. In addition, the therapeutic characteristics of the Dead Sea region may also be effective in treating certain rheumatic diseases, neuromusculoskeletal conditions, and respiratory problems that will need further investigation in future studies.

INV-18: RATING OF HETEROTROPIC CLASSIFICATION IN THE HTP: I SAY HO AROUND THE HIP, YOU SAY HOW MUCH?

G. I Vasileiadis

USA

The usefulness of well-established orthopedic classification systems, widely used in PRM practice as well, has been questioned. For the incidence of HO formation after major hip surgery, 47% of studies utilize the Brooker scale. Is Brooker Scale efficient in HO description and has it got any relevance with the clinical image of the patient? There are several layers of HO at different periarticular depths that are superimposed to generate an HO grade. This prevents any comparison to function or outcome. In a study performed at Mayo Clinic and published in Journal of Arthroplasty in 2015, we reviewed the charts of 104 patients with documented radiographic HO. Their HHS at final follow-up was calculated from survey sheets. They were categorized into high HO (i.e. Brooker III-IV) and low HO (i.e. Brooker I-II). After reaching consensus, 51 and 53 patients formed the two groups respectively. Statistical comparisons were made between -terminal range, -arc of motion, -HHS. After analyzing the data, a statistically significant decrease in terminal hip internal rotation as well as a statistically significant decrease in the abduction-adduction arc of motion with high grade HO. The clinical relevance of these differences is debatable given the lack of a statistically significant difference in HHS with HO grade. Additionally, HHS is not sensitive to changes in hip ROM.

In a paper published in 2017, we tested the reproducibility of subsequent radiological readings. We calculated the intraobserver reliability as well as the interobserver agreement of two classification systems for HO after THA i.e. the Brooker scale and the Della Valle classification. Both classification systems showed moderate interobserver agreement ($0.40 \leq \kappa < 0.60$). The Brooker scale showed moderate to substantial intraobserver

reliability ($0.43 \leq \kappa < 0.71$), and the Della Valle classification system showed substantial intraobserver reliability ($0.65 \leq \kappa < 0.77$). There is a need to update the classification system for HO about the Hip in order to achieve higher agreement among readers and to be more closely related to the clinical impact of HO formation.

INV-19: ANTICIPATORY SYNERGY AND POSTURAL ADJUSTMENTS IN PERSONS WITH AND WITHOUT LBP SUPPORT

R. Meroni, D. Piscitelli, C. G. Cerri

Italy

We used the framework of the uncontrolled manifold (UCM) hypothesis to investigate two types of feed-forward postural adjustments: anticipatory synergy adjustments (ASAs) and anticipatory postural adjustments (APAs). ASAs reflect attenuation of a synergy index stabilizing a variable (e.g. center of pressure anterior-posterior coordinate, COP_{AP}) in preparation to a quick change in that variable, while APAs are the means of generating net forces and moments of force that minimize the effects of a predictable perturbation on posture. If the timing of a perturbation is known, ASAs are always expected to be helpful for the generation of postural corrections independently of the direction of the perturbation. In contrast, APAs are useful only if the direction of the perturbation is known. We explored ASAs and APAs in preparation to a self-triggered postural perturbation in conditions when the direction of the perturbation was known and unknown.

Subjects stood on a force platform and performed two tasks: (1) voluntary cyclic body sway in the anterior-posterior (AP) direction at 0.5 Hz; and (2) self-paced load release task where the perturbation direction was known. Surface electromyograms (EMGs) of 16 leg and trunk muscles as well as COP_{AP} displacements were recorded and analyzed. The first task was used to identify four muscle modes (M-modes) in the space of muscle activations. Further, inter-trial variance in the M-mode space was quantified within the UCM and orthogonal (ORT) space. An index of synergy (ΔV) was computed reflecting the relative amount of inter-trial M-mode within the UCM for COP_{AP} .

The index of multi-M-mode synergies showed a drop starting about 200 ms prior to the time of perturbation. Previous data shows that ASAs are similar between conditions where the perturbation is either known or unknown (e.g. with and without knowledge of the perturbation direction). In contrast, the timing and structure of APAs differ based on knowledge of the perturbation direction. Namely, APAs are delayed when the perturbation direction was unknown. In addition, analysis of indices of co-activation and reciprocal activation within agonist-antagonist muscle pairs performed at the level of M-modes showed predominance of reciprocal patterns in conditions when the subjects knew the perturbation direction and co-activation patterns when the perturbation direction was unknown.

The aim of this research is to assess whether difference in ASAs and APAs are present when comparing people with and without chronic low back pain.

INV-20: PATELLOFEMORAL BIOMECHANICS AND DISORDERS MANAGEMENT

N. Christodoulou

Cyprus

The presentation aims to explain the patellofemoral biomechanics as necessary knowledge to understand the reasons why several painful syndromes may happen at the area. It is analyzed how the forces are applied on the joint surfaces during movements and how this may cause disturbances of the patellar stabilization, leading to patella malalignment, which is a predisposition to patellofemoral dysfunction. Contributing factors for malalignment are described like in patella alta-baja, in dysplasia of the patellofemoral joint, in kissing patella, in

increased Q angle, in vastus medialis obliquus muscle dysfunction, in muscular factors, in hyperpronation, in hyperlaxity of the medial retinaculum and in tightened lateral retinaculum.

The causes and the clinical signs of chondromalacia are presented, like Zohlen sign etc. The methods of conservative treatment are discussed concerning the pain treatment, the stretching and passive mobilization, the muscle re-education and the correction of hyperpronation.

INV-21: VIBRATION THERAPY IN PRM

C. Foti

Italy

In Rehabilitation Medicine, therapeutic exercise can be made in three environments: normogravity, hypogravity, and hypergravity. Therapeutic exercise in normo-gravity is performed by the patient using free motion or resistance motion in normal gravity field (1g). It means moving in normal conditions, such as rehab gyms. Therapeutic exercise in hypo-gravity is performed by the patient using free motion or resistance motion in lesser gravity field (acceleration 1g); it means moving during supplementation of vibration energy (TEVE: Therapeutic Exercise by Vibration Energy). TEVE can be used for ameliorating the flexibility. This target exercise can gain range of motion, solve postural problems, and cure focal muscle strains. Vibration exercise can increase proprioception drivers to fast regain drill and coordination after traumatic lesions. The clinical applications are the followings: osteopenia, postmenopausal osteoporosis and non-union fractures; muscular hypotrophy and hyposthenia, after PNS or osteo-mio-articular lesions or after ortho-surgical treatments; muscle retractions and shortenings, in ROM limitations, postural defects, and muscle lesions; proprioceptive deficits, in balance disorders, or after orthopaedic surgery, and in RSDS. Rehabilitation physicians have to consider some contraindications, which are as follows: high myopia, pregnancy, severe balance deficit, neoplastic diseases, consisting blood and liquid effusions, nephrolithiasis, hepatolithiasis and pakemaker. Actually TEVE on patient needs a severe control by physician, and a precise and warning application by PTs. In conclusion TEVE is a promising, easy to apply, procedure in many fields of disability. It certainly needs more research and publications to understand better the application modalities and the target disabilities.

INV-22: RESPONSIVENESS AND MINIMAL IMPORTANT CHANGES OF THE FEAR AVOIDANCE AND BELIEFS QUESTIONNAIRE IN ITALIAN SUBJECTS WITH CHRONIC LOW BACK PAIN UNDERGOING MOTOR AND COGNITIVE REHABILITATION

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Italy

Purpose: The Fear Avoidance Beliefs Questionnaire (FABQ) is rapid means of measuring the beliefs of subjects with chronic low back pain (LBP). The Italian version showed satisfactory psychometric properties, in line with those of the original form. This observational study is aimed at evaluating FABQ responsiveness and minimal important changes (MICs) in Italian subjects with chronic LBP undergoing rehabilitation.

Method: At the beginning, at the end of an 8-week rehabilitation programme and at the one-year follow-up, 129 patients completed the FABQ. After the programme and at follow-up, subjects and physiotherapists also completed the global perceived effect (GPE) scale, which was divided to produce a dichotomous outcome. Responsiveness was calculated by distribution [effect size (ES); standardised response mean (SRM)] and anchor-based methods [receiver-operating characteristics (ROC) curves; correlations between change scores of the NeckPix© and GPE]. ROC curves were also used to compute MICs.

Results: The ES ranged from 0.68 to 0.92 and the SRM from 0.77 to 0.81 at post-treatment and follow-up, respectively, based on subjects and physiotherapists perspective. The ROC analyses revealed AUCs of 0.96 and

0.91 at post-treatment and follow-up; MICs (sensitivity; specificity) were of 7 (0.85; 0.96) at post-treatment and of 6 (0.86; 0.85) at follow-up. The correlations between change scores of the NeckPix and GPE ranged from -0.72 to -0.79.

Conclusion: The FABQ was sensitive in detecting clinical changes in Italian subjects with chronic LBP undergoing rehabilitation. We recommend taking the MICs provided into account when assessing patients' improvement or planning studies in this clinical context.

Acknowledgements: Subjects and physiotherapists involved in the study.

Keywords: Chronic low back pain; Responsiveness; Minimal important changes; Kinesiophobia; Fear Avoidance Beliefs Questionnaire.

INV-23: EFFECT OF RUNNING ON FEMORAL BONE DENSITY IN PRM

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Egypt

Mechanical loading plays an essential role in the bone remodeling regulation. Running is a medium impact aerobic activity, which has been previously reported as exerting both positive and negative impacts on skeletal health. Aim: To study the effect of running on femoral bone mineral density (BMD), testosterone, and osteocalcin level among young male runners. Subjects and Methods: The study was carried out on 20 male runners aged between 18 and 25 years. Twenty healthy age-matched sedentary men were enrolled as a control group. BMD at the femoral neck, Ward's triangle, greater trochanter, and total femur was measured by dual-energy X-ray absorptiometry in all participants. The Z-score was selected for BMD assessment. Serum calcium, phosphorous, testosterone, and osteocalcin level were measured. Results: Runners had significantly higher BMD at all sites ($P < 0.01$). Runners had a higher serum osteocalcin (15.729 ± 13.722 vs. 4.980 ± 1.3724 ng/ml, $P = 0.002$) and lower serum testosterone level (3.844 ± 1.617 vs. 5.994 ± 2.190 ng/ml, $P = 0.001$). Serum level of osteocalcin and the duration of running were correlated positively with BMD among runners. Conclusion: This study confirms the positive osteogenic effect of running on BMD.

Key words: bone mineral density, dual-energy x-ray absorptiometry and osteocalcin, running

INV-24: REHAB HEALTH STRATEGY FOR THE 21ST CENTURY

J. Lains

Portugual

"Health" is the complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1948).

Until the 60s' years, medicine focused in the contraction of diseases and the main Health indicator was the mortality rates. After this period, medicine shifted its main focus to prevention and to chronic diseases, the main Health indicator becoming morbidity rates and optimal functioning.

The International Classification of Diseases (ICD) became insufficient to classify many health conditions and in 1980, WHO launched the International Classification of Impairments, Disabilities and Handicap (ICIDH), with the emphasis on disability and handicap, focusing its negative aspects. In 2001, WHO created the International Classification of Functioning, Disability and Health (ICF), emphasizing functionality, the positive perspective, and recognizing the importance of the environmental and personal factors.

The World Report on Disability (WHO and World Bank, 2011) showed important international information about disability: 15% of the world's population have some form of disability; between 110 million and 190 million adults (2-4%) have significant difficulties in functioning; rates of disability are increasing; people with disabilities have less access to health care services.

From 2005 to 2015 the prevalence of health conditions associated with severe disability increased by 23% in the World, with 74% linked to health conditions for which rehabilitation is beneficial [GBD 2015 DALYs and HALE Collaborators. Lancet. 2016]. Rehabilitation is essential in addressing the full scope of health needs and achieving the UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages.

Rehabilitation Medicine must be of the part of the universal health coverage integrating the National Health Systems and ensuring that financial resources are allocated to rehabilitation services. Rehabilitation can reduce care costs, ensure healthy lives and promote well-being for all at all ages, enabling participation.

Rehabilitation Medicine services are imperative for Health Systems in the 21st century. Rehabilitation a Health Strategy.

INV-25: WHAT IS NEW IN THE PRM BRANCH?

G. Aykuz

Turkey

Rehabilitation aims to enhance and restore functional ability and quality of life to people with physical impairments or disabilities. It does not reverse the damage caused by disease or trauma, but rather helps restore the individual to optimal health, functioning, and well-being. The success of rehabilitation depends on many factors including the nature and severity of the disease, disorder, or injury; the type and degree of any resulting impairments and disabilities; the general health of the patient, and family support. There are many subtitles of rehabilitation medicine: physical rehabilitation; occupational rehabilitation; vocational rehabilitation; psychiatric rehabilitation which is a branch of psychiatry dealing with restoration of mental health and life skills after mental illness; cognitive rehabilitation (neuropsychology) which is a therapy aimed at improving neurocognitive function that has been lost or diminished by disease or traumatic injury; the rehabilitation of criminal behavior (penology); visual rehabilitation. Rehabilitation medicine specialists sometimes deal with acute injuries, control the problem and find appropriate methods in a short term, but the main area is long-term improvement. Therefore, the main target is to prevent further injuries and minimize the damage. This helps the patient to control his disease, results in less disability, dependence on external sources of support, and finally decreases the economic burden on society. Research is the Achilles heel of rehabilitation area. It is not easy to do evidence-based studies and form control groups in rehabilitation researches. Actually, it is hard to evaluate functional outcome and quality of life. Nowadays, smartphone, tablet and external hard drive technologies provide to rehabilitation professionals to gain easier access to all kind of data. These new data may help to understand the effectiveness of various treatments such as the use of assistive devices within society. I believe that it is not unreasonable to expect that our analyses of rehabilitation data will be supported in the future by tools that take it far more initiative. Instead of software packages that blindly run analyses, we will have tools that actively assess our data, use that context to understand the data in ways we have not, and present views and analyses that we have not anticipated. Most rehabilitation researchers and practitioners would not be able to build such tools themselves, but we can call for the technology and software research and development necessary to deliver this desired future to rehabilitation professionals.

As a conclusion, we know that progress will not necessarily be smooth and unproblematic. Technology and other innovations are not going to rapidly deliver dramatic results in rehabilitation. If we keep looking to the future, there is a risk of losing the opportunities to integrate our current clinical knowledge into practice. Although developing increasingly sophisticated research tools and methodologies has considerable value, our primary

focus should be what to do and how to do. We need to work multidisciplinary, lead the residents, and guide the rehabilitation team members for a successful outcome of the rehabilitation programmes. The emphasis will be on individualized prevention-based therapy and cost analysis will become more essential. The improvements in technology may be able to turn the outcomes of disabling injury. In the next 20 years, rehabilitation will have more global developments, however our main philosophy and approach must remain intact and we must protect the patients from marketing pressures and economical strains.

INV-26: DIAGNOSTIC AND TREATMENT OF PAIN CONDITIONS IN CHILDREN WITH SPINAL DEFORMITIES

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Serbia

Purpose: Causes of pain and spine deformities in children during accelerated growth could be non-specific and specific. The most frequent among them are non-specific that are caused by postural dysfunction, growing pains and muscular injuries. It should be stressed that causes might be the consequence of severe conditions and diseases including traumatic injuries (spondylolysis, spondylolysis and discal herniation) and deformities (scoliosis, Scheuermanns kyphosis and tethered cord syndrome) or as a consequence of infection, neurofibromatosis and tumors. The aim of our study was to according by the pain characteristics, mobility and neurological dysfunction and disability, to establish a program of necessary diagnostic evaluation and adequate treatment.

Method: Study was performed at University Childrens Hospital in 100 children age 8-16 years during 2010-2017. We performed anamnesis/heteroanamnesis (pain characteristics, frequency and localization), clinical exam (posture, walking and musculoskeletal mobility), neurological exam and additional imaging methods (X ray, MRI, CT) and biochemical analysis. According to diagnosis, treatment was multidisciplinary.

Results: Non-specific cause of pain was present in 73 (73%) patients. From specific causes of pains, scoliosis and Scheuermann kyphosis were more frequent and was present in 11(40.7%) patients, 9 (33.3%) spondylolysis, spondylolysis and discal herniation, 4 (14.8%) with neurofibromatosis due to the compression of such changes and 3 (11.1%) with tumors.

Conclusion: It can be pointed out that due to the fact that back pain and spine deformity might be the cause of serious pathological conditions, it is necessary to perform detailed diagnostic protocol especially in patients with prolonged, repeated and night pains.

INV-27: TREATMENT OF CONGENITAL IDIOPATHIC TALIPES EQUINOVARUS WITH PONSSETI METHOD

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Italy

Introduction: Congenital talipes equinovarus (CTEV) is one of the most common congenital bone deformities. It is usually defined as a fixation of the foot in adduction, supination and varus. Different treatment options exist including the Ponseti method. The aim of the study is to report the results obtained in infants with CTEV treated by the Ponseti method.

Materials and methods: Between June 2005 and December 2015, 152 patients (247 idiopathic clubfeet) were treated with Ponseti method at the Orthopedic Clinic of the University of Catania. One hundred and four patients (59.4%) were male, the anomaly was bilateral in 94 (61.8%) cases, unilateral in 58 (38.2%), in the right side in 32 (55.2%). The mean age at initiation of treatment was 8 days (range 3-81 days), severity of the clubfoot deformity by the Pirani Severity score was 5.56 points (range 4.3-6 points). Total numbers of Ponseti casts before

tenotomy, details of tenotomy, and compliance with CTEV brace were recorded. Clinical evaluation was performed using the functional Ponseti scoring system.

Results: Mean follow up was 73 months (range 18-110 months). An average of 6.6 casts were necessary before performing the tenotomy. Tenotomy was performed in a total of 185 feet (74.9%) always in an operating room under general anesthesia by a percutaneous approach at a mean age of 106 days (range 45-213 days). Compliance with CTEV brace was satisfactory in 148 patients (97.4%). Functional Ponseti scores were good/excellent in 145 (95.3%) patients for a total of 236 clubfeet (95.5%). Only 7 patients (4.6%) for 11 clubfeet (4.4%) suffered relapse. Poor compliance with the Denis Browne splint was thought to be the main cause of failure.

Conclusions: The aim of obtaining a straight, painless, plantigrade flexible, normal-looking foot, which allows the child to live a regular daily life, is achieved by the Ponseti Method which remains the best way to treat the ICTEV anomaly.

INV-28: VERTEBROPLASTY IN THE TREATMENT OF FRACTURES AND VERTEBRAL COLLAPSES

E. Avarotti

Italy

Kyoplasty is a mini-invasive procedure for the treatment of vertebral compression fractures; consists of the percutaneous introduction of methyl methacrylate into a fractured vertebral body, with the purpose of increasing its rigidity and mechanical strength to the compression load.

INDICATIONS:

Compression painful vertebral fractures in the lumbar or thoracic region by:

- Primary osteoporosis
- Secondary osteoporosis
- osteolytic lesions due to multiple myeloma or bone metastases
- Trauma

AIMS:

- Reduce and stabilize the fracture in a controlled manner
- Correct spinal deformities
- Prevent new fractures
- Quick and prolonged pain disappearance and improve patient quality of life.
 - allows rapid clinical improvement by relieving pain (95%) and improving functionality and mobility
 - stabilizes the fracture

RESULTS:

- Reduces height loss
- Reduces the cephalic angle by more than 50% and therefore corrects the spine deformity
- The SF-36 quality of life data is considerably better after CP.

O-01: A SYSTEMATIC REVIEW EXPLORING THE RELATIONSHIP OF CORTICAL ACTIVITY AND RECOVERY OF UPPER LIMB SENSORIMOTOR IMPAIRMENTS AFTER STROKE

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Purpose: At six months post-stroke, 33-66% of survivors do not present with full recovery of upper limb function (Kwakkel et al. International Journal of Stroke 2013; 8(1):25-32.). One of the methods of measuring cortical neurophysiological mechanisms of brain recovery in stroke is electroencephalography (EEG). Disruption of neural connectivity can be measured by event related potentials such as somatosensory evoked potentials (SSEPs) and event related synchronization (Stepien et al. Neuroscience letters 2011; 488(1):17-21.). The aim of this systematic review was to examine the current evidence about the changes of cortical activity measured by EEG or magneto encephalography (MEG) in association with sensorimotor upper limb impairments in stroke.

Method: In order to identify the relevant studies, electronic searches, abstract and full-text papers were independently reviewed by two reviewers. From 1614 papers, 32 papers were selected for risk of bias assessment. Nine papers were then included in the review; 7 used EEG and 2 used MEG methodology.

Results: In total, 321 people with stroke were included. Preliminary findings showed that: (a) presence, latency and amplitude of SSEPs in the acute stage could give an indication about the outcome of upper limb motor impairment post stroke and (b) inter-hemispheric imbalance involving higher alpha event related synchronization in the ipsilesional hemisphere could be more pronounced with moderate than mild upper limb motor impairments.

Conclusion: SSEPs could give neurophysiological insight of upper limb motor outcome of people with stroke. However, further in-depth research exploring event related synchronization and functional connectivity analyses in ipsilesional and contralesional hemispheres in people with sensorimotor upper limb impairments from the acute to chronic stages of stroke is required.

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Keywords: stroke, electroencephalography, brain activity, arm and hand impairments, motor recovery

O-02: PREDICTION OF REHABILITATION OUTCOME USING BIOMECHANICAL ASSESSMENT IN POST-STROKE HEMIPARESIS

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Romania

Purpose: This study aimed to assess biomechanical foot parameters, due to moro- functional changes in patients affected by stroke, in order to predict the outcomes of a rehabilitation programme.

Method: We investigated 50 hemi-paretic post ischemic stroke patients (average age 60 yrs, 48% right hemiparesis, 52% left hemi-paresis, neurologically and hemodynamically stable, preserved cognitive functions, communication and effort tolerance). This observational, non-experimental, study was conducted in an

inpatient 6 months programme of rehabilitation. Evaluation included: clinical evaluation, spasticity assessment by Ashworth Scale (initial mean score 2), foot biomechanical analysis (at the beginning and after 6 months of therapy) using RSScan system force-plate: Fmax (maxim force), Pmax (maxim pressure), %CA (contact area) recorded during the gait cycle for 5 plantar regions: HL lateral heel, HM medial heel, Midfoot, Metatarsian I, Metatarsian V.

Results: After 6 months rehabilitation programme we noticed a Fmax and Pmax 54% mean increase for the left hemiparetic foot, while for %CA were no significant changes (what might mean the development of particular moro-functional changes of paretic shank and foot muscle groups in connection with spasticity decrease). In case of right hemiparesis we noticed a 52% decrease of Fmax and Pmax, and constant evolution of %CA. Moreover, on the contralateral (non-affected) side we observed a 48% mean increase of Fmax and Pmax for left hemiparesis, respectively 50% for the right hemiparesis patients.

Conclusion: By this study we noticed significant differences of biomechanical foot behaviour between left and right hemiparesis, probably explained by the development of different compensatory mechanism, much more visible for the left hemiparesis which had a higher rehabilitation potential.

Keywords: stroke, biomechanic, rehabilitation

O-03: WHAT HAPPENS TO SWALLOWING MUSCLES AFTER STROKE? A PROSPECTIVE RANDOMIZED CONTROLLED ELECTROPHYSIOLOGICAL STUDY

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TURKEY

Purpose: Stroke is the most frequent reason of neurological dysphagia (ND). Electrophysiological studies can be use to evaluate oral, pharyngeal and initial phase of esophageal stances. This study aims to evaluate mastication, mimic and tongue muscles which play an important role in oral stance of swallowing process noninvasively comparing healthy individuals. The aim of this study is to evaluate the real functional capacities of the mastication, mimic and intrinsic tongue muscles which are associated with the oral phase of swallowing process non-invasively in early post-stroke patients.

Method: 26 patients who admitted to our clinic between January 2014 and 2016 with stroke and 25 healthy individuals were evaluated for the study. Demographic features of individuals were recorded. Duration of oral, pharyngeal and esophageal phases of swallowing process and motor action potentials (MAPs) of trigeminal, facial and hypoglossal nerves were measured. After 4 weeks treatment schedule, patients were re-evaluated.

Results: Duration of all phases of swallowing were found prolonged compared to the healthy controls ($p<0,05$). MAPs of masseter, orbicularis oculi and intrinsic tongue muscles were significantly lower in patient group ($p<0,05$). After treatment, we found significant improvement for all parameters in patient group but the durations of oral, pharyngeal and esophageal phases were still significantly prolonged and MAPs of these muscles were still lower ($p<0,05$).

Conclusion: Although swallowing is examined as different phases, the process is complicated and should be evaluated totally. In post-stroke dysphagia, oral phase of swallowing process is as important as pharyngeal phase and perioral, mastication and tongue muscles are influenced in early stages. Although significant recovery is maintained by treatment functional disability continues compared to healthy individuals.

Keywords: dysphagia, electrophysiology, stroke

O-04: POST STROKE FATIGUE: POINT PREVALENCE, CHARACTERIZATION, ASSOCIATIONS AND RADIOLOGICAL CORRELATION IN A REHABILITATION HOSPITAL

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Dublin

Purpose: Post stroke fatigue is a common yet under diagnosed phenomenon among stroke patients. Relatively little is known about how it is experienced and how mobility deficits, social supports and radiological associations relate to it. This study aimed to determine the point prevalence of post stroke fatigue in a rehabilitation hospital, its relationship to sociodemographic, clinical and radiological factors.

Method: Cross sectional observational study. All the stroke inpatients with age > 18 years in the National Rehabilitation Hospital Jan- Feb 2015 admitted for rehabilitation who had a stroke in the last 6 months of admission were interviewed using a structured questionnaire and review of medical record. Patients with profound aphasia, cognitive impairments, who refused to participate, with background liver and renal dysfunction were excluded from the study. Post stroke fatigue was assessed by using the Fatigue severity scale and the Fatigue severity visual analogue scale. The level of functioning was assessed by the disability rating scale.

Results: A total of 30 (21 males, 9 females) patients fulfilled the inclusion criteria, out of which n= 25 reported fatigue at the time of interview with a mean age of 47.4. Five patients with mean age of 55 denied the symptom. Sample included 21 patients with ischemic stroke and 9 with hemorrhagic stroke. Out of the 25 who reported fatigue, n=17 had sustained an ischemic stroke. Mean time since injury was 4 months in the fatigued and 3 months in the non fatigued group. N=12 were employed, n=8 lived alone, n=10 were moderately dependent out of the 25 individuals who reported fatigue. There were 17 smokers and 7 alcohol dependant individuals in the fatigue group. Past medical history of depression was present in 4 (16 %) and hypothyroidism in 2 (8 %) patients who reported fatigue. No significant past medical history was seen in the non-fatigue group. There was right sided involvement on the CT scan in n=9 (36 %), and n=2 (40 %) in fatigued and non fatigued group respectively. 16 (64 %) patients had left sided involvement in the fatigued group versus 3 (60%) in the nonfatigued patients. Out of 25, 16 patients in the fatigue group were mobile with or without aid and all 5 out 5 were mobile in the nonfatigued group.

Conclusion: This survey shows that post stroke fatigue is a prevalent symptom in patients undergoing rehabilitation post stroke in the NRH. The limitation of the study is its small sample size. No clear correlation could be concluded between fatigue, psychosocial, clinical or radiological variables. No association was established between fatigue, level of functioning and mobility. However, the survey does suggest necessity of formal assessment of fatigue in stroke rehabilitation. It would be interesting to look at the effect of fatigue on multidisciplinary therapies.

Keywords: stroke, fatigue

O-05: PERSONS WITH STROKE-INDUCED COMMUNICATION DISORDERS: ARE WE IDENTIFYING THEM?

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Malta

Purpose: Stroke is a major cause of acquired communication disorders, such as aphasia, apraxia of speech, cognitive communication disorder and dysarthria, and the impact on the quality of life of persons with these disorders is well recognized. There is widespread evidence that Speech Language Therapists play an important role in the management and rehabilitation of such disorders. Yet, there is general consensus that several persons with acquired communication disorders do not receive the service of speech language therapy and may not be

identified at all. This work takes an international perspective and aims to address identification of persons with stroke-induced communication disorders.

Method: An online survey was distributed to various organisations. Each organisation shared the link for the survey with Speech Language Therapists in several countries, with the aim of obtaining a multinational view of the situation. Completed surveys were anonymous and were received by the researcher automatically through the online system.

Results: This work provided a picture of the procedures that are in place in different countries for the identification of people with acquired communication disorders during the acute phase post stroke. The availability of effective screening tools was explored and the perception of Speech Language Therapists regarding the possible reasons for ineffective identification of such persons was obtained. Health professionals who work closely with stroke patients play an important role in referral for speech language therapy.

Conclusion: Effective rehabilitation of acquired communication disorders can only be achieved by means of the establishment of an optimal system for the identification of such disorders.

Keywords: identification, acquired communication disorders,

O-06: CONSIDERING APHASIA IN STROKE REHABILITATION

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Turkey

Purpose: Aphasia is one of the most common complications after stroke and occurs in 16-38% of the acute period after stroke. The aim of this study is to demonstrate the demographic and clinical features of stroke aphasia and the efficacy speech and language therapy in patients with aphasia after stroke.

Method: The medical records of all patients with stroke admitted to the Gaziler Physical Therapy and Rehabilitation Center, during a 1-year period (January 2014- January 2015) were reviewed. All of the patients were administered Speech and language therapy for 24 sessions (8 weeks, 3 days a week). Aphasia evaluations were performed with Gulhane Aphasia Test-2 (GAT-2) before and after rehabilitation programme.

Results: The medical records of 107 patients who met the inclusion criteria for stroke were reviewed. In the linear regression analysis, GAT-2 change was not affected by age, gender, post-event duration, duration of rehabilitation, level of education, functional independence and disability (FIM and Modified Rankin Beard). The mean GAT-2 before and after treatment was statistically significantly lower ($p < 0.05$) in MCA involvement than other arteries involvement. After the SLT, while individuals with MCA involvement showed improved GAT-2 scores which were statistically significant, the improvements in those with other arterial involvement were not statistically significant.

Conclusion: The present study is one of the largest study on patients with stroke aphasia in Turkey. We think that the present findings may provide a comprehensive picture of Turkish stroke aphasia patients

Keywords: aphasia, speech and language therapy, stroke, brain injury, rehabilitation

O-07: VALIDITY AND RELIABILITY OF ACCELEROMETER DATA IN THE ASSESSMENT OF UNILATERAL TRANSTIBIAL AMPUTEE GAIT PATTERNS – A CORRELATIONAL STUDY

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Malta,

Purpose: Gait deviations exist in specific conditions or pathologies. Accelerometer technology in the assessment of pathological gait has seen an increase in use in the past two decades, however such data in unilateral transtibial amputees is lacking both locally and internationally. This study aims at addressing this research gap by testing for reliability and validity of data obtained by a single trunk accelerometer placed at L5. Subsequently the study aims at establishing normative data for the specific population under investigation.

Method: The study is a within subject correlational (exploratory) design. Subjects were selected by random lot from the local Malta National Amputee Database. Correlation data was synchronised and obtained by comparing data from a single accelerometer (Delsys© Trigno™) versus a 10-camera three-dimensional motion capture (3DMC) system (Vicon© Bonita) at 200Hz. iGAIT developed by Yang et al. (Comput Methods Programmes Biomed 2012; 108:715-723) was used to extract spatio-temporal, symmetry, and regularity data.

Results: Results from this study show that accelerometer data had good inter-rater reliability with a Wilcoxon signed rank test showing no significant difference on accelerometer placement at $p = 0.219$. Test-retest reliability and intra-rater reliability was also established at $p < .001$ level of significance. ICC (absolute) Correlation between accelerometer data and 3DMC ranged from very good (0.868) for step length (m) to excellent (0.983) for velocity (m/s). Symmetry and regularity data could discriminate between a high functioning independent and a low functioning (using an assistive device) unilateral transtibial amputee.

Conclusion: This study concludes that accelerometer data is a reliable and valid tool in assessing spatio-temporal, symmetry, and regularity data in unilateral transtibial amputees. Data is highly important in clinical practice and may help determine patients' quality of life and facilitate decisions on therapeutic or prosthetic interventions. This study also acknowledges the limitation that kinematic and kinetic data cannot be obtained from a single trunk accelerometer.

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Keywords: accelerometer, gait, transtibial, amputee, reliability

O-08: FOREARM REPLANTATION AFTER TRAUMATIC AMPUTATION – HOW TO ACHIEVE BETTER OUTCOMES: CLINICAL CASE

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Portugal

Purpose: Nowadays, the challenge of upper limb replantation after amputation has become an achievable reality, thoroughly improved in last decades and in constant evolution. The surgical option for replantation should take into account not only the exclusive analysis of the feasibility of replantation, but specially the potential of long term upper extremity functional recovery.

Method: We report a case of an 40-year-old man, left-handed, with no relevant antecedents, transferred from another Hospital, victim of traumatic amputation of the right forearm, while the patient was working. The warm

ischemia time was 5 hours and he underwent Orthopaedics and Plastic and Reconstructive Surgery (PRC) combined with surgery for replantation. Subsequently, he was referred to an earlier date of Physical Medicine and Rehabilitation (PRM), to perform a sequential programme of rehabilitation as soon as possible.

Results: 10 months after the accident, the patient has made a lot of progress, being able to use his right hand in daily activities, as eating, dressing himself, etc. The rehabilitation programme is still going on, as we expect much more improvements in sensitivity, mobility and function.

Conclusion: The aim of this work is to emphasize the importance of an early, thorough and extensive rehabilitation programme as key of functional recovery and long-term prognosis in traumatic injuries lesions and its role in preventing complications.

Keywords: forearm replantation, functional improvement, physical therapy

O-09: USE OF PROSTHESIS IN A CONSECUTIVE COHORT OF LOWER LIMB AMPUTEES AND ITS RELATIONSHIP WITH THE PRESENCE OF STUMP AND PHANTOM LIMB PAIN

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Italy

Purpose: Epidemiological data on lower limb amputees are often incomplete and related to the type of pathology that caused the amputation (i.e. metabolic, vascular traumatic/work related amputation). Moreover data are completely lacking if considering the impact of pain (both stump pain and /or phantom limb pain) on functional parameters, activity of day living and participation after discharge from a rehabilitation programme. The aim of this work is to give insight on the presence of pain of the stump (SP) and of the pain felt in the phantom limb (PLP) and to assess how pain in these two declination can affect persons with lower limb amputation in term of functional parameters, activity of daily living and participation after discharge from a rehabilitation programme in a real life context.

Method: This is an observational study on a cohort of 430 consecutive patients with lower limb amputation in which a rehabilitation programme lead to a prosthesization. The study was structured in two phases: a first phone contact and a second phone simple structured interview. Of 430 amputees only 186 (51 F;135 M mean age 61) was possible to establish a contact. Among them 2 refused to have further contact (1.08%). General features of the sample, and etiological cause for amputation, were recorded along with other specific parameters such as presence of phantom limb pain and/or stump pain. Functional parameters include a modified Ranking Scale and a Walking Handicap Scale.

Results: Stump pain was present in 85 subjects (45.7%) while phantom limb pain was present in a more high number (N°109 pts; 58,6%). Prosthesis was used in 135 patients (72.58%) while 51 patients declared not using the prosthesis (27%). A consistent/constant help was declared during indoor activity in 17% of patients, while 17,21% of patients needed only moderate to minimal help and 65,59% of patients didn't need any help during indoor activity of day-living. As far as outdoor activity is concern, a consistent/continuous help was declared in 34.9% of patients, while a minimal/moderate help was needed in 17.02% of patients. A 46.24% of patients didn't need any help also in outdoor activity while 1.09% of patients (2 subjects) declared they don't go outside.

Conclusion: A review of the available literature indicates that after limb salvage interventions, despite reasonable graft patency, amputation-free survival, and limb salvage rates, patients do not always experience significant gains in their QoL. However only two thirds of diabetic patients who undergo major limb amputation will ambulate with a prosthesis with a great reduction of their QoL. These rather negative outcomes for both amputation and salvage interventions prompted us to assess functional parameters such as activity of the day living and the use of outdoor use of prosthesis and a possible correlation with the presence of pain. Our data

reflect the literature in that pain both as phantom limb pain and stump pain is present in a high number of subject with percentage i(n agreement with the literature). What is of interest is the fact that prosthesis is utilized also by patients with pain ((stump pain N°85 pts; PLP N° 109 pts Vs N°51 pts not using the prosthesis). This datum is lower than that from the literature and can be seen on the light that wearing the prosthesis can reduce pain perception . Further in-depth analysis are needed to ascertain which type of pain is reduced by wearing the prosthesis, if the etiology of amputation can affects the wearability and use of prosthesis and in which context (indoor or outdoor utilization).

Keywords: amputees, stump pain, phantom limb pain, QoL, AdL

O-10: THE NATIONAL AMPUTEE DATABASE: AN OVERVIEW

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Malta

Purpose: To provide an overview of the National Amputee Database and the rationale behind it, and to highlight trends in the dynamics of local amputee rehabilitation pathways.

Method: Data related to all major lower limb amputations was collected from June 2010 to May 2017. Variables included demographics, aetiologies, levels of amputation, any previous ipsilateral or contralateral amputations, data on prosthetic rehabilitation and related milestones, including suitability for prosthetic rehabilitation, date of commencement of the Early Walking Aid, time between amputation and casting/measurement, as well as the time between casting/measurement and prosthetic supply. Finally, data regarding instances of abandoned prosthetic use and functional outcomes achieved at the end of prosthetic rehabilitation was also collected. At each end of year of data collection, data was discussed among the various members of the multidisciplinary team, including the Amputee Task Force.

Results: Over 7 years of data collection, a decrease in the number of major lower limb amputations was observed (from 96 to 56). The number of trans-tibial amputations (average of 42 per year) was consistently higher than the number of trans-femoral amputations (average of 31 per year). Variations were noted in in-patient hospital length of stay, time of commencement of the Early Walking Aid as well as the interval between stump casting/measurement and prosthetic supply. Discussion of data among members of the multidisciplinary team provided stakeholders with a suitable platform for the undertaking of measures aimed at improving the service.

Conclusion: The National Amputee Database is the only data archive related to all lower limb major amputations carried out in Malta. It provides a comprehensive and complete picture of time frames in the local amputee care pathway, and is thus a significant source of data related to amputee rehabilitation.

Keywords: lower limb amputations, database, rehabilitation, diabetes, multidisciplinary

O-11: A SYMETRICAL WALKING OF PEOPLE WITH TRANS TIBIAL AND TRANS FEMORAL AMPUTATION: A BIOMECHANICAL ANALYSIS WITH A SINGLE WEARABLE SENSOR

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Italy

Introduction: People with unilateral amputation load their intact limb more than the prosthetic one suggesting a compensatory mechanism to reach a greater static-dynamic stability. Then, gait asymmetry (GA) represents an important variable in studying the mobility of people with transtibial (TTA) and transfemoral (TFA) amputation. Therefore, the aim of this study was to analyze GA, identifying a Symmetry Index (SI) and a Propulsion Index (PI) using a single inertial sensor among these groups of individuals with TT and TF amputations.

Methods: Five patients with TTA (age 51.0±9.0) and 5 patients with TFA (age 54.0 ± 14.0) and 10 aged-health matched control (CG, age 48.0±12.0) individuals took part to this study. Each subject walked along a 10 meter walkway wearing an inertial sensor (BTS G-WALK, BTS Bioengineering, Italy) applied at the level of sacrum. For data analysis was used a specific software (BTS G-Studio, BTS Bioengineering, Italy). Were registered the gait spatio-temporal parameters. A symmetry index (SI) was computed and expressed in percentage (1). The PI, the difference in AP acceleration between left and right single support phases (SS), was calculated as follows:

$$PI = ASS (LPI - RPI)$$

where ASS is the absolute value, LPI is the angular coefficient of the straight line passing between the point A1 and B1, point A1 is the value of the mean AP acceleration at beginning of the left SS, B1 is the value of the mean AP acceleration at the end of the left SS, RPI is the angular coefficient of the straight line passing between the point A2 and B2, where A2 is the value of the mean AP acceleration at beginning of the right SS phase and B2 is the value of the mean AP acceleration at the end of the right SS. The statistical difference between the variables has been evaluated using the ANOVA one-way and applying the Bonferroni post hoc correction.

Results: SI value for CG was 96.08%; lower value was found for TFA (60.26%). The analysis shows a significant difference for SI ($F= 137.26$, $p < 0.001$). Moreover, the post hoc correction indicates a statistical difference between all the groups: CG and TTA ($p < 0.001$), CG and TFA ($p < 0.001$), TFA and TTA ($p < 0.001$). A similar statistical trend was found for PI (whose results were CG= 0.77; TTA= 1.23; TFA= 1.88) ($F = 9.21$, $p < 0.001$). The post hoc correction shows a significant difference between the CG and the TF group ($p < 0.001$). Cadence and velocity were different between TTA and TTF patients ($p < 0.005$).

Discussion: The main results of our study show that patients with TTA and TFA have a different SI respect to the CG and between themselves. Furthermore, we have shown that TTF patients have a higher asymmetry of propulsion respect to the CG, whereas TTA patients were closer to CG. Our study indicates firstly that a single wearable sensor is able to discriminate between different pathological/biomechanical conditions in amputees and secondly suggests that the analysis of these parameters (SI and PI) could be useful for an accurate tuning of prosthesis.

O-12: THE EFFECTS OF DUAL TASK ON GAIT IN PEOPLE WITH TRANSFEMORAL AMPUTATION

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Turkey

Purpose: The aim of this study was to investigate the effects of cognitive dual task on gait in people with transfemoral amputation (TFA).

Method: 19 people with TFA who have used the prosthesis with non-microprocessor knee at least 6 months included in the study. 10-meter walking test was used to determine the walking speed. The footprint method was used to determine the spatio-temporal parameters of the gait. Gait was evaluated under both single task (walking alone) and dual task (walking while performing a cognitive task). Primary outcomes were walking speed, step width, stride length and tempo. The cognitive task was serial subtraction task. The Wilcoxon test was used to compare single-task and dual-task performances.

Results: Mean age was 53.6±3.6 years. The difference between single-task and dual-task 10-meter walking test times was statistically significant (respectively 14.3±5 sec. 16.7±6 sec. $p<0.01$). The difference between single-task and dual-task step width (respectively 19.7±4.2 cm; 21.6±3.8 cm; $p<0.01$), and stride length (respectively 92.8±23.3 cm; 86.9±24.6 cm; $p=0.03$) were statistically significant. The difference between single-task and dual-task tempo was statistically significant (respectively 88.6 steps; 84.6 steps; $p=0.01$).

Conclusion: The results obtained from this study suggest that people with TFA walk slower, with larger step widths, shorter stride lengths and lower tempo with dual task. Many activities in daily life require walk with a concurrent task. It may be important to include dual task gait training in the rehabilitation of patients with TFA for a more comfortable walking

Acknowledgements: Ertuğrul Demirdel.

Keywords: amputation, gait, dual task.

O-13: PHYSIATRIC MANAGEMENT OF DYSPHAGIA IN PATIENTS WITH BRAIN INJURY

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Turkey

Purpose: In this study, we aimed to compare demographic and clinical features and their relation to rehabilitation outcomes in patients with impaired swallowing after stroke and Traumatic brain injury.

Method: The medical records of all patients with stroke and traumatic brain injury admitted to the Gaziler Physical Therapy and Rehabilitation Center, during a 1-year period (January 2014- January 2015) were reviewed. All of the patients were applied swallowing therapy for 24 sessions (8 weeks, 3 days a week). Swallowing evaluations were performed with a video fluoroscopy device before and after rehabilitation programme.

Results: Ninety two (33.9%) of the patients were female and 179 (66.1%) were male. There were 175 (64.6%) stroke, 58 (21.4%) traumatic brain injury, 13 (4.8%) anoxic brain injury and 25 (9.2%) tumors and infection. One hundred thirty-seven (50.6%) patients had left hemisphere involvement, 61 (22.5%) right hemisphere involvement and 73 (26.9%) bilateral hemisphere involvement. When rehabilitation gains are examined as stroke and other acquired brain diseases; statistically significant improvement was observed in oral intake type, PAS (fluid, pudding and solid) and FOIS data in both groups. There was no significant difference between the groups. There was no significant difference in FOIS and PAS scores between patients with brain stem involvement and other patients.

Conclusion: To the best of our knowledge, the present study is one of the largest on patients with neurogenic chronic dysphagia and is the first to focus on these unique patients in Turkey.

Keywords: dysphagia, swallowing therapy, stroke, traumatic brain injury, rehabilitation

O-14: OBJECTIVE PROGNOSTIC PARAMETERS FOR MANAGEMENT OF SPASTICITY: CLINICAL, ELETROPHYSIOLOGICAL AND SURGICAL STUDY

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Egypt

Purpose: 1) to evaluate different electrophysiological methods as objective and prognostic parameters for assessing spasticity & 2) to assess different current modalities involved in treatment of spasticity

Method: 57 adult patients and 20 controls were included. Clinical assessment and follow up were performed for patients at 1, 6, 12 and 18 months post intervention. Electrophysiological studies included NCS, F/M ratio, H/M ratio, agonist-antagonist co-contraction ratio, rate of firing of spontaneous motor units and degree of voluntary activity. Patients were divided according to their degree of spasticity and disability score into 4 groups: Group 1: BTX-A group (27 patients), Group 2: Selective peripheral neurotomy (12 patients), group 3: Microsurgical dorsal root entry zone group (5 patients) and group 4 (13 patients) underwent multimodality procedures

Results: Pain and spasm were significantly reduced- in 19 patients of group 1 ($p < 0.001$) and 11 patients of group 2. Very high significant reduction in the tone occurred at the 1st month ($p < 0.001$), with significant improvement in disability score at 6 month. The maximum baseline of Hmax/Mmax ratio for improved patients was 0.49. In group 3: pain was significantly reduced at the first month post-operative then mildly increased during one year follow-up period. There was no change in disability score in all patients over one year follow-up period, (but care was given with more ease)

Conclusion: Electrophysiological studies offer an easy and valid objective method for evaluating the severity of spasticity. Botulinum toxin type-A gave better results in specific indications: focal and moderate spasticity, Hmax/Mmax < 0.5 and in absence of fixed joint deformity. Selective peripheral neurotomy showed the best results in this study in both physical and functional outcomes

Keywords: spasticity, H/M ratio, selective peripheral neurotomy

O-15: DOES AGE INFLUENCE THE FUNCTIONAL OUTCOME AFTER A SPINAL CORD INJURY?

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Purpose: To examine the characteristics of patients with spinal cord injury (SCI) and to determine the impact of age on functional outcome after SCI.

Method: We made a retrospective analysis of 83 inpatients admitted in a Spinal Cord Rehabilitation Unit (SCU) since 1/1/2016 until 31/12/2016. They were divided into 2 groups: "elderly" (≥ 65 years) and "non-elderly" (< 65 years). The variables analysed were: age, gender, length of hospital stay (LOS), aetiology, AIS classification, injury level, Functional Independence Measure (FIM) and Spinal Cord Independence Measure (SCIM) on admission and discharge and post-discharge destination.

Results: 34 patients were classified as elderly, 23 of which were male. In this group, the mean age was $72,62 \pm 6,07$ years and the mean LOS was $98,62 \pm 47,90$ days (vs $123,71 \pm 45,30$ days on the "non-elderly" group). 82,35% of these patients were discharged home and most of them had incomplete motor lesion of traumatic origin. Elderly patients presented lower FIM (80,41 vs 90,45 "non-elderly", $p = 0.005$) and SCIM scores (42,85 vs 53,56, $p = 0.005$) at admission and at discharge (FIM=94,41 vs 106,28, $p = 0.005$) (SCIM=58,79 vs 70,71, $p = 0.005$). Differences in FIM gain and SCIM gain were also found between the two groups, although not statistically significant.

Conclusion: Patients benefited of rehabilitation regardless their age. Elderly patients seemed to benefit with rehabilitation as much as the non-elderly. Thus, age alone does not seem to be decisive for access to rehabilitation.

Keywords: spinal cord injury, age, rehabilitation

O-16: ALANINE AMINOTRANSFERASE BLOOD LEVELS AND REHABILITATION OUTCOME IN OLDER ADULTS FOLLOWING HIP FRACTURE SURGERY

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Israel

Purpose: Recent studies show that low Alanine Aminotransferase (ALT) blood levels are associated with frailty and poor outcome in older adults. Therefore, we have sought to study the association between ALT blood levels prior to rehabilitation and rehabilitation outcome in older adults following hip fracture surgery.

Method: Included were older adults (age >60 years) who were admitted to rehabilitation at a tertiary medical center during 2007-2012 following hip fracture surgery. Their rehabilitation outcome was assessed by the Functional Independence Measure (FIM) scoring system. Their ALT blood levels were documented between one and six months prior to rehabilitation. Excluded were patients with abnormally elevated ALT blood levels (>40 IU/L) possibly consistent with hepatocellular liver injury. The cohort was divided into two groups: patients with ALT>10 IU/L and patients with ALT≤10 IU/L.

Results: Included were 490 patients: 402 (82.0%) females, mean age 82.9 ± 6.7 years. Upon rehabilitation discharge, the total FIM gain was significantly higher in the ALT>10 IU/L group compared with the ALT≤10 IU/L group (17 vs. 13; p=0.002). A logistic regression analysis showed that patients with ALT>10 IU/L were almost twice as likely to undergo a successful rehabilitation by means of total FIM score of 50 or more (2nd-4th upper quartiles) at their discharge (odds ratio 1.7; 95% confidence interval 1.1-2.6; p=0.014).

Conclusion: High-normal ALT blood levels prior to rehabilitation are associated with a better rehabilitation outcome in older adults following hip fracture surgery.

Keywords: alanine aminotransferase, hip fracture, rehabilitation

O-17: EVALUATING HOW INFORMATION SESSIONS GIVEN TO CARERS OF PEOPLE WITH DEMENTIA AFFECT THEIR CONVERSATION SKILLS, WHEN COMMUNICATING WITH INDIVIDUALS WITH DEMENTIA

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UK

Purpose: The aim of the present study was to identify whether information sessions given to caregivers, enhanced their conversation abilities when communicating with individuals with dementia.

Method: A comparison of talk using Conversation Analysis, prior to and after the information sessions, was carried out. This was achieved by audio recording participants, which included six dyads, during a conversation in their home environment. Each dyad consisted of a caregiver and a person with dementia, three of which had early stage dementia whilst the other three had moderate stage dementia. Caregivers were spouses or siblings of the persons with dementia.

Results: Six talk practices, two prior and another four after the information sessions, used by both caregivers of persons with early and moderate stage dementia, were identified. These talk practices all maintained communication between the caregiver and the person with dementia. This increase in talk practice repertoire appeared to be linked to the communication tips suggested during the information sessions. Persons with dementia's age, relationship between caregiver and the person with dementia, and research process were factors discussed as possibly instilling the use of all six of the talk practices identified.

Conclusion: Information sessions might have had a positive impact upon caregivers of persons with dementia, by enabling them to develop better communication skills. This consequently allowed the person with dementia to maintain an interaction. These findings might help in providing further support to caregivers, thus possibly reducing the chances of early institutionalisation for persons with dementia.

Keywords: dementia, caregivers, communication, conversation analysis

O-18: THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY LEVEL AND FUNCTIONAL PERFORMANCE IN GERIATRICS

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Turkey.

Purpose: The aim of this study was to investigate the relationship between physical activity level and functional performance in geriatrics.

Method: 117 people (69 Male, 48 Female) included in the study. All participants could walk independently. Physical activity level was assessed using International Physical Activity Questionnaire Short Form (IPAQ). Functional performance was assessed using Timed Up and Go Test (TUGT) and Five Times Sit to Stand Test (FTSST). Spearman Correlation analysis was used to investigate the correlation between physical activity level and functional performance.

Results: Mean age of participants was 73.5 ± 8 years. Mean IPAQ score was 744.7 ± 976.9 MET min/wk. Mean TUGT time was 13.6 ± 7.2 sec. Mean FTSST time was 14.8 ± 6.1 sec. There was a statistically significant correlation between IPAQ and TUG ($r = -0.356$, $p < 0.01$). There was a statistically significant correlation between IPAQ and FTSST ($r = -0.263$, $p < 0.01$).

Conclusion: It is known that physical activity is important in terms of elderly health. As a result of this study, functional performance of geriatrics with higher physical activity level were found better. It may be good to plan for practices that will increase the level of physical activity in geriatrics in order to provide independence in daily life and reduce fall risk and morbidity.

Keywords: geriatrics, physical activity, functional performance.

O-19: THE RELATIONSHIP BETWEEN DIABETES MELLITUS AND FALLS

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Portugual,

Purpose: Explore the evidence on current literature of the relation between diabetes mellitus and the risk of falls, and the importance of their prevention.

Method: The PubMed database was searched for the terms “diabetes” and “falls”, selecting meta-analyses, review and systematic reviews for the past 10 years. Additional references were obtained through review of references from articles obtained.

Results: Falls are a leading cause of injury in the elderly with serious consequences for the patient, family and community. One in three persons over 65 years old fall at least once per year. Diabetes mellitus is one of the most challenging public health problems. Elderly diabetic patients have an increased risk of falling (diabetes increases recurrent falls risk by 67%). Diabetic peripheral neuropathy is a well accepted independent risk factor for falls. Other risk factors have been investigated and can't be missed: retinopathy, vestibular dysfunction, cognitive decline and polypharmacy, including antidiabetic agents (insulin-treated patients with 94% increased fall risk versus 27% in no-insulin-treated). A careful evaluation of fall risk should be carried out regularly, with the support of clinical tests and scales. The prevention strategy should comprise optimization of diabetes control, education about safe environments and a structured exercise intervention, including Tai Chi, lower-limb strengthening and balance exercises.

Conclusion: Multiple factors contribute to a higher fall risk among elderly diabetic patients, like diabetes-related complications and polypharmacy. Physicians must assess the risk of fall and implement early prevention strategies to enhance well-being and functional capacity of patients.

Keywords: diabetes mellitus, elderly, falls, risk factors

O-20: QUALITY OF LIFE AFTER HIP FRACTURE SURGERY IN OLDER PERSONS

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Malta

Objective: Hip fractures are classified as one of the most serious healthcare problems in older persons since they are associated with a high annual healthcare expenditure and account for a number of quality-adjusted life years lost due to functional losses. The main objectives of the study were (i) to evaluate health related quality of life in older persons (65 years and over) who had sustained a hip fracture and were eventually operated on and (ii) to compare and contrast pre-fracture variables with after-fracture variables and their impact on functional outcomes.

Design: A prospective cohort study was carried out. Data was collected at two different time points one in the immediate postoperative phase, that is before the older person was discharged from the acute phase of his / her care and three months after the fracture incident. Data was collected through the use of two questionnaires (one for each time point) which included a mixed-method research design, since it consisted of both closed and open-ended questions which measured demographic data, pre-fracture variables, after-fracture variables and quality of life through the use of tools and instruments. This type of information helped in the process of triangulation so as to achieve validity of the data being studied.

Setting: The study took place in various different settings. The first data collection was carried out at Malta's general hospital - Mater Dei Hospital in the designated orthopaedic wards, which admit patients who had sustained any form of trauma. The second data collection was carried out at different locations. These included Karin Grech Rehabilitation Hospital, Mater Dei Hospital, various private residential nursing homes and older person's own private residential homes.

Participants: Twenty-five older persons (65 years and over) who were operated for a hip fracture between June and July 2016, had no cognitive impairment and did not suffer from any terminal illnesses were included in the study.

Outcome Measures: Three standardized tools were used, both in the pre-fracture phase and once more three months after and included: the Barthel activities of daily living index, the Geriatric Depression Scale which measured the presence of depression in older persons and the EQ-5D which measured health related quality of life.

Results: The majority of the study participants were females, had a mean age of 78.08 years, had up to a secondary level of education and were married. Significant differences were found out between the pre-fracture Barthel index scores and those scores three months later. This implies that hip fractures can have an impact on an older person's ability to carry out activities of daily living. The incidence of comorbidities increased within three months, which was attributed to previously undiagnosed / unknown comorbidities and also some as a result of the negative events and effects associated with hip fractures.

Subjects studied had a high probability of developing depressive symptoms whilst their quality of life was lower three months after the fracture incident when compared to their pre-fracture levels.

Fracture variables such as vision, hearing, weight bearing status, pain intensity, time between fall and surgery, type of surgical operation carried out and the presence of postoperative complications were studied. Results show that vision and hearing status did not vary between the two studies. The type of fracture and weight bearing status were not found to be significantly related to one another. Pain intensity varied between the two different time points and when it was measured with the type of fracture sustained a statistical correlation was found. Furthermore, the longer the time elapsed between the fall and the time for surgery the more postoperative complications were likely to set in.

Physiotherapy, occupational therapy and rehabilitation were compared together and it was determined that physiotherapy had a positive effect on rehabilitation, whilst adherence to occupational therapy was limited and had minimal or no effect on rehabilitation.

Conclusions: With the sample analysed one can conclude that hip fractures can have an impact on the quality of life of older persons. Findings of this study together with suggested recommendations should be taken into account when devising guidelines and programmes on the management of hip fractures in older persons.

Keywords: hip fracture, osteoporosis, functional outcomes, quality of life, depression, morbidity and mortality.

O-21: DARIER SYNDROME A NEW IDENTITY IN PHYSICAL MEDICINE AND REHABILITATION? WHAT WE CAN DO? – A REVIEW AND CASE REPORT

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Portugual

Purpose: Darier Disease (DD) is a rare keratinizing disorder that exhibits autosomal dominant inheritance. DD often develops in childhood, persists through adolescence, and causes small papules predominantly in seborrheic areas such as the face, chest and back and scalp margins. The lesions are often associated with itching and malodor. Punctate depressions on the palms and soles may be observed in addition to a keratotic surface and hyperkeratosis, which could be severe and cause pain, disability and lead to social exclusion

Method: A review and a case report of a 33-year-old male is presented, diagnosed with DD with severe and exuberant hyperkeratosis on the palms and soles of the feet, which cause pain and result in the inability to walk and work

Results: There are currently no validated curative treatments available for DD. Systemic retinoids mainly isotretinoin have been shown to be effective. We propose a multidisciplinary treatment protocol with Physical Medicine and Rehabilitation (PMR), Dermatology and Psychiatry to manage the disease. The treatment plan should provide symptomatic relief, by encompassing podiatric care with debridement of the hyperkeratotic tissue, prescription of foot insoles, modification of footwear and gait training with crutches

Conclusion: Chronic skin diseases like DD present a challenge to PMR. It is important to ensure a multidisciplinary approach in the management of patients with Darier's disease, due to its impact on multiple facets of the patient's life: physical, social and emotional

Keywords: Darier disease, rehabilitation, physical medicine and rehabilitation

O-22: REHABILITATION HEALTHCARE PROVIDERS, MINDFULNESS AND COMPASSION TRAINING, AND PERCEIVED STRESS: A PILOT STUDY

Janette Falzon

Malta

Purpose: Healthcare professionals' vulnerability to stress overload and burnout has negative implications on the quality and effectiveness of healthcare (Raab, 2014). Mindfulness is a way of responding to present moment experiences with openness, ease, and creativity (Kabat-Zinn, 2013). Mindfulness training can result in positive outcomes for healthcare workers and their clients (Morgan, Simpson, & Smith, 2014). Compassion is sensitivity to suffering of self and others with a commitment to try to relieve and prevent it (Neff, 2003). Compassion training increases positivity, feelings of kindness and willingness to help others (Singer & Klimechki, 2014). Mindfulness-based interventions with elements of compassion training may reduce healthcare professionals' perceived stress and improve clinical care (Raab, 2014). The current study aims to introduce mindfulness and compassion training to healthcare professionals in Malta to improve (a) their personal health and well-being, and (b) the effectiveness of local healthcare.

Method: Around 60 health professionals, from several departments of two rehabilitation hospitals in Malta, will receive 6 weeks mindfulness and compassion training (including weekly trainer-led sessions and daily home practice). The Mindfulness Awareness and Attention Scale (Brown & Ryan, 2003), Self-Compassion Scale (Neff, 2003) and Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) will be used to measure participants' trait mindfulness, self-compassion, and perceived stress at baseline and post-intervention.

Results: An increase in levels of mindfulness and self-compassion, and a decrease in perceived stress are expected.

Conclusion: The findings will be used to inform a larger mindfulness and compassion training intervention for healthcare professionals in Malta.

Acknowledgements: Funded by VGH, Malta.

Keywords: rehabilitation, mindfulness, compassion, healthcare, stress

O-23 HOW CAN DANCE HELP EXPRESS EMOTIONS WITH SPECIAL REFERENCE TO PEOPLE WITH PARKINSON'S DISEASE

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Malta

Purpose: Over the last fifteen years there has been a growing interest in alternative therapies for people with Parkinson's disease and over the last seven years there have been several research done to collect data researching the benefits of dance for people with Parkinson's disease. Parkinson's disease is a neurodegenerative disease whereby the patients can have symptoms such as instability, a stooped posture, a hurried shuffled walk, slowness of movement, rigidity, lack of coordination, tremor, the voice may become softer and facial expression might disappear. With this paper I investigate through a literature review the possibilities if dance can help express emotion with people with Parkinson's disease. To have a more direct focus with this research I have based the analyses on the principles of Rudolf Laban, to understand if by utilising the Laban principles in my workshops, people with Parkinson's disease can express emotions through movement.

Drawing on my personal experience as a dancer, teacher and founder of the voluntary organisation called 'Step up for Parkinson's', I believe and have experienced that in certain settings, people with Parkinson's disease when feeling safe and trusted are able to connect within and able to express emotions. This paper includes a literature review of Rudolph Laban, his students and different scholars and academics who are all specialised either with Laban his principles or community based projects.

Conclusions: After this thorough research I do believe that the Laban principles can be of a great use to help people with Parkinson's express emotions. With this I want to clarify that this would not be in a therapeutic manner but merely in forms of expression through movements by having a better knowledge of movement and oneself. I believe that the person-centred research approach, in which the emphasis is on observing the participant experiencing the dance, would also be able to give an insight if the participants can express certain emotion feelings through the dance classes. It would be possible to further research this usage of Laban's principles within a group specifically related to Parkinson's disease, in the future, by using carefully worded questionnaire design and one-on-one interviews. This would be possible if specialized syllabus would be designed for the dance classes for people with Parkinson's in which the Laban principles are fundamental. Exercises, routines and creative tasks would be created with Laban principles as the essence of the creation.

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Keywords: dance, Parkinson's disease, emotions, quality of life

O-24: DEVELOPING AN INTEGRATED CARE PATHWAY FOR INFRAINGUINAL BYPASS SURGERY

J. Cassar

Malta

Purpose: The aim of this study is to explore, through the development of an Integrated Care Pathway for Infrainguinal bypass surgery, the extent to which professionals can work in a multidisciplinary/interdisciplinary manner. Additionally, it will investigate the perceptions of the professionals involved in the pathway the use of a paper-based versus paperless documentation

Method: This study employed an action research approach during the development of the Integrated Care Pathway and a qualitative case study approach based on semi-structured interviews, during the second part of the research study. The target population was health care professionals working with patients undergoing infrainguinal bypass surgery at Mater Dei Hospital. The tool was developed by the researcher following an extensive literature search. The Integrated Care Pathway was developed between August 2015 and April 2016 and the interviews were carried out between May and June 2016. The interviews were transcribed by the researcher in verbatim style and data was analysed through the use of content analysis.

Results: Twenty-five interviews were conducted, yielding a response rate of 50%. A knowledge assessment on Integrated Care Pathways was completed by twenty-one of the participants. Five major themes emerged from the interviews, these being, Integration of disciplines in care, Implementing an Integrated Care Pathway, Impact of an Integrated care pathway on clinical care, documentation of the patients' care and the way forward.

Conclusions: The participants discussed the importance of an interdisciplinary approach when caring for patients undergoing infrainguinal bypass surgery. Even so, there are still aspects of care that are fragmented. Some of the participants remarked that the development and implementation of an Integrated Care Pathway can

improve multidisciplinary/interdisciplinary teams, improve communication between professions, increase standardisation of care and improve patient documentation. Even though the participants are more familiar with a paper-based method of documentation, most of the participants believe that the way forward is to implement a web-based documentation system. This study recommends the implementation of the integrated care pathway for patients undergoing infrainguinal bypass surgery, whilst investing in more efficient information technology systems to aid in the introduction of a web-based documentation system.

O-25: THE EFFECT OF ALPHA LIPOIC ACID ON THE RECOVERY OF TRAUMATIC SCIATIC NERVE INJURY IN RATS

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Turkey

Purpose: To investigate the effect of alpha-lipoic acid (ALA) on the recovery of traumatic sciatic nerve injury (SNI) in the rat model.

Method: A total of 28 male Sprague-Dawley rats were randomly divided into 4 equal groups in this experimental, sham-controlled study. Sciatic nerves of the rats were traumatized by compression with Aesculap FB363R clamp for 60 s. under anesthesia as follows. Group 1: sham operated+saline (intraperitoneally), Group 2: SNI+saline (intraperitoneally), Group 3: SNI+ALA 50mg/kg (intraperitoneally) and group 4: SNI+ALA 100 mg/kg (intraperitoneally). At the 0, 1st, 7th, 14th, 21st and 28th days, all animals were evaluated with sciatic functional index (SFI) and at the 0, 14th and 28th days threshold values of nerve stimulation were measured by Medtronic NIM Response 3.0 device. Histopathologic evaluation was done and statistical analyses was evaluated at significance level of $p < 0.05$.

Results: The increase in SFI values in groups 2, 3, and 4, at 7th, 14th, 21st and 28th days, when compared to 1st day, was statistically significant. However, there was no significant difference between groups 2, 3 and 4 in terms of the increase in SFI values at 7th, 14th and 28th day compared to 1st day. Electrophysiological measurements revealed no significant difference in nerve stimulation threshold values at 0, 1st, and 14th days between groups, whereas threshold values at 28th day in group 2 were significantly higher than group 1 and 4. The best improvement in connective tissue and nerve structure was seen in group 3.

Conclusion: The results suggest that alpha-lipoic acid accelerates the process of nerve healing.

Acknowledgements: We would like to thank to veterinary surgeon Engin Sumer from Experimental Research Center (YUDETAM), Faculty of Medicine, Yeditepe University, Istanbul, Turkey.

Keywords: Alpha-lipoic acid, peripheral nerve injury, rat, sciatic nerve

O-26: CLINICAL AND ULTRASOUND EVALUATION OF THE EFFICACY OF EXTRACORPORAL SHOCK WAVE THERAPY ON CALCINOSIS – A CASE REPORT OF PATIENT WITH SCLERODERMA.

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Croatia

Purpose: We are presenting fifty-six year old female patient with long lasting scleroderma with severe functional impairment of both hands involving inability to form a fist and painful ulcerations on tips of her fingers without any secretion.

Method: Clinical examination revealed facial expression typical for scleroderma, active synovitis on her wrists and metacarpophalangeal joints, Raynaud phenomenon, painful ulcerations on her fingertips and inability to form right fist. Pain intensity was assessed using VAS score: 7/10. Laboratory findings showed positive

antinuclear antibodies with positive homogenous fluorescence (1:2560) and positive anti-Scl-70-antibodies. Ultrasound showed synovial thickness (grade II-III) in her wrists and small soft tissue calcification in several fingers.

Results: Based on clinical and functional assessment as well as radiological finding and occupational therapy evaluation, our idea was to continue with conservative nonpharmacological treatment: exercise for scleroderma and extracorporeal shock wave therapy for subcutaneous calcinosis. The protocol was designed as follows: 1600 impulses directly on the subcutaneous calcinosis on both indices, duration 4 minutes on weekly basis with total of six sessions. The same protocol was repeated three months later with identical design. After six months, there was evident improvement of her hand function: decreased pain intensity (3/10), she was able to form her left fist, while ultrasound findings showed the regression of subcutaneous calcinosis.

Conclusion: Based on our clinical experience and data from literature, extracorporeal shock wave therapy proved to be beneficial for scleroderma patients with painful subcutaneous calcinosis.

Keywords: extracorporeal shock wave, treatment, calcinosis, scleroderma

O-27: PROLOTHERAPY IN MUSCULOSKELETAL CONDITIONS: A SINGLE-CENTRE ONE-YEAR ANALYSIS

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Turkey

Purpose: To report the authors' experience using dextrose prolotherapy (PT) and to determine its effectiveness and whether its use decrease the cost with regard to other most popular injection methods (ozone-oxygen therapy (OOT) and platelet-rich plasma (PRP)).

Method: Medical records of patients with chronic recalcitrant musculoskeletal disorders were retrospectively reviewed. Pain evaluation was performed using visual analogue scale (VAS) and quality of life (QoL) was assessed using the Short Form-12 (SF-12). Patient satisfaction was measured on a 5-point Likert-type scale. The calculated cost was compared with the cost of the 2 other common injection methods.

Results: The greatest decrease in pain was in patients with heel and low back pain, whereas pain decreased the least in patients with hand pain. There was significant improvement in VAS and SF-12 scores. The level of satisfaction was also very high. Dextrose PT costs \$15.00 for the maximum number of 5 injections, the least expensive PRP kit and OOT session cost \$70.00 and \$50.00, respectively.

Conclusion: PT was beneficial in patients with various chronic recalcitrant musculoskeletal conditions. The cost of dextrose PT was shown to be lower than other injection techniques commonly used in daily clinical practice (PRP and OOT).

Keywords: prolotherapy; dextrose; musculoskeletal; recalcitrant; cost; effectiveness; satisfaction.

O-28: WIDESPREAD CHRONIC MUSCULOSKELETAL PAIN SYNDROME IN SECONDARY OSTEOPOROSIS AND PRIMARY HYPERPARATHYROIDISM

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Serbia

Purpose: Hyperparathyroidism causes widespread musculoskeletal pain, which can mimic fibromyalgia or polymyalgia rheumatica. It should be underlined that osteoporotic patients without fracture can suffer from diffuse pain and awareness of this condition.

Method: For 12 years, from 2004 until 2016 a female was observed in the Institute of Rehabilitation in Belgrade, with widespread pain in “all muscles and bones”. The patients suffered from osteoporosis without fracture and was cured by medication, laser therapy and surgical approach.

Results: During the observation period, a polytenosynovitis was the dominant clinical finding with sleep disturbance. Neurological motor and sensitive deficits were not observed. Standard biochemical analysis and parameters of acute inflammation markers were in reference ranges except for decreased level of 25 OHVITD, an elevated level of PTH, total and ionised Ca serum with hypercalciuria. The patient was referred to an endocrinologist with the diagnosis of Primary Hyperparathyroidism with secondary osteoporosis, suspected vertebral fractures Th7-Th10 and insufficiency of VIT D. The patient was operated in 2004 and histopathology findings confirmed the Hyperplasia of parathyroid glands. She was treated with Fosavance 5600 IU from 04.02.2006 until 2013 and from 2016 with additional VIT D until today; Calcimimetic–Cinacalcet, since July 2005.

Conclusion: The VIT D restitution repeated treatments of laser therapy on affected tendons and decreased levels of PTH led to the synergistic reduction of widespread chronic musculoskeletal pain syndrome caused by primary hyperparathyroidism and VIT D insufficiency. The patient with regards to the improved T- score level from osteoporosis to osteopenia without progression of vertebral fractures.

Keywords: widespread musculoskeletal pain, primary hyperparathyroidism, secondary osteoporosis, vertebral fractures, VIT D insufficiency

O-29: THE USE OF BOTULINUM TOXIN IN THE MANAGEMENT OF LOW BACK PAIN

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Portugual.

Purpose: Low back pain is the most prevalent musculoskeletal disorder, affecting 40-80% of individuals worldwide. In this context, there has been evidence that therapy with neuromuscular transmission blocking agents, such as Botulinum Toxin (BT), might have an important role in the management of this condition. The present systematic review aims to reflect on scientific evidence that evaluates the role of BT in the treatment of low back pain.

Method: Systematic review of the literature indexed in the databases Medline, ISI Web of Science and CENTRAL. To achieve study purpose, only Randomized Clinical Trials (RCT) were included, with at least 2 months of follow-up, appropriate sample size and in line with the standards of the Dephi List.

Results: BT therapy proved to be superior in pain control and in the improvement of functional capacity when compared with placebo. On the other hand, the treatment of BT + Physiotherapy showed more effectiveness versus 1) placebo + physiotherapy and vs 2) therapy of infiltrations with corticosteroid and local anesthetic (triamcinolone and lidocaine) + physiotherapy, regarding pain control of low back pain. Finally, treatment with BT showed greater effect than acupuncture treatment on pain relief and on functional gain in cases of chronic low back pain.

Conclusion: Though the approached studies indicate the role of BT in low back pain management, the consolidation of these conclusions need scientific evidence with higher quality, larger randomized clinical trials, standardization of the evaluated outcomes and detailed intervention protocols.

Keywords: low back pain, Botulinum Toxin, rehabilitation, pain

O-30: ACUPUNCTURE AND FIBROMYALGIA: PERSONAL EXPERIENCE

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Rome

Purpose: A pain trend investigation in fibromyalgia and chronic pain treatment with acupuncture and physical therapeutic exercises was done. Acupuncture effectiveness and acupuncture combined with physical therapeutic exercise synergy was evaluated. This involved a pain trend investigation in fifty-six patients affected by chronic pain, including twenty-eight fibromyalgia cases. They had an integrated rehabilitation approach including overpain management with acupuncture treatment combined with home-based therapeutic physical exercise. Our setting was Careggi Hospital Neuromusculoskeletal and Sensory Organs Department Rehabilitation Facility, Florence, Italy. The evaluation took place between January and June 2016.

Method: Fifty-six adult patients, aged between twenty-seven and eighty-eight were treated: six acupuncture sessions were performed one week apart from each other. Forty patients ended the entire acupuncture cycle. Home-based physical therapeutic exercise was also prescribed to thirteen suitable patients. Every patient compiled VAS scale prior to and after each acupuncture session to get subjective pain evaluation. Each single session required a needle insertion time ranged between fifteen and thirty minutes. It was intentionally avoided to apply any traditional formula in choosing acupuncture points for treatment, so that acupoints were chosen from time to time according to tongue and pulse traditional Chinese diagnosis. We used HWATO 30 x 25 disposable copper handle acupuncture needles without insertion tube. We considered mean, median, standard deviation, and percentile values for VAS scores at the beginning and at the end of each session, and VAS scores value at the beginning and at the end of the cycle were compared. A Student's T-test was also performed on paired data from single sessions. Using $P > 0.05$ as hypothesis evaluation cut-off, the H_0 hypothesis should be accepted if $P > 0.05$, therefore it should be rejected if $P < 0.05$.

Results: Each single session appears to significantly improve pain, as expressed by VAS scale. Overall treatment is more effective than the individual treatments. Third and fifth sessions' appear to be decisive: VAS score at the beginning of the session is worse than the previous two, but it is followed by a better improvement compared to the previous sessions average so that second and fourth sessions work like cut-off points indicating an analgesic effect stabilization. Only six subjects out of thirteen for whom home-based physical therapeutic exercise points had been prescribed completed the entire cycle, but partial data suggest a synergy with acupuncture effects. Approximately ten acupuncture points were most frequently used in treating our patients.

Conclusion: Acupuncture proves to be an effective treatment in chronic pain. Specific cut-off sessions existence suggests the opportunity to introduce physical therapeutic exercise after reaching a superior analgesic effect, therefore enhancing patient compliance. Further studies should be conducted, aimed at assessing the effectiveness of combining acupuncture with physical therapeutic exercise, involving a higher number of patients.

Acknowledgements: VAS scaled value by ordinary activity in Acupuncture AOUC Neuromusculoskeletal and Sensory Organs Department Facility was used.

Keywords: fibromyalgia; acupuncture; chronic pain; rehabilitation; complementary and alternative medicines

O-31: THE POTENTIAL OF THERAPEUTICAL CANNABINOIDS FOR THE TREATMENT OF FIBROMYALGIA

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Portugual

Purpose: Fibromyalgia is a chronic pain syndrome of unknown etiology. It is characterized by musculoskeletal widespread pain, fatigue and cognitive symptoms, as well as sleep disturbances and lack of memory/concentration. It affects 2-4% of the adult population, being much more prevalent in females. There are multiple therapeutic options available for the treatment of this pathology, but the results are poor and unsatisfactory. Cannabinoids are effective for the treatment of some types of chronic pain syndromes, being already approved for its medicinal use for the treatment of pain on palliative care in Canada and in the USA for the treatment of some chronic pain syndromes as well as for the treatment of pos-chemotherapy nausea. The formulations used include smoked cannabis, vaporized cannabis extracts, nabilone, dronabinol and some analogues of the active principle-tetrahydrocannabinol. This presentation has the objective, accordingly to the best evidence available, to summarize most recent data about the possible role of the medicinal cannabinoids for the treatment of fibromyalgia symptoms.

Method: An online research was made on PubMed, Medline and consulted articles from 2000 to 2016. Further papers were consulted through the consultation of the bibliography of relevant articles.

Results: From the research 82 articles were selected. Only the ones written in English were eligible. After a detailed analysis of the abstracts and after the exclusion criteria applied 23 relevant articles were selected. Clinical cases were excluded.

Conclusion: The physiopathological mechanisms of fibromyalgia are still not clear. There is growing evidence of a dysfunction of the descending pain modulation system and the endocannabinoid circuits on fibromyalgia. The outcome of the various treatments of fibromyalgia is clearly poor and is known that cannabinoids are often used in off label regimen by these patients with a clear necessity of the demonstration of the safety profile and efficacy of this substance. Cannabinoids demonstrate efficacy on the treatment of pain in fibromyalgia patients. There is growing evidence that it also shows an improvement of sleep and fatigue. The side effects described were not significant. Cannabinoids can potentially be integrated on a multimodal treatment plan. Further investigation is necessary to validate these data and to clarify the real value of the possible benefits of the treatment with cannabinoids on chronic pain syndromes, such as fibromyalgia.

Keywords: therapeutical, cannabinoids, fibromyalgia

O-32: HOW DOES A STANDING EXERCISE PROGRAMME FOCUSING ON HIP ABDUCTION STRENGTH AFFECT ANTERIOR KNEE PAIN IN RUNNERS?

Laura Schembri

UK

Purpose: Anterior knee pain (AKP) is the most prevalent injury in running. Growing evidence suggests that hip muscle imbalance plays a role in the development of AKP. Gluteus Medius is the main abductor of the hip and also stabilises the pelvis during gait. Studies show that hip-abduction strength is affected in populations with AKP, which may relate to changes in the control of the hip and knee during running

Method: This was an inter subject pre test post test comparative trial. Due to a lack of compliance there were only 7 participants who completed the six week programme. Participants were runners with anterior knee pain. GMed torque was measured using a Biodex® System 3 isokinetic dynamometer as demonstrated by Brent et al (2013). The Numerical Rating Scale was used to measure pain related to running. The participants had a running

diary with a NRS to relate pain to running and also an exercise compliance diary. Gluteus Medius was tested on the Biodex in standing before and after undertaking a standing exercise programme developed for runners.

Results: Pre-test torque scores were higher on the affected side. Scores on the affected side improved by 22.81% from a mean baseline average of 96.00Nm/kg to 117.86Nm/kg, (p-value 0.013). Scores on the unaffected side improved by 27.97% from a mean baseline average of 90.14Nm/kg to 115.29Nm/kg (p-value 0.031). Post-test scores were more balanced between limbs. Pain scores decreased from 5.29 as measured on the NRS to 1.00 (p-value 0.000).

Conclusion: Standing exercises aimed at strengthening the hip-abductors may be a valid intervention for prevention and rehabilitation of AKP in runners. However, further research is needed in order to validate this.

Acknowledgements: I would acknowledge Dr David Attard for testing the participants at MFC Ta Qali.

Keywords: gluteus medius. knee pain. running. Exercise

O-33: DO SHOULDER ULTRASOUND FINDINGS RELATE TO PHYSICAL PERFORMANCE IN QUADRIPELEGIC ATHLETES? PRELIMINARY RESULTS OF THE PADUA STUDY ON ITALIAN WHEELCHAIR RUGBY TEAM

S. Masiero

Italy

Purpose: To investigate the presence of shoulder ultrasound (US) abnormalities in Wheelchair Rugby Athletes (WRA) of the Italian National team with spinal cord injury (SCI) using a newly developed Quantitative Ultrasound Shoulder Abnormalities Rating Scale (QUSARS). Our hypothesis was the presence of a correlation between shoulder ultrasound findings and the results of isometric (push forward isometric strength) and dynamic tests 20 meters (mt) Sprint Mean Dynamic Forward Force, 20 mt Mean Acceleration Test, 20 mt Sprint Time, Eight Track Racing Time) of the WRA.

Method: Volunteer sample of 13 quadriplegic WRA with SCI, members of the Italian National Wheelchair Rugby Team

Results: The most frequent shoulder Rotator cuff US abnormalities were Long Head Biceps tendinopathy. The QUSARS correlated with static ($p < .005$), but not with dynamic measurements ($p > .05$). We found no correlation between age, MI, time elapsed from trauma, Biomechanical tests results and QUSARS Score ($p < .05$).

Conclusion: To the best of our knowledge this is the first study on the correlation between shoulder US abnormalities and physical performance of wheelchair athletes. Wheelchair athletes show a higher rate of rotator cuff tendinopathy than able bodied. The early detection of shoulder pathologic signs could contribute to *targeted training and avoid further damage*.

Keywords: quadriplegic athletes, shoulder ultrasound, wheelchair rugby

O-34: INJECTABLE COLLAGEN ON ACHILLES TENDINOPATHY – A SOLUTION?

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Portugual

Purpose: Achilles tendinopathy affects athletes, recreational exercisers and even inactive people. Overuse is considered to induce the condition but the aetiology and pathogenesis have not been scientifically clarified.

Collagen injections have been reported as a possible therapeutic option in lots of soft tissue injuries, as playing a role on healing process and pain relief.

Method: We present a group of 3 athletes. Two recreational: 56-year-old male tennis player, a 23-year-old long distance runner and a 27-year-old male professional modern pentathlete. They all had Achilles pain for more than 5 months. They all stopped practicing and initiated a 3-month-physiotherapy-programme, focused on pain relieving and eccentric exercises. As this programme wasn't working, we decided to do collagen peritendon injection, weekly, until total pain relief. Pain-VAS (0-10) and time to return to play were used to measure the outcomes.

Results: After the the first injection they all got better. The tennis player needed 3 injections, and returned to play 10 days after the first injection. The other two athletes needed 2 injections; one restarted practicing after 5 days and the other 7 days. The pentathlete competed 17 days after the first injection.

Conclusion: We have applied a weekly collagen injection treatment protocol in 3 different athletes with Achilles tendinopathy, obtaining good results in terms of pain relief, functional improvement, and return to sport. These results are interesting, but the group had only 3 people. More studies are needed in order to establish the validity of this treatment from a scientific point of view.

Keywords: Achilles tendinopathy, collagen injection, sports injuries

O-35: EFFECTS OF DYNAMIC TAPE IN UNIPED HORIZONTAL JUMP AND DYNAMIC BALANCE IN YOUNG HANDBALL MALE ATHLETES

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Portugual

Purpose: Handball is an Olympic sport with great international impact played professionally in Europe. It is a contact sport, implying the use of physical abilities such as running, change of direction and jumping in several game moments. This study aims to evaluate the effects of Dynamic Tape in a uniped horizontal jump and dynamic balance in Handball athletes.

Method: 30 male participants (mean \pm s age 15, 87 ± 0.89 years, weight 72, 65 ± 8.50 kg, height 1.79 ± 0.09 cm and body mass index 22.78 ± 2.29 kg / m²) were randomly distributed into two groups of 15 elements: group Dynamic Tape (DT) and group without Dynamic Tape (GC). The Single leg hop test and Y balance test were performed before and after the application of tape or after five minutes, depending on the group.

Results: DT group demonstrated positive statistically significant differences ($p = 0.02$) in the Dynamic Anterior Balance, compared with the control group at the final moment (M1). When compared to the initial moment (M0) and M1, the DT group showed statistically positive results ($p = 0.001$) in single leg hop test. However, when compared with the GC group, DT also showed positive results in the single leg hop test, but no statistically significant differences ($p = 0.06$).

Conclusion: Dynamic Tape possesses a positive effect on single-leg horizontal jump and dynamic Anterior Balance in Handball athletes.

Keywords: handball, dynamic tape, dynamic balance, Single leg hop test, Y balance test

O-36: PERFORMANCE AFTER ANTERIOR CRUCIATE LIGAMENT RUPTURE IN ELITE ATHLETES

Diogo Martins, Jorge Dias, Afonso Pegado, Miguel Silva, Leonor Cabral

Portugual

Purpose: Anterior cruciate ligament (ACL) tears are one of the most common injuries in both contact and noncontact sports. Anterior cruciate ligament (ACL) injuries are particularly frequent in contact sports and can seriously impair an athlete's performance and career longevity. They are most often a result of low-velocity, noncontact, deceleration injuries and contact injuries with a rotational component. Contact sports also may produce injury to the ACL secondary to twisting, valgus stress, or hyperextension all directly related to contact or collision. The treatment is surgical. This presentation has the objective, accordingly to the best evidence available, to summarize the data available about the performance in elite athletes after this injury, in different sports.

Method: An online research was made on PubMed, Medline and consulted articles from 2000 to 2016. Further papers were consulted through the consultation of the bibliography of relevant articles.

Results: From the research 127 articles were selected. Only the ones written in English were eligible. After detailed analysis of the abstracts and exclusion criteria applied were selected 19 relevant articles. Clinical cases were excluded.

Conclusion: There is a high return to sport (RTS) rate following anterior cruciate ligament repair when the surgery and rehabilitation programme are performed by a highly trained medical team. Nearly all players resumed play the season after surgery. The mean time to RTS ranges from 6 to 13 months. Performance among elite athletes who returned to sport after ACL reconstruction often deteriorated compared with preinjury levels. The number of games for season is usually decreased. The performance tends to decrease on the second and subsequent seasons. The rupture graft rate is considerable. Clinicians must guide the athletes into realistic expectations regarding return to sport following ACL reconstruction.

Keywords: LCA, rupture, performance, athletes

O-37: HOW MUCH IS TOO MUCH? TWO CROSSFIT CLINICAL CASES

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Portugual

Purpose: CrossFit is a high-intensity strength and conditioning programme that has gained popularity over the past decade. One of the features that attracts people is its emphasis on quantifiable results, being associated with a significant improvement in VO2 max and decreased body fat percentage. However, potential injuries associated with CrossFit training have been suggested. The purpose of this work is to report two cases of cerebrovascular events associated with CrossFit workouts. And also to raise awareness to an exercise practice based on balanced between health and competitive or high intensity performance

Method: Patient 1: 28-year-old female, personal trainer and professional CrossFit athlete with past history of untreated hypertension and consumption of dietary supplements. During a cross fit training, the patient performed handstand push-ups with repetitive craniocervical trauma, initiating at that time temporal headaches associated with cervical pain, which progressed to a worsening of headache and vertigo, dysphagia and deep sensation deficit on the left side of the body. The MRI showed a vertebral artery dissection which led to a bulbar ischemic stroke. The craniocervical EcoDoppler showed a 50% stenosis of right V4 segment. She was hospitalized for 15 days at the hospital and then transferred to a rehabilitation center, presenting with deficits in superficial and deep sensation on the left side, right partial horner syndrome and gait ataxia. She started 100 mg of aspirin

daily. After an intensive rehabilitation programme, some deficits reversed, however a partial horner syndrome, right homonymous hemianopsia and the deficit in superficial sensation still persist. During hospitalization, she underwent a reconditioning programme and was instructed on the workouts she was allowed to do. Although this, the patient returned to Crossfit workouts without any restriction 7 months later. Patient 2: 36-year-old female, a non-professional CrossFit athlete (practices twice a week) with past history of dietary supplements consumption and smoking. During a Crossfit workout, while performing squats, she had a severe headache, accompanied with dysarthria, left grade 1 hemiparesis (including face) and anosognosia. The MRI revealed an ischemic stroke in the temporal polar and lenticulo-capsular temporal region of the right side with extension to the radiated crown. The craniocervical EcoDoppler showed a stenosis of 50% of the right internal carotid and middle cerebral stenosis. She was hospitalized for four days, and started 100 mg of aspirin daily. During the hospitalization, all deficits were reversed.

Results: While direct causality cannot be proven in the second case, intense Crossfit workouts may have led to the ischemic event. On the other hand, in the first case, there was a traumatic exercise that probably caused the dissection of the vertebral artery. Some experts are troubled by lack of guidance of beginners such as the second patient, who may dive into stressful workouts with intensities inappropriate to their physical condition. Even fit people are at risk by lack of technique or overly strenuous and excessively fast exercise. Cases of cervical carotid artery dissections and rhabdomyolysis have been reported. To prevent injuries trainers should have appropriate training certifications, the equipment should be inspected regularly. A medical clearance should be done before participation and monitor athletes for signs of overtraining, rhabdomyolysis, and other problems. Participants should adjust rest periods to optimize recovery and reduce fatigue, and the train should alternate exercise programmes with other unit training activities to eliminate redundant activities and minimize the risk of overuse injuries.

Conclusion: The danger of CrossFit is the speed and high-intensity movements and lack of proper guidance on technique. The constant push to increase performance with faster speed and more weights may lead to further degradation in exercise technique and predisposition to injury. So the question is how much is too much in the quest for balance between health and competitive performance.

Keywords: CrossFit; high intensity train; cerebrovascular; vertebral dissection

O-38: LONG-TERM OUTCOME AFTER ULTRASOUND THERAPY FOR CALCIFIC TENDINITIS OF THE SHOULDER: RESULTS OF THE TEN YEARS FOLLOW UP OF AN RCT

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¹ Austria, ² Germany

Purpose: To follow both the structure and function related ten-years' outcome of shoulders that had been treated with therapeutic ultrasound (US) for symptomatic calcific tendinitis; to identify predictors for an unimpaired shoulder function.

Method: Shoulders of patients that had been treated for symptomatic calcific tendinitis with either a series of US or sham US ten years ago and for whom follow-up examinations were available nine months after therapy, and patients' shoulders that had not been enrolled in the original RCT, were assessed. The main outcome variables were presence of calcium deposits and subacromial impingement on standardized X-ray imaging. In addition, shoulder symptoms (Binder score) and function (Constant score) were assessed.

Results: Of 74 shoulders from 37 patients investigated, a total of 45 shoulders had been treated in the original study. At ten-years, a similar proportion of calcium deposits had resolved in 21 (78%) of the originally US treated compared with 15 (83%) of sham treated shoulders. Between the nine-months' and the ten years' follow-up, significantly more calcium deposits had resolved in the sham-group than the US group ($p=0.045$). Shoulder

symptoms and function had significantly improved at both nine-months' and ten-years' follow-up examinations with no significant differences between groups. No variables were found to be of prognostic value to predict a favorable long-term outcome.

Conclusion: Symptomatic calcific tendinitis of the shoulder has a good likelihood to completely resolve in the long-term. Therapeutic US may speed up this process. However, treating the calcium deposit may not be causal to the recovery from symptoms and function in calcific tendinitis

Acknowledgements: We would like to thank Prof. Dr. Veronika Fialka-Moser (passed away in 2014) for her generous support with this study.

Keywords: non-surgical management, treatment, calcific tendinitis of the shoulder, therapeutic ultrasound, function

O-39: WHAT IS THE IMPACT OF INTRODUCING STATIC PROGRESSIVE SPLINTING EARLY IN THE TREATMENT PROCESS ON THE RESTORATION OF FOREARM PASSIVE RANGE OF MOTION AFTER A DISTAL RADIUS FRACTURE?

Vicky Camilleri

Malta

Purpose: The purpose of this study was to investigate the use of static progressive splinting (SPS) in increasing passive range of motion (PROM) in forearm pronation and supination following a distal radius fracture (DRF) when introduced early in the therapeutic process together with standard therapeutic techniques, as compared to standard treatment techniques only. Moreover, this study aimed to explore the functional outcomes between the two therapeutic pathways in relation to changes in PROM.

Method: The study design of this research is a feasibility study for a full randomised controlled trial, undertaking the method of an experimental pre-test– post-test control group design (Arian M et al. BMC Medical Research Methodology 2010; 10: 67 – 71.) 6 patients with limited pronation/supination motions were recruited and allocated to the control / the experimental group. A splint was designed and used from the participants in the experimental group alongside other standard techniques as for subjects in the control group for six weeks. Addressed outcomes were changes in PROM for supination and pronation evaluated by goniometric measurements and functional outcomes by scores for the Disability of the Arm, Shoulder and Hand (DASH) questionnaire and Patient Rated Wrist Evaluation (PRWE) questionnaire.

Results: The paired samples t-test reported significant changes between the two phases of treatment for both groups in all outcome measures. Insignificant changes were however reported for all outcomes between the two groups by the Independent samples t – test. Nonetheless results demonstrated a positive inclination towards the experimental group. A negative correlation was obtained between PROM measurements and functional scores for both questionnaires, revealing that increments in PROM resulted in better outcomes in hand functionality.

Conclusion: Results implied that SPS are effective in restoring forearm movements when introduced early in the healing process. In addition the practicality of conducting a full RCT was determined, in further supporting the findings of this study.

Keywords: static progressive splinting, pronation/supination, distal radius fracture, passive range of motion

O-40: CORRELATION BETWEEN MRI AND EMG FINDINGS IN THE LUMBOSACRAL PART OF THE SPINE IN PATIENTS WITH CHRONIC LOW BACK PAIN

G. Deverceviski

Serbia

Purpose: The aim of the work was to compare pathoanatomical MRI scan findings on the lumbosacral part of the spine and the electromyoneurography (EMNG) findings, and to evaluate their association, in the patients with chronic low back pain.

Method: In the investigations were included 60 patients, suffering from low back pain, with mean age $48,97 \pm 10,49$ yrs., 28 men (46,67%) and 32 women (53,33%), hospitalized and treated in the Clinic for medical rehabilitation, Clinical center of Vojvodina, Novi Sad. Besides health history and physical examinations, in the diagnostic procedures were used MRI scans of the lumbosacral spine and EMNG findings.

Results: MRI scans showed the vertebral bodies changes in 12 (20,00%) patients, and intervertebral disk lesions in 54 (90,00%) which were associated with nerve roots compressions in 34 (56,67%) patients. Two or more associated different changes had 48 (80,00%) patients. The most frequent changes were on spinal segments L4 and L5, in 34 (56,67%) cases. The changes of the vertebral bodies were as follows: spondylolisthesis in 6 (10,00%) patients, retrolisthesis in 6 (10,00%), relatively stenosis of spinal canal in 10 (16,67%), and absolute spinal canal stenosis in 4 (6,67%) patients. The most frequent changes were on intervertebral disks: bulging disk in 10 (16,67%) patients, protruded disk in 32 (53,33%), herniated disk in 8 (13,33%), rupture of annulus in 6 (10,00%), extruded disk in 12 (20,00%) patients and hardened disk in 2 (3,33%) patients. Pathological EMNG findings were most frequently present in the patients with the disk protrusions, whereby anterior protrusions were often associated with bilateral radiculopathies. In the patients with herniated disk and rupture of annulus, i.e. protruded disk, pathological EMNG findings were found in 95% cases. EMNG findings showed radiculopathies in 49 (81,67%) on L5 and S1, and in 11 (18,33%) patients on L4 and L5 spinal segments.

Conclusions: In the patients with chronic low back pain, MRI and EMNG are very important methods in the diagnostic procedures, for the estimation of the pathoanatomical substrate, nature and the degree of the changes, as well as for making the right decisions of choice and type of therapeutic procedures that follow.

Keywords: magnetic resonance imaging, electromyoneurography, low back pain, radiculopathy, pain, correlation

O-41: OUTCOME AFTER A COMPREHENSIVE OUTPATIENT REHABILITATION PROGRAMME IN CHRONIC LOW BACK PAIN PATIENTS

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¹ Austria, ² Slovakia

Purpose: This observational study describes the therapeutic effects of a multimodal outpatient rehabilitation programme in patients suffering from chronic recurring low back pain.

Method: 3090 patients (60% females, aged $53,9 \pm 9,9$ years) performed a six month rehabilitation programme comprising of progressive resistance exercise, sensorimotor training, relaxation techniques, and back specific patient education twice per week. Lumbar range of motion (ROM), maximum isometric lumbar extensor muscle strength, pain, disability (Roland Morris Questionnaire, RMQ), and the health related quality of life (EQ-5D) were measured before and immediately after rehabilitation.

Results: In 2439 patients successfully completing the programme all outcome measures significantly improved from baseline to the end of the programme. Therapeutic benefits in ROM, RMQ, and EQ-5D in those accessible for long term observation persisted at 6, 12, and 24 months after completion of rehabilitation.

Conclusion: Chronic low back pain patients significantly improve after a 6 months multimodal rehabilitation programme. Future studies should investigate the therapeutic effects in different patient subgroups and the needs for long term preservation of the benefits.

Acknowledgements: This work was supported by the Slovak Research and Development Agency under the contract no. SK-AT-2015-0031.

Keywords: outcome, multimodal outpatient rehabilitation, low back pain

O-42: VIRTUAL REALITY REHABILITATION IN PATIENTS WITH TOTAL KNEE REPLACEMENT: PRELIMINARY RESULTS

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Italy

Purpose: This Randomized Control Trial aims to evaluate the Virtual Reality (VR) efficacy for motor skills enhancement in patients with Total Knee Replacement (TKR) and to detect changes in posture and balance during gait after such treatment compared to Traditional Rehabilitation (TR) (Knoop J et al. Osteoarthritis and Cartilage 2011;19(4):381-388.).

Method: 23 TKR patients were enrolled within 10 days post-surgery: 13(68±9yrs) Virtual-Reality-Group (VRG) and 10 (70±6yrs) Control-Group (CG). Subjects conducted 15 sessions of forty-five-minutes (5 times/week) of VR (VRG) or TR (CG). The VRG used the Virtual-Reality-Rehabilitation-System (VRRS-Khymeia-Italy) standing on balance board and receiving real-time visual bio-feedback in serious video-games (Jungjin Kim et al. Journal of rehabilitation research and development 2016; 53(2):239). Clinical assessments (10-meter Walk Test (10mWT); Time Up and Go (TUG); Medical Research Council Quadriceps-Femoris and Tibialis-Anterior (MRC QF and TA); and Visual Analogue Scale (VAS) was performed before (T1) and after (T2) rehabilitation period. A subset of patients (5 VRG; 5 CG) was also instrumentally evaluated through the gait analysis (GA) at T1 and T2 to investigate detailed on postural and balance changes. Wilcoxon's test ($p < 0.05$) was used to detect significant changes between T1-T2.

Results: At T1, no significant differences were found between groups. Significant improvements found for both groups in 10mWT ($p < 0.001$), MRC QF and TA ($p < 0.001$), and VAS (VRG: $p = 0.012$; CG: $p = 0.005$). TUG variations were significant in VRG only (VRG: $p < 0.001$; CG: $p = 0.051$). Significant changes in spatio-temporal parameters from GA were: mean-velocity (VRG: $p = 0.023$; CG: $p = 0.19$), cadence (VRG: $p = 0.049$; CG: $p = 0.075$), cycle-length (VRG: $p = 0.015$; CG: $p = 0.21$), prosthetic-step-length (VRG: $p = 0.015$; CG: $p = 0.369$).

Conclusion: The VR system improves motor skills (gait, postural control and direction shift) in TKR patients compared to TR as in neurorehabilitation (Laver K et al. European journal of physical and rehabilitation medicine 2012; 43(2):523-530). The results obtained with the gait analysis and the TUG tests are encouraging and suggest further instrumental investigations on the sit-to-stand and balance task on a larger sample.

Acknowledgements: The work described was conducted in accordance with current ethical standards and regulations in biomedical research.

Keywords: virtual reality, gait analysis, TKR-rehabilitation

O-43: ASSESSING THE VALIDITY, RELIABILITY AND USABILITY OF A NEWLY DEVELOPED SMARTPHONE BASED APPLICATION IN MEASURING CHRONIC LOW BACK PAIN

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Malta

Purpose: Chronic low back pain (CLBP) is considered to be one of the biggest problems for public health systems in the western world. Physiotherapists rely on self- reporting from the patient to obtain the necessary information which is then transcribed into paper format. Though paper- based tools are valid, they present limitations as patients have to retrospectively remember their pain episodes. This can make the recorded information inaccurate. Mobile phone applications can help to avoid such problems. However studies on such technologies showed an apparent lack of user, clinician, or health service engagement in their development and minimal research on their effectiveness. The aim of the study was to investigate whether a newly developed application could be valid, reliable and usable.

Method: CLBP patients that were being treated by a physiotherapist at a musculoskeletal outpatient department were chosen as the study population. An application, called “Pain in the App”, was developed for this study. This application was transferred onto the participants’ smartphone for the 30 day collection period. Following data collection, a modified questionnaire was distributed to the participants.

Results: Statistical analysis showed that the application is valid when compared to the numerical rating scale (NRS) (p- value <0.001). Results also suggest that the application is capable of recording data in a reliable and consistent manner (p- value <0.001) and that the usability, the design elements adopted and the quality of clinical content were likened by the participants (p- value 0.729).

Conclusions: The results obtained show a great potential of smartphone applications in healthcare and a satisfactory proof- of- concept.

Keywords: chronic low back pain, numerical rating scale, smartphone application, validity reliability & usability

O-44: CAN THE TOILET SITTING POSITION INFLUENCE THE DEVELOPMENT OF KNEE OSTEOARTHRITIS?

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Syria

Purpose: Osteoarthritis of the knee is considered to be related to knee straining activities during the day. KOA risk is increased by obesity and physical activities which mechanically stress the joint. While several risk factors have been identified, the causes of knee osteoarthritis are not well known. Sitting for long periods during the day for example is a possible risk factor.

Method: Data are from 62 participants with a clinical & radiological assessment for KOA, BMI, self-reported leisure and working time, years of squatting toilet use, sitting toilet use.

Results: Sitting on toilet was strongly and positively associated with KOA in men and women.

Conclusion: Results from this study do not support an association between daily use of squatting on the toilet and KOA, whereas sitting on the toilet can be associated with higher risk.

Keywords: sitting position on toilet; knee osteoarthritis

O-45: IMPORTANCE AND ROLE OF PSYCHO-BEHAVIOURAL ASPECTS IN REHABILITATION IN THE REFERENCE FRAME OF ICF

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Italy

Acquired disability is a life-changing condition for accidents survivors and those around them. Profound psychological consequences are often associated to a variety of physical symptoms.

Disabilities associated with neurological damage as hemiplegia, ataxia, paraparesis, parkinsonism reduce mobility, cause difficulty in controlling basic body functions, aphasia, dysarthria, cognitive problems and emotional problems as anxiety and depression impair interpersonal communication.

The tangible, observable effects of disabilities can be conceptualized according to the International Classification of Functioning model (ICF; WHO, 2001) where functioning refers to the physiological (or pathological) functioning of body systems and structures, ability to comprehend both activity limitation and participation, and contextual factors enclose environmental factors and personal factors. While for functioning and ability there are numerous studies and a general consensus on the use of core related or short form codes, this cannot be said for the environmental factors. On the other hand, the problems derived from interaction of disability and contextual factors are object of several reports that suggest persistently reduced quality of life. In particular, the contextual factors are considered of interest in the patient-centered model of rehabilitation set.

The contextual factors enclose both the relationships between patients, caregivers and healthcare professionals and the psychological factors affecting disabled people. This view is at the basis for a holistic model of rehabilitation that helps individuals regain their capacity for everyday activities related to work, family life, and leisure.

We tried to study whether it is possible to adopt tools that can help the circulation of both rational and emotional contents infra- patients and between patients and healthcare professionals, in such a way as to re-introduce the deepest parts of oneself, thus making it possible to face a difficult and traumatic reality with an awareness of the limitations while simultaneously rediscovering life pleasures.

By the conversationalist approach it has been showed that subjects with a variety of neurological chronic conditions were able to modify their behaviours and thoughts about the quality of life, and healthcare professionals simultaneously find themselves very close to questions of pain and disability. Thus, we decided to use routinely this approach in our clinical activities and in the planning of the rehabilitation process.

Furthermore, some indicators were isolated to monitor the group evolution: respect of conversation rules and type of interventions in the conversation meeting.

At the end of the group experience, the socializing indicators were higher than the supportive ones. A positive relationship between rehabilitation outcome scales and positive group experience was also seen.

We propose to integrate in the rehabilitation activities a formalized approach to the contextual factors, particularly those linked with intra and interpersonal relationships.

O-46: PATIENT IN A PRM FACILITY: CAN WE RELY ON REFERRAL DIAGNOSES?

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Poland

Purpose: The problem of diagnostic errors in physical and rehabilitation medicine (PRM) has not been addressed sufficiently. The responsibility of a referring physician is to determine indications and contraindications for planned intervention. An adequate diagnosis of both leading health condition and comorbidities is a prerequisite for safe and effective rehabilitation. The aim of this study is to assess the rate of and risk factors for inaccurate referral diagnoses (IRD) in patients referred to a rehabilitation facility. Three hypotheses were established: IRD would be more common in patients 1) referred by non-PRM physicians; 2) those waiting longer for the admission; 3) older persons.

Method: In this retrospective observational study, reliability of referral diagnoses in 1000 randomly selected cases admitted between 2012 and 2016 to a University Day Rehabilitation Center specialized in musculoskeletal diseases, was analysed. Comparison of referral diagnoses with admission diagnoses established by experienced PRM specialists. Inappropriateness was noted regarding primary diagnoses and comorbidities. Influence of factors affecting the probability of IRD was analyzed with multiple binary regression model applied to 6 categories of diseases.

Results: The rate of IRD was 25.2%. Higher frequency of IRD was noted among patients referred by non-PRM specialists (30.3%) in comparison with patients referred by PRM specialists (17.3%). Application of logit regression showed highly significant influence of the specialty of a referring physician on the odds of inaccurate RD (joint Wald test $\chi^2(6) = 38.98$, $p\text{-value} = 0.000$), controlling for the influence of other variables. The rate of IRD did not correlate with time between referral and admission (joint Wald test of all odds ratios equal to 1, $\chi^2(6) = 5.62$, $p\text{-value} = 0.467$). A high risk of overlooked multimorbidity was revealed in elderly patients (all odds ratios for variable age significantly higher than 1). Hypotheses 1 and 3 were confirmed. A sub-optimal knowledge of the rehabilitation process and a tendency to neglect comorbidities by non-PRM specialists may be responsible for the higher rate of IRD. In our sample mean and median waiting times were relatively short (35.7 and 25 days respectively). The retrospective design, expert-based method of verification, incomparability between patients referred by PRM and non-PRM physicians may be responsible for underestimation of IRD rate. Similar analyses should be performed in patients with neurological and cardiopulmonary conditions.

Conclusion: Over a quarter of patients referred to DRC had IRD. Risk factors for IRD include referral by a non-PRM specialist and elderly age. Verification of referral diagnoses should be routinely introduced to PRM practice.

Keywords: physical and rehabilitation medicine, diagnosis, diagnostic error

O-47: THE ESTABLISHMENT OF THE NEW REHABILITATION DEPARTMENT IN SOROKA UNIVERSITY MEDICAL CENTER: CONCEPTIONS AND EXPECTATIONS OF STAFF AND MANAGEMENT

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Israel.

Purpose: To identify and explore the perceptions and expectations of stakeholders involved in the establishment of the rehabilitation department in Soroka University Medical Center. There is a dearth of empirical research on the establishment of rehabilitation departments in general hospitals. Determined to minimize inequalities in access to rehabilitation services, Soroka University Medical Center in Beer Sheva, Israel, established a rehabilitation department. Soroka is the only major hospital in Southern Israel, consistently providing health care to more than one million people.

Method: During the establishment of the rehabilitation department in Soroka University Medical Center, we conducted two rounds of qualitative interviews (N=22) with rehabilitation department clinicians, hospital management, and state-level stakeholders. Data collected was transcribed verbatim and analyzed using grounded theory.

Results: We found resemblances between the perceptions and expectations of hospital staff and managers in relation to the rehabilitation department development. All three groups of stakeholders related to three fundamental issues in the establishment and functioning of the rehabilitation department: family as a full partner in the rehabilitation process, multidisciplinary teamwork, and continuity of care before, during, and after hospitalization. These categories were found in both interviews rounds.

Conclusion: This study sheds light on fundamental issues worth considering when setting up a new rehabilitation department, and rehabilitation as a discipline in a general hospital. Stakeholder collaboration and staff motivation significantly improves the implementation process.

Keywords: multidisciplinary staff, rehabilitation department, perceptions and expectations of stakeholders

O-48: MANAGEMENT OF PATIENTS WITH MULTI DRUG RESISTANT ORGANISMS IN REHABILITATION FACILITIES THROUGHOUT EUROPE

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Purpose: Patients in the rehabilitation setting have among the highest prevalence of multi-drug resistant organism (MDRO) colonization of any long-stay inpatient population. Currently there is no widely accepted consensus on how patients with MDROs should be managed in the rehabilitation setting. This survey aimed to assess how rehabilitation hospitals throughout Europe manage patients with MDROs and the impact of MDRO carriage on rehabilitation outcomes.

Method: A survey monkey questionnaire was designed and circulated to rehabilitation hospitals via the European Board of Physical and Rehabilitation Medicine. Fifty-four responses were received of which 45 were suitable for analysis, representing 28 European countries.

Results: Sixty-two percent of hospitals estimate MDRO prevalence to be less than 10%. Hospitals from seven countries reported MDRO prevalence as greater than 20% and two hospitals estimate prevalence to be as high as 51-60%. 49% of hospitals establish MDRO status of patients prior to admission and one third screen patients on admission for MRSA, VRE, CRE, and ESBL. 53% (24/45) of hospitals isolate or cohort patients with MDROs. Patients with MDROs wait longer for admission (36%, 16/45) and in the case of five hospitals they are refused admission. Nineteen hospitals (42%), report that MDRO positive patients cannot partake in a full rehabilitation programme and 51% (23/45) felt that the presence of an MDRO severely or moderately limits rehabilitation outcome

Conclusion: There is a lack of guidance on how rehabilitation hospitals should deal with MDRO positive patients. Current approaches have a significant impact on rehabilitation outcomes. A European-wide consensus on the management of these patients is required to allow patients to partake in a full rehabilitation programme while limiting the spread of MDROs.

Keywords: multi-drug resistance, rehabilitation, outcomes, Europe

O-49: INTERNATIONAL EDUCATION EXCHANGE FOR PHYSICAL AND REHABILITATION MEDICINE TRAINEES WITHIN MEDITERRANEAN FORUM OF PHYSICAL AND REHABILITATION MEDICINE

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Purpose: To propose a minimal data set (MDS) of trainee (Tr) and his/her Physical and Rehabilitation Medicine (PRM) mentor curriculum (CV) and other requirements, sending institution (SI) identification, and host institution (HI) accreditation and/or information on available specialty areas and on Tr external rotation recognition, for international educational exchange (IEE) PRM Tr, in Europe, within Mediterranean Forum PRM (MFPRM).

Method: These MDS are Union Européenne des Médecins Spécialistes (UEMS) PRM section CV of studies and theoretical knowledge for the diploma of the European Board of PRM-based, according to the World Health Organization (WHO) Initiative on transforming and scaling up health professionals' education and training, in order to converge to the WHO global disability action plan 2014–2021.

Results: A template has been developed including the following data on: • Tr accreditation on Medicine degree and post-graduated PRM University training • SI and HI accreditation on post-graduated PRM University teaching • Tr specialty rotation at the SI, according to the exchange learning goal at the HI • A goal-oriented exchange learning-based agreement among the Tr, the SI and the HI with a final recognition • Returning agreement between the Tr and the SI, including Tr placement maintenance in origin and potential IEE impact on future placement • Duration of stay according to the SI allowance, grant and HI requirements • Knowledge on HI country/another HI accepted language • Tr financial capacity • Tr health insurance • Host country specific requirements

Conclusion: A MDS on Tr, SI and HI may contribute to promote IEE for PRM Tr within MFPRM, on a liability and reliability basis.

Keywords: international education exchange, post-graduated education, health professionals' education and training, physical and rehabilitation medicine training

O-50: TRAUMA REHABILITATION IN ENGLAND – THE JOURNEY SO FAR

C. Bezzina

Royal Stoke University Hospital

Dealing with major trauma in England has undergone a complete overhaul over recent years. This presentation will share the experience in the North-West Midlands with a particular objective of sharing best practice on

The developing role of Physical and Rehabilitation medicine within a Major Trauma Service.

The Rehabilitation Prescription and its use.

The development of an Acute Rehabilitation Trauma Unit (ARTU) which is run in a novel way in the UK. ARTU – the challenges, successes and lessons learnt one year on.

O-51: PHYSIOTHERAPY STUDENTS ARE NOT AWARE OF THE PRM ROLE IN HEALTHCARE

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Poland

Purpose: Rehabilitation approached from a bio-psycho-social perspective requires interdisciplinary collaboration. All professionals involved in the interdisciplinary team should have an educational background ensuring an appropriate mutual recognition of competencies and roles in healthcare. The purpose of our study is to identify how the role of physical and rehabilitation medicine specialists (PRM) in healthcare is perceived by physiotherapy students.

Method: In this cross-sectional observational study we assessed the awareness of PRM role in healthcare in a population of 677 physiotherapy students of the largest university-level educational institutions in Warsaw, Poland. The population of 519 final year medical students served as a control group

Results: The definition of PRM was known to 32.9% of the medical students and 19.9% of physiotherapy students. Mistakes most frequently resulted from an inability to distinguish PRM from physiotherapy. The leading role of PRM specialists in team management of persons with disabilities was perceived adequately by 55.5-25.4% of medical and 12.1-9.0% of physiotherapy students. Inadequate perception of the PRM role in healthcare may result from both organizational and legal reasons. Derangement of the previously effective system of comprehensive and continuous rehabilitation, strong tendencies towards professional independence among health professionals, approval of new applicable laws and insufficient formative education of health allied professionals. The results are not generalizable to other populations. The research should be replicated in a multicenter setting applying a random selection of participants and spread across students of other professions represented in the rehabilitation team.

Conclusion: In the studies population of physiotherapy students, a perception of the role of PRM in healthcare was found to be inadequate. Further investigations should be performed on national and international levels to address the mutual perception of competencies and roles among students of health professions. The system of health professional education should be changed to maintain a patient-centered collaborative practice.

Keywords: physical and rehabilitation medicine, physiotherapy, education, interdisciplinary collaboration, rehabilitation team

O-52: ADOLESCENT IDIOPATHIC SCOLIOSIS: RELEVANCE OF EARLY DIAGNOSIS AND ADEQUATE TREATMENT

S. La Maestra

Italy

Background: Scoliosis is a three-dimensional deformity of the spine. Evolutionary potential represents the basic characteristic of spine deviations and constitutes the most important element that influence prognostic judgment and therapeutic approach. There is a close relationship between aggravation of scoliotic curves, growth and bone maturity.

In view of this and in the awareness, that in most of them there is no identification of an etiopathogenetic cause, prevention can only be obtained through early diagnosis that will allow us to resort to all those measures that are useful to halt ingravescence.

Methods and results: The author reports his experience gained from January 2005 to January 2007, in 1173 patients treated according to the Lionese method, describing the findings and pointing out that only 300 patients

in the case have been diagnosed early by the family doctor and / or pediatrician who did not, however, avoid corrective treatment for lack of immediate and appropriate therapeutic measures.

Conclusions: In the light of the above, it is emphasized that early diagnosis is placed in too few cases and how often it can be useless in the absence of immediate and appropriate specialist therapeutic measures.

O-53: THE EFFECT OF LYCRA BASED COMPRESSION ORTHOSIS ON TRUNK, SITTING AND GROSS MANUEL DEXTERITY IN CHILDREN WITH CEREBRAL PALSY: A RANDOMISED CONTROLLED STUDY

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Turkey

Purpose: The aim of this study was to investigate if the use of a lycra based compression garment called SPIO vest will lead to improvement in posture and balance during sitting, trunk asymmetry, hip lateralization and gross manuel dexterity.

Method: Twenty-four children with CP between the ages of 3-7 with impaired trunk control were enrolled in this single blind randomized controlled trial. Children were allocated to either of three groups: Control group (recieved only conventional exercise therapy), SPIO 2 hours (worn SPIO 2 hours during therapy) and SPIO 6 hours (worn SPIO 4 hours in addition to 2 hours of wear during therapy). To assess sitting function and posture and balance during sitting. Sitting domain of Gross Motor Function Measure (GMFM) and Sitting Assessment Scale (SAS) were used. Box and Block Test was used to evaluate gross manuael dextrity. Assessments were done before treatment (BT), immediately after garment was worn, posttreatment, at 1 month posttreatment (MPT) and at 3 MPT. To measure trunk asymmetry and effect of orthosis in hip lateralization, changes in Cobb (CA) and kyphotic angles (KA) and Migration index (Mi) between BT and 6 MPT were determined.

Results: All groups showed smiliar improvements except the control group showing less improvement in SAS scores than SPIO groups. Posture and balance during sitting and gross manual dexterity also improved immediately after orthosis was worn. While CA and KA decreased significantly at 6 MPT, Mi did not show statistically significant difference. Changes in radiographic assessments were similar between groups except CA values. CA values showed less change in control group. When SPIO groups compared with each other, there were no significant differences in any of the assessments.

Conclusion: All groups showed smiliar improvements except control group showing less improvement in SAS scores than SPIO groups. Posture and balance during sitting and gross manual dexterity also improved immediately after orthosis was worn. While CA and KA decreased significantly at 6 MPT, Mi did not show statistically significant difference. Changes in radiographic assessments were smiliar between groups except CA values. CA values showed less change in control group. When SPIO groups compared with each other, there were no significant differences in any of the assessments.

Keywords: cerebral palsy, lycra garments, orthosis, sitting, suit therapy, trunk control.

O-54: TO BRACE OR NOT TO BRACE? EFFICACY OF BRACING IN ADOLESCENT IDIOPATHIC SCOLIOSIS

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Portugal

Purpose: Adolescent Idiopathic Scoliosis (AIS) is a tri-dimensional deformity of the spine involving lateral deviation of the vertebrae and axial rotation. While mild scoliosis is often asymptomatic, the spinal curvature may increase, resulting in back pain, reduced mobility and decreased pulmonary function. Physical Medicine and Rehabilitation (PMR) plays a key role in the conservative treatment of AIS coordinating, prescribing exercise and bracing

Method: Review of the literature from last 10 years in Pubmed /Medline and Accessphysiotherapy databases. The search strategy included the following terms: “adolescent idiopathic scoliosis”, “bracing” and “effectiveness”. The articles selected for this review were chosen according to the criteria established by the Scoliosis Research Society (SRS) and Society of Scoliosis Orthopedic and Rehabilitation Treatment (SOSORT).

Results: According to our review bracing significantly decreased the progression of high-risk curves and reduced the threshold for surgery in patients with AIS. Increased benefits were observed with longer hours of brace wear. There is no agreement among experts, either on the best braces or on their biomechanical action, however prescription of orthoses and exercise according to SOSORT criteria seem to increase treatment efficacy.

Conclusion: The role of bracing in patients with adolescent idiopathic scoliosis who are at risk for curve progression and eventual surgery is controversial. Although the evidence level is limited, bracing is more effective than observation. Many technologies are still in development to improve the bracing process and to study the effects of bracing. Brace treatment outcomes are correlated to the quantity and the quality of brace usages and patient adherence to treatment.

Keywords: brace, adolescent idiopathic scoliosis, physical medicine and rehabilitation

O-55: ADOLESCENT IDIOPATHIC SCOLIOSIS: WHAT KIND OF EXERCISE FOR BETTER OUTCOMES

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Portugual

Purpose: Adolescent idiopathic scoliosis (AIS) is a persistent lateral, rotated curvature of the spine that arises in otherwise healthy children between 10-16/18 years old. Its etiology and pathogenesis remain unknown. Almost 10% of those with scoliosis will require treatment. Bracing and physiotherapeutic scoliosis-specific exercises are used to prevent the progression of the curve. While bracing has been demonstrated to be effective in reducing curve progression, it may have a potential secondary outcome: reduced rate of bone mineral accrual. Adolescents with AIS have consistently been shown to have a low bone mineral content (BMC) and bone mineral density (BMD), thereby increasing the risk of developing osteoporosis and related complications later in life.

Method: Bibliographic review of the last 10 years concerning this subject – pubmed, clinicalkey and medscape.

Results: Studies suggest that the prevalence of low BMD in adolescents with AIS is 20-38%. The impact of spinal bracing on physical activity has been poorly described in the literature and remains inconclusive. Studies show that adolescents with AIS or kyphosis, their overall step activity before and during brace treatment is lower than expected values for healthy peers. Importantly, it is high-impact/weight-bearing activity which appears to have the greatest effect on bone mineral accrual and structure during the growing years, which is usually discouraged by physicians.

Conclusion: We concluded that adolescents with AIS treated with bracing, can and should be encouraged to participate in physical activity. However, there are no controlled studies that show the impact of the exercise, especially resistance training, in this population, and we strongly believe it would be beneficial for the bone mineral accrual and structure.

Keywords: adolescent idiopathic scoliosis, phisical activity, bone mineral accrual

O-56: CASE REPORT CHILDHOOD LEUKAEMIA SURVIVOR: A GROWING CHILD WITH MUSCULOSKELETAL DISABILITY

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Egypt

Purpose: The aim of this work is to describe the association between skeletal morbidity and childhood acute lymphoblastic leukemia (ALL) which can occur at diagnosis, during treatment, and also following chemotherapy with greater tendency for long-term musculoskeletal disability in childhood ALL survivor.

Method: A 13 -year- old girl known to be leukaemic (of 1 year duration) and still under treatment presented with bilateral hip pain and generalized bone aches. A) At presentation: Clinical evaluation., laboratory investigation: CBC, peripheral blood film examination and blood chemistry, bone marrow aspiration, X-ray and CT of both hips and DXA scan were done. B) Treatment: decrease weight bearing, Ca and vitamin D supplementation. C) Follow up after 9 months (while still under treatment): clinical and x-ray of both hips. D) Follow up 3 years after completion of ALL treatment: clinical, laboratory investigations including serum Ca level, serum phosphorus, serum osteocalcin, serum 25 OH vitamin D, serum parathormone and serum bone specific alkaline phosphatase (ALP), X-ray examination of both hips and Dual-energy X-ray absorptiometry (DXA).

Results: At presentation, the patient was diagnosed to have osteonecrosis (ON) of the left femoral head. DXA scan showed significantly low BMD (Z-score of -4 at spine and -3 total body less head BMD). The patient developed bilateral severe ON of both hip joints 9 months later while still under ALL treatment. Three years after treatment of ALL was completed, there was no improvement in BMD (Z-score of -3.6 at spine and -4 total body less head BMD), and there were osteoarthritic changes in both hip joints. The patient had normal parathormone level, normal bone specific ALP, low normal serum Ca, low normal serum 25 OH vitamin D and elevated serum osteocalcin level.

Conclusion: Thanks to advances in treatment of leukemia, an increasing population of childhood ALL survivors has grown. Unfortunately, this could be associated with increase in skeletal morbidity such as ON and low BMD. These complications can impair the survivors' health-related quality of life.

Keywords: survivor, long term, disability

O-57: MUSCULOSKELETAL DEFORMITIES AND ORTHOPAEDIC SURGICAL TREATMENT TRENDS BY CEREBRAL PALSY SUBTYPE AND GMFCS LEVEL IN CHILDREN AND ADOLESCENTS - DATA DERIVED FROM THE GREEK CEREBRAL PALSY REGISTRY, MEMBER OF SCPE NETWORK

M. Pyrgeli, M. Petra, D. Pasparakis, M. Koutsaki, R. Mastroianni

Greece

Purpose: To present musculoskeletal deformities and orthopaedic treatment trends by GMFCS level and CP subtype.

Method: Data were retrieved from the Greek CP registry, member of the SCPE network, for all children, youth and young adults currently registered (birth years ranging from 1981–2013). The medical files of 358 CP patients with available orthopaedic information were reviewed.

Results: In total, 316/358 patients had spastic (88.2%) [238/316 bilateral BSCP (66.5%), 78/316 unilateral spastic USCP (21.8%)], 18/358 ataxic (5%), 17/358 dyskinetic (4.7%) and 7/358 non-classifiable (2%) CP. GMFCS levels were I=65/358 (18.2%), II=80/358 (22.3%), III=71/358 (19.8%), IV=90/358 (25.1%), V=52/358 (14.5%). Mean age at latest fu 10.67yrs. Hip dislocation [Migration Percentage, MP = 100%] was documented in 25/716 hips (3.5%)

at average age 10yrs. Scoliosis was diagnosed in 53/358 (14.8%) at mean age 13.9yrs and foot deformities in 279/716 feet (39%) at final fu. Orthopaedic procedures were performed in 140/358 patients (39.1%), including soft tissue procedures of lower limbs in 130/358 (36.3%), bony surgery of lower limbs in 54/358 (15.1%), spinal fusion in 8/358 (2.2%), upper limb soft tissue procedures in 8/358 (2.2%). When analyzing data by GMFCS level, it was found that the highest percentage of patients who had had at least one orthopaedic procedure in GMFCS IV [47/90 (52.2%)]. The highest percentage of patients who had at least one soft tissue release or bony procedure of lower limbs were also GMFCS IV [42/90 (46.6%) and 26/90 (28.8%) respectively]. The lowest mean age at 1st soft tissue release and 1st bony surgery of lower limbs was recorded in GMFCS V patients [7.28yrs and 8.37yrs respectively]. The highest percentage of hip dislocation and scoliosis was recorded in 19/104 hips (18.26%) and 23/52 (44.2%) patients GMFCS V. When analyzing data by CP subtype, we identified 3/42 (7.14%) patients (2 ataxic, 1 dyskinetic-dystonic) with spondylolisthesis and 9/42 patients (21.4%) with scoliosis [4/18 ataxic (22.2%), 2/7 non-classifiable (28.5%), 3/17 dyskinetic (17.6%)]. Spinal fusion was performed in 3/42 patients (7.14%). Anterior hip dislocation was recorded in 2/14 hips (14.28%) in the non-classifiable CP subgroup but no hip in the ataxic subgroup had MP>45%. The lowest percentage of operations was recorded in the non-classifiable CP subgroup (1/7 =14.28%).

Conclusion: Grouping CP patients' characteristics and orthopaedic treatment results by GMFCS level has been proven an invaluable tool for treatment planning for the majority of CP patients, represented by the predominantly spastic component of movement disorder. Reports on orthopaedic treatment results for dyskinetic, ataxic and non-classifiable CP patients are generally lacking. Pooling data on treatment results for the non-predominantly spastic CP subtypes can help us increase knowledge for these heterogeneous subgroups of patients.

Acknowledgements: Dr Antigoni Papavasiliou, Children Neurologist, coordinator of SCPE in Greece, Director of Neurology Department of Pentelis Children General Hospital; Dr Helen Skouteli, Children Neurologist, ELEPAP; Dr Filiopoulos Konstantinos, Orthopedic Surgeon for Children, Pentelis Children General Hospital; Dr Argyris Ntinopoulos, Director of Neurology Department of Attikon University General Hospital

Keywords: cerebral palsy, GMFCS level, musculoskeletal deformities, orthopaedic surgery

O-58: MUTUAL CARE APPROACH IN REHABILITATION – FINDINGS OF THE “MUTUAL CARING-FROM KNOWLEDGE TO ACTION” PROJECT

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Purpose: Based on the role of demand and motivation, through participants' needs analysis in medical informal education, the aim of our project was to underline the reciprocity and complexity of multidisciplinary care process.

Method: The research has been carried out within the Grundtvig Partnership project “Mutual Caring—from Knowledge to Action (M-CARE)”, involving medical universities, social assistance stakeholders, NGOs (Romania, Italy, Latvia and Poland). A Consensual Qualitative Research (CQR) was conducted to explore reciprocity relationships within the multidisciplinary rehabilitation teams, linking the aspects of making a contribution to the role of patient (or family carer) empowerment in disability case management. Were also used document and statistical analysis of a quantitative survey. 260 questionnaires were sent, 161 were returned. The participants were patients, parents/relatives caregivers, or trainers/medical specialists working with disability affected people.

Results: The comprehensive examination revealed specific organizational practices, cultural and structural elements that encourage the development of innovative, effective care delivery practices based on an

“interdependence paradigm”. The majority of the respondents (79/161) were to some extent familiar with disability legislation in their country, while 41.6% (67/161) of them have indicated that they unfamiliar with this issue. A high majority of Romanian respondents were very unsatisfied about proactive intervention to help families and patients avoid the social problems and social isolation (77.6%), and the availability of assistive devices (75.8%).

Conclusion: This survey offers different aspects concerning the needs for medical/caring education in disability and point to a possibility of a gap between the EU policy and programmes and the general public awareness. The “mutual care approach” emphasizes on the carer-patient dynamics where there is mutual/reciprocal give-and-take care as well as knowledge between all those that are involved in this process, in contrast to the conventional approach where care is provided by the carer to cared person.

Keywords: care process, education, mutuality, disability

O-59: THE ROLLERCOASTER RIDE: THE LIVED EXPERIENCE OF PEOPLE ACQUIRING A PHYSICAL IMPAIRMENT IN YOUTH

M. C. deBono

Malta

Purpose: During our life course, we embark on different journeys, some planned and some unexpected, one of which could be the acquiring of a physical impairment. Oliver, Zarb, Silver, Moore and Salisbury (1988) described this significant life event as a complex relationship among the impairment, the social context and the meanings individuals utilise to make sense of the experience. This inquiry aimed to present the lived experiences of acquiring a physical impairment in youth, according to the meanings ascribed by the persons themselves. The research focused on what this experience entails, what it means to experience this phenomenon in youth, the changes that this experience might generate and the potential impact of others.

Method: Existential-hermeneutic phenomenology and the emancipatory principles informed the conceptual framework of this work. Using interpretative phenomenological analysis (IPA) as the methodological framework, information was gathered through face-to-face, topic-guided interviews with six persons who acquired a physical impairment of sudden onset in youth and are living in the community.

Results: The experience of acquiring a physical impairment in youth was principally depicted as a rollercoaster ride. There seems to be a fluctuating paradox of sameness and difference as the individuals experience the phenomenon, reach new understandings and move along the hermeneutic circle to reach a new mode of being-in-the-world. This paradox was reflected in the participants’ daily lives, self-concept, relationships, careers, interests, attitudes and future expectations. The experience was also marked by positive outcomes and the sense of continuity transpired as the stabiliser which enables the person to experience the being-in-the-world in an ordinary way. Acquiring the impairment in youth was believed to have helped in responding better and quicker to the situation. Most participants held fast to their youth identity and persevered in their respective roles, despite the inevitable changes that occurred. Changes were linked with day-to-day routines, the home environment, employment opportunities, life perspectives and future orientation. Participants acknowledged the supportive role of their family, friends, disabled peers and professionals throughout the experience. Professionals were criticised for assuming to be the experts when the expert knower is always the person who experiences the phenomenon. The relationship of participants with the non-disabled population featured around disablism, although improvement in this relationship was noted along the years.

Conclusion: While this study has contributed to the gap within literature about the lived experiences of persons with acquired impairments, further phenomenologically-oriented emancipatory research is required, particularly focusing on youth. Public spaces need to embrace and highlight the authentic disability experience

as a different mode of being-in-the-world. Findings also indicate that services need to adopt a bottom-up approach to give primacy to the expert knower.

Keywords: acquired impairment, disabled youth, phenomenology, emancipation, IPA

O-60: MORTALITY IN REHABILITATION DEPARTMENT

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Israel

Purpose: Deconditioning is a complex process of physiological change following injury or disease resulting in functional decline. Although the effectiveness of inpatient rehabilitation in deconditioning is under debate, deconditioning remains one of the reasons of referral to rehabilitation. Unfortunately, mortality rate in this population is high. Here we examined rehabilitation outcomes in 55 patients admitted to our department due to deconditioning and discussed implications for the feasibility of rehabilitation in this population.

Method: Data from 323 patients admitted to our newly established department over 18 months of activity was collected. 17% (n=55) were referred following deconditioning. Information included: demographic characteristics, diagnosis, length of stay (LOS) in rehabilitation, and time between discharge and death.

Results: Of the 55 patients with deconditioning, 4 (7.2%) resulted in patient's death. Only one (0.03%) death occurred among the remaining 268 patients. Of the four patients (3 males) one patient suffered from severe medical complication and died on the day of admission. The additional 3 patients who developed severe medical conditions were transferred to other departments and died within three weeks. The first three deaths occurred during the first 6 months of the department's activity whereas only one patient died during the following 12 months.

Conclusion: Our findings indicate mortality rates were significantly higher in patients with deconditioning and during the preliminary stages of the department's activity. It is possible that these patients were admitted too early for rehabilitation and were medically unstable. These findings highlight the importance of setting clear characteristics for patient selection in rehabilitation.

Keywords: Mortality, Rehabilitation department, deconditioning

O-61: VISUALLY CONNECT – OLDER ADULTS' REFLECTIONS AROUND A PROGRAMME OF VISUAL ART DIALOGUES

Purpose: The research was designed to address a lacuna in fourth age learning within the context of lifelong learning, outside of formal settings and within a residential home for older adults. The main goal of the research was to investigate older adult participation in a learning programme and to determine the kind of learning that occurs when they attend a weekly programme of visual art dialogues over a seven-week period. It sought to investigate the effect these reproductions of visual art had on the kind of learning experienced: learning in terms of personal gains and identity capital, learning in terms of the social/peer interactions and in terms of the exposure to the projected images of the medium of visual arts shown.

The visual art dialogues learning programme had various general objectives to achieve the aim of learning:

- To provide visual art enrichment and an aesthetic experience
- To stimulate creativity and provide free reign to the imagination
- To provide a creative educational opportunity (informal art appreciation)
- To support and encourage self-expression through the arts, by relating interpretations from reproductions of visual arts with any personal memories, i.e. to reminisce

- To facilitate the person-centered empowerment process creatively via discussion of choice of topics
- To enhance social interaction primarily amongst participants themselves
- To decrease depression and social isolation
- To increase self-fulfillment and psychological wellbeing
- To improve quality of life.

Method: The study was qualitative in nature. The action research explored the learning experienced by a group of 10 older adults in a residential home (chosen via convenience sampling), participating in a learning programme of weekly meetings of visual art dialogues over a 7 week period. The mean age of participants was 81 years. A focus group was held at the end. The research involved the planning and execution of such a programme, each meeting lasting approximately 90 minutes. The qualitative approach was used to analyse the kind of learning they perceived in terms of personal learning gains, in terms of social interaction with others and in terms of the exposure to the visual art images. Various methods of data collection were used. The data was analysed and coded for themes.

Results: Analysis and discussion of the findings led to the emergence of six main identifiable themes: the importance of reminiscence, intergenerational and 'intra'-generational learning, visual art dialogues as springboard for more contemporary issues, visual art dialogues encouraging art appreciation, visual art as a vehicle to dialogue and socialization, and stimulation of cognitive abilities. Learning occurring via these themes was also evidenced. The research tried to ensure that geragogical principles are followed and implemented.

Conclusions: The research was framed mainly within a liberal-humanist rationale although it also had a slight dose of critical educational gerontology and to much lesser extents, traces of other rationales. The humanist approach emphasized dignity, solidarity and wellbeing. The main significance of the study however remains the fact that this was an opportunity in non-formal learning, within the home of the older participants, especially when considering that there is as yet still little motivation to pursue this area of interest academically. Whereas ageistic attitudes speak of older adults' mental incapacity to learn, this study showed the exact opposite. Not only were participants open to new learning but they also seemed to follow the movement, mentioned in the scarce research in fourth age learning, on reflecting on the self (Withnall, 2002; Coleman, 2005) and on learning via the social contacts. Limitations and barriers of the study were discussed. The research also threw up many questions in need of further investigation. Recommendations across different spheres ranged from practice to policy issues. The research concluded that although there were no actual measureable tangible outcomes, the other general aims of the programme were also achieved, that is, the provision of visual art enrichment and informal art appreciation, communication by encouragement of self-expression and consequent enhancement of social interaction, stimulation of creativity, increasing psychological wellbeing and ultimately improvement of quality of life. Motivations and benefits of fourth age learning emerged too.

Keywords: fourth age learning, geragogy, residential home, programme of visual art dialogues

O-62: DETERMINANTS OF QUALITY OF LIFE IN TUNISIAN STROKE SURVIVORS

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Tunisia

Purpose: To evaluate QOL in short term (3 and 6 months) and mean term (12 months) of patients with stroke after discharge from hospital and to identify the potential HRQOL predictors one year later

Method: This is a cross-sectional and a prospective study. Patients with a first-ever hemispheric stroke responding to our inclusion criteria were interviewed at least 12 months after discharge from hospital. QOL was evaluated at 3, 6 and 12 months using 36-Item Short-Form Health Survey (SF-36) was evaluated, starting from 3 months after stroke. The stepwise multiple regression analysis was carried out to determine the main predictors

of QOL. Models included age, gender, family and marital status, education, stroke subtype (ischemic or hemorrhagic), side of stroke, National Institutes of Health Stroke Scale (NIHSS) score at admission, motricity index of Demeurisse (IM), score Hospital Anxiety and Depression Scale (HAD), Mini-Mental State Examination instrument (MMSE), Functional Independence Measure (FIM) Instrument, and Reintegration to Normal Living Index (RNLI).

Results: Sixty-five patients were included, predominantly male, with an average age of 62.9 ± 10.3 years. All domains of QOL were altered until 12 months post stroke, despite an improvement that was judged to be significant. The multiple regression analysis identified for early predictive factors of QOL (one year after stroke) include: advanced age, NIHSS score at H48, FIM at 1 month, IM of Demeurisse at baseline and at 1 month, HAD scale at 1 month, family status and education. Thus, gender, stroke subtype, marital status, MMSE and IRNLV were not associated with poor QOL.

Conclusion: Stroke severity, age, social and educational status, disability, anxiety, depression were the most important covariates of impaired QoL in post-stroke patients. A systematic assessment of stroke severity, deficiencies at discharge, and disabilities would be basic for an optimum patients care, provided by the different actors. These results contribute to the orientation of stroke victims to physical medicine department, in order to prepare and improve the stroke outcomes early, together with the patients and their family.

Acknowledgements: We thank all of the staff of all of the hospital departments in Monastir, especially the department of Emergency-Neurology-Neurosurgery and department of Epidemiology and Preventive Medicine. We dedicate this article to all patients and their families

Keywords: stroke, quality of life, SF36 scale, outcome, predictive factors

O-63: SOCIAL PARTICIPATION: THE PERCEPTION OF FOUR PEOPLE WITH STROKE-INDUCED APHASIA

Loridana Buttigieg, Ritienne Grima

University of Malta

Purpose: There is no local research that addresses the social consequences of aphasia. The purpose of this study was to describe how four Maltese people with stroke-induced aphasia experienced and perceived their participation in life, and which factors influenced their levels of perceived social participation (SP).

Method: All participants were tested on a language screening assessment and interviewed using the Assessment for Living with Aphasia (Kagan et al., 2011). The latter is based on the International Classification of Health, Functioning and Disability (ICF) (World Health Organisation, 2001), and yields information about the language impairment, life participation, personal factors and environmental factors from the perspective of people with aphasia (PwA). An individual case analysis was implemented to thoroughly analyse the results of each participant individually. This was followed by a cross-case analysis, whereby the participants were analysed in relation to each other.

Results: Results indicated that all four participants experienced activity limitations and participation restrictions in different life domains. Individual variation was revealed in terms of how they perceived their own SP, with more importance being given to the quality rather than to the quantity of their performance. Unlike aphasia severity, personal factors and environmental factors were shown to greatly influence how SP was perceived by the four participants.

Conclusion: This research project highlighted the importance of looking beyond the language impairment of PwA. Indeed, there is the need for clinicians to focus on the overall consequences of aphasia, and to explore the concerns of PwA themselves.

Keywords: stroke, aphasia, social participation

O-64: SEX AFTER BEING DIAGNOSED

M. Bartolo

Malta

Purpose: The workshop will give practical examples of vocabulary to use when assessing sexuality and sexual health after diagnosis. It will also explore different suggestions that can be given to clients / patients in order to maintain a healthy sex life.

Method: This is a clinical presentation. Cases presented are real cases that were treated at the clinic.

Results: Presentation will focus mostly on literature about sexuality and sexual health after stroke and how it is applied in a Maltese sex clinic.

Conclusion: Research and experience have showed us that when practitioner includes sexual health in the assessment it helps clients / patients discuss queries about their hangups and issues related to their sexual relationships after suffering a stroke / trauma. Nowadays there's a lot one can do to maintain a healthy sex life after stroke.

Keywords: Sex therapy, stroke, assessment, sexual health, relationships

O-65: GROWTH AND NUTRITIONAL STATUS OF TUNISIAN MULTIDISABLED CHILDREN

S. Boudoukhane, H. Migaou, A. Dhahri, A. Jellad, Z. Ben Salah Frih

Tunisia

Purpose: To describe the nutritional status and anthropometric assessment in Tunisian multidisabled children (children with neurological, intellectual and motor handicaps).

Method: This was a cross-sectional study of 40 multidisabled children. Anthropometric measurements (body weight, knee height, mid-upper arm circumference and triceps skin-fold thickness) were taken. In addition, all the participants had a thorough evaluation of the feeding times, and the presence of gastrointestinal problems (drooling of saliva, vomiting, dysphagia, etc...).

Results: Twenty-three children were epileptic and 34 children had skeletal deformities (scoliosis or contractures). Oromotor dysfunction affected 55% of children, drooling of saliva were noted in 60% of cases and Gastroesophageal reflux in 45% of cases. The meal was given in most cases by the mother and lasted on average 37,25 minutes. The majority of parents described feeding time as stressful and unenjoyable. The average skinfold value was 6.5 ± 3.5 mm and the mid-arm circumference was 16.1 ± 3.4 cm. The weight was on average 15Kg (below the 10th percentile).

Conclusion: Parameters of growth and nutritional status are significantly altered in multidisabled children. The results highlight that feeding problems and anthropometric parameters of the nutritional status in these children are common and severe. Many of these children must benefit from nutritional assessment and management as part of their overall care.

Acknowledgements: We dedicate this study to all children and their mothers

Keywords: mutlidisapled children; growth; neurologically impaired; nutrition

O-66: NEWS IN DEGENERATIVE PATHOLOGIES OF THE KNEE

G. Condorelli

Italy

The incidence of degenerative pathologies of the knee is going up in last years and this situation seems to evolve without possibility of stop it.

Research could improve our knowledge giving us many choices of treatment more and more new and good, even if none can give us certain on results in long term evaluation.

The choice of treatment goes from conservative, such us FKT or drugs therapy, to surgery choices, from palliative technique, to stimulation of repair or regeneration technique, or, at the end, prosthesis. It's obligatory knowing all these technique in order to select the best one in every situation to get the best satisfaction for the patient.

It's also important to keep in mind that kind of therapy used versus the causes of the arthritis, when known, could stop, or at least decrease, the evolution in very important way.

O-67: NON-SURGICAL CONSERVATIVE TREATMENT IN DEGENERATIVE HIP AND KNEE PATHOLOGY.

R. Morello

Italy

The articular degenerative hip and knee pathology is one of the major causes of work-related absence and illness in European countries. It is now recognized that osteoarthritis affects 25% of adults over the age of 25. The most frequent locations, after those of the spine, are the knee and hip. Although surgical treatment is a valid therapeutic approach, it is also true that not all degenerative diseases need to be treated with a surgical approach and that not all patients are subjected to surgical treatment. The conservative treatment with hyaluronic acid and/or corticosteroid intra articular infiltrations is thus a valid treatment for both pain, related to degenerative pathology, and as a therapeutic means for blocking the evolution of the pathology itself.

O-68: THE EFFECT OF KINESIO TAPE ON STRENGTH, FLEXIBILITY, PROPRIOCEPTION IN HAMSTRINGS IN FOOTBALL PLAYERS

Pauline Fenech

Malta

Purpose: The aim of this study was to investigate the effect of KT tape on strength, flexibility and proprioception in hamstrings muscles in football players with a history of hamstring injury and on healthy football players.

Method: 30 male football players ranging from professional players playing in the Premiere division in Malta, to recreational players, were recruited. 15 players with up to a year history of hamstring injury were allocated to group A and another 15 players without a history of ham-string injury were allocated to group B. 24 participants managed to finish the study, 12 in each group. Each player had to undergo a battery of 5 tests in three different conditions: with Kinesio tape over the hamstring muscle ii) with Kinesio tape over the dermatome sup-lying the hamstring muscle iii) without any tape (control). Each player had to keep the tape for 2 days. Main outcome measures pre-post test: hamstrings strength was measured via Baseline analogue 500 lb push pull dynamometer in a seated position with knee flexion set at 60°. SLR in lying & sit & reach test: to investigate flexibility in hamstrings. proprioception was tested in lying and standing using the joint position sense, were the participant had to reproduce the angle of knee flexion at which the knee was placed by the researcher on the ipsilateral leg with closed eyes.

Results: Significant changes (p value < 0.05) reported in group A using Kinesio tape over hamstrings in strength, flexibility and proprioception. Significant changes reported in group A using Kinesio tape over dermatome in flexibility only. No significant changes reported in the control. Significant changes reported in group B using Kinesio tape over hamstrings were in strength and flexibility only. Significant changes reported in group B using the dermatome application were in SLR only. No significant changes noted in group B in the control except for strength. No significant changes noted between group A & B.

Conclusion: Kinesio tape applied directly over hamstrings muscle provided significant effect on strength, flexibility and proprioception in football players with a history of injury in hamstrings muscle. Dermatome application was found effective to enhance flexibility. Further studies need to be carried out on how Kinesio tape works. Kinesio tape might be beneficial in athletes who have a history of hamstring injury in order to prevent re-injury occurrence although other means of prevention are recommended.

Acknowledgements: The whole study was self funded. A few rolls of Kinesio Tapes were offered by Match-Ready sports supplies importers.

Keywords: kinesio tape, hamstrings, proprioception, flexibility, strength

O-69: IRREPARABLE MASSIVE POSTEROSUPERIOR ROTATOR CUFF TEARS: LATISSIMUS DORSI TRANSFER PRO ROTATOR CUFF

C. A. Massimiliano

Italy

Latissimus dorsi transfer pro rotator cuff is the surgery we suggest in patients with irreparable massive rotator cuff tears.

Thanks to this surgery, the shoulder can reach a new equilibrium and together with other steps, like long head biceps tenotomy, bursectomy or shaving the issue of pain is solved and arthropathy risk is reduced.

Gerber invented a lateral footprint because he wanted help to improve extrarotation. We use Gervasi footprint because we believe that it is necessary to give the shoulder a new fulcrum.

O-70: BALANCE EVALUATION AND PROPRIOCEPTIVE TRAINING ON BALLERINAS – PART I: QUESTIONNAIRE DESIGN AND PROPRIOCEPTIVE TRAINING PROGRAMME FOR BALLET DANCERS

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Purpose: To assess the auto-perception of balance in professional and pre-professional ballet dancers through a new self-assessment balance questionnaire, the Self Assessment Balance Ballet Questionnaire and to propose a new Proprioceptive Eye-Closed Training Programme of exercises, specifically settled on female ballet dancers performing “en pointe”.

Method: A Self Assessment Balance Ballet Questionnaire was designed in two phases: Phase I, Development of New Questions, included generating of an expanded set of items using a review of existing questionnaires, expert review and focus groups. Phase II, Questions Revision that includes a series of interviews. The study teamwork developed an expanded set of questions regarding perception of balance in professional and pre-professional ballet dancers. Subjects and procedure: 3 specialist medical physicians and 1 physiotherapist were recruited from 2 different settings within the medical rehabilitation and physiotherapy field, including public and private rehabilitation clinics, and research settings. The specialists were recruited through personal and professional contacts if they satisfied the following criteria: active in clinical practice and having expertise in

sports rehabilitation, assessment and measurement of the musculoskeletal and balance complaints, instrument design, validation, and score construction. Instrument: an open-ended questionnaire was designed to investigate what questions are more important to include on this new tool to evaluate the satisfaction perceived by subjects performing specific tasks, such as balance on two legs when dancing, balance on the single leg when dancing, or the perception of instability on both legs. Three of the project team members examined drafts of the questionnaire to ensure completeness, clarity, and applicability. Few minor revisions were made. The questionnaire was translated into Romanian language by a native Romanian-Italian speaking PRM specialist physician. According to correct procedures for designing questionnaires the final draft was pre-tested by the fourth team member, expert dance trainer and physiotherapist, and final minor revisions made. The programme of exercises was drawn on the basis of several proprioceptive exercises programme in patients with ankle instability and identifying the appropriate and precise tasks that need improvement, using these tasks in the training programme and as a part of the test battery that evaluates the efficacy of the training programme. A population of 12 professional and pre-professional female ballet dancers, with an age from 15 to 25 were enrolled in a preliminary study and tested for balance through the Star Excursion Balance Test (S.E.B.T.). Ballerinas were tested before and the execution of this eye-closed training proprioception programme.

Results: The S.A.B. Self Assessment Balance Ballet Questionnaire means to measure the auto-perception of balance in well trained professional and pre-professional ballet dancers, through five questions about the satisfaction perceived by subjects performing specific tasks, such as balance on two legs when dancing, balance on the single leg when dancing, the perception of instability on both legs when performing and an auto-evaluation of stability in the movement of relevé. The Proprioceptive Eye-Closed Training Programme means to improve balance in professional ballet dancers dancing en pointe, through the eye-closed execution of specific tasks requested in ballerinas when dancing. A population of 12 professional and pre-professional female ballet dancers, with an age from 15 to 25 were enrolled in a preliminary study and tested for balance through the Star Excursion Balance Test (S.E.B.T.). Ballerinas were tested before and the execution of this eye-closed training proprioception programme. The S.E.B.T. showed satisfying results in the implement of balance in this population.

Conclusion: We introduced a self-assessment questionnaire, that was designed and focused on the specific tasks and skills of ballet dancers, to evaluate the auto-perception of balance in a selected population composed by ballerinas, which according to literature and common experience, have postural static and dynamic balance greater than a not dancing population, either than other sports. The new proposed Proprioceptive Eye-Closed Training Programme was focused on the specific balance skills and dancing steps performed by female ballet dancers dancing en pointe, through the implement of balance by exercises already executed by dancers, but with increasing difficulties such as: the exclusion of visual inputs, the execution of the programme using a proprioceptive table, the use of exercises and positions strictly referred to ballet technique, such as the movement of “relevé en demi-pointe”, the position of “cou de pied” and “arabesque”, and the standardization of timing and increasing difficulty of the programme. The development of tools that enable the assessment of balance in ballet dancers is a fundamental step to measure balance in a selected population who has higher balance than common people, but needs to test in order to improve programme of exercises useful in training and rehabilitation for a better stability of joints (especially ankle). This assessment could also promote a scientific link between ballet dancers needs and physicians, physiotherapists and trainers’ approaches to prevention of injuries and improving in ballet technique.

Keywords: balance, ballet, proprioception, training, ballerina

O-71: FUNCTIONAL RESULTS OF ANTERIOR CRUCIATE LIGAMENT-RECONSTRUCTED KNEES WITH HAMSTRING TENDON AUTOGRAFT: A PROSPECTIVE SIX-MONTH FOLLOW-UP STUDY

A. Golež

Slovenia

Purpose: The anterior cruciate ligament (ACL) rupture is a common serious injury of the knee. When qualitative reconstruction of flexor tendons is carried out and patients have intensive pre- and post-surgery rehabilitation, they can return to the pre-injury level of sports activity in the short term. The purpose of the study is to find out, if there is a statistically significant difference in functional outcome between the operated and non-operated leg at 6 months after surgery and if good pre- and postsurgery rehabilitation programme provides a good functional outcome.

Method: From July 2014 to July 2016 sixty-five patients had primary arthroscopically assisted ACL reconstruction with a hamstring tendon autograft. Statistical results of isokinetics, balance, hop index and KT-1000 values of the operated and non-operated knees are compared at 6 months after surgery.

Results: At 6 months after the surgery there is no statistical significant difference between the operated and non-operated knee according to isokinetics, balance ($P=0.430$), hop index ($P=0.836$) and KT-1000 values ($P=0.041$). The average deficit of the peak torque in the operated knee at angular velocity 240° was 13.4% for extensor muscles and 7.8% for flexors muscles.

Conclusion: Results of the ACL reconstructed knees with flexors tendons are comparable to those of opposite, non-operated kness. Good surgery technique and intensive pre- and post-surgery rehabilitation are very important.

Acknowledgements: I would like to thank Assist. prof. dr. Matjaž Sajovic, MD, and Mrs. Nataša Šipka, dipl. physiotherapist, for their help.

Keywords: Anterior cruciate ligament reconstruction; Balance; Hamstring muscle tendon; Isokinetics; KT-1000.

O-72: DISABILITY AND SPORT: THE EXPERIENCES OF ATHLETES AND THEIR COACHES

D. Cauchi

Malta

Purpose: Sport is key to the maintainence of a healthy lifestyle for both disabled and non-disabled persons (Bragaru et al., 2013). Nevertheless, the participation rate of disabled people in sport is still very low. The aim of this research is to explore the sporting experiences of Maltese disabled athletes and their coaches.

Method: The self-determination theory (SDT) and the affirmative model of disability were used as the theoretical frameworks, whilst the interpretative phenomenological analysis (IPA) was applied as the methodological framework. Eight individuals were recruited for this research – four physically disabled athletes and four coaches who participate in either wheelchair basketball or swimming. Data was generated through semi-structured interviews with each individual participant.

Results: Overall, participants experience sport in a positive manner, despite the several barriers they encounter within the local scenario. All the participants are intrinsically motivated to participate in sport, even though most of them initially engaged in sport due to external reasons, such as the athletes' rehabilitative needs, and the coaches' awareness of an unsatisfied need. Through sport, athletes form positive self-identities, which turns them into disability advocates and role models. However, sport may also contribute to 'feelings of normality' which bring about the rejection of the disability identity.

Conclusion: As a result of these findings, this study recommends that sport should be promoted amongst the Maltese population at large with a view to fostering a stronger sport culture. Further research on disability sport is also required to promote the reconstruction of a disability discourse which values the self-worth of disabled people.

Keywords: disability sport, SDT, affirmative model of disability, IPA, athletes, coaches.

P-1: WHY PATIENTS AFTER FRACTURES OF THE DISTAL PART OF THEIR LOWER LIMB ASK FOR IN-HOSPITAL REHABILITATION?

Atzmon Tsur

Israel

Purpose: To investigate why relatively young people insist to receive in-hospital rehabilitation following fractures in the distal part of the leg (DPL) bones, instead of going home and have physical therapy in the community.

Method: Twenty study group patients called "participants" and twenty-four control group patients were recruited for this study. All forty-four patients were hospitalized in the Department of Orthopedics after an accident that caused either tibial and fibular fracture, isolated ankle fracture, or heel fracture. Only the participants were hospitalized for rehabilitation treatment before being discharged to home, according their request. Their personal data, information about the actual injury, their medical history, and familial situation, were collected, in order to see if they have any influence about their decision making.

Results: Study group mean age was 55.35 ± 11.4 , and control group mean age was 46.6 ± 16 (Independent T-test, $p=0.047$). Of the 20 study group participants, 70% suffered from either chronic neurological or mental disease, blindness or disorders in one or more limbs, in contrast to 4% in the control group)Fisher Exact Test, $p<0.001$.(The injured leg in all 24 control group patients was plastered with a circular cast, compared to only 6 study group patients (Fisher Exact Test, $p<0.001$).

Conclusions: Older age, existence of severe chronic disease or acute lesion in another limb, or when the injured leg is free of circular cast which allows an immediate physical therapy program, can justify in-hospital rehabilitation short time after injury.

Keywords: tibia, foot, fracture, in-hospital rehabilitation

P-02: WHEN THE CLINIC DOES NOT MATCH THE IMAGE

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Portugual

Purpose: Reverse shoulder total arthroplasty(RSTA) was initially designed to rotator cuff tear arthropathy in elderly patients. Nowadays is accepted for patients with advanced glenohumeral(GH) joint pathology who have persistent pain and loss of function despite conservative management.

Method: The aim of this study is to review the main complications of RSTA, and the role of a good rehabilitation in maintaining an adequate functional level.

Results: Female, 78 years old. Medical history of knee surgery, resulting in an altered gait pattern, requiring a crutch on the right side. 18-years later, she started pain and loss of function on right shoulder with gait impairment, as she could not use the crutch. The RMI showed an advanced GH osteoarthritis with rotator cuff tear, subluxation of humeral head and a destruction of the glenoid. The patient was subjected to a RSTA. Followed by a 5-month rehabilitation programme returning to her daily life activities as the previous level. One year after surgery, RX showed a glenoid detachment, with a luxation. The patient was proposed for new surgery, which she refused, as she did not have functional limitation or pain. She then started a conservative approach

focussing on strengthening and maintaining functional Independence without pain. Four years later, she returned to trauma urgency with movement restriction, acute pain and finally accepted the surgery.

Conclusion: RSTA, implies changes of joint physiology and biomechanics, which might increase the potential for complications, such as scapular notching followed by glenoid component misalignment. RSTA leads to an improvement of shoulder function and quality of life, despite its surgical risk complications. In this case, as a consequence of an early return to walking with crutch. Post-surgical rehabilitation has an important role in maintaining an adequate functional level.

Keywords: reverse shoulder total arthroplasty (RSTA), rotator cuff tear

P-03: NEMALINE MYOPATHY: CASE REPORT

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Portugal

Purpose: Nemaline myopathy is a congenital, hereditary neuromuscular disorder. It has an estimated prevalence of 1/50000 live births and is the most common non-dystrophic myopathy. It is defined by muscle weakness and the presence of microscopic "nemaline bodies". Main symptoms are muscle weakness and hypotonia. The severity of the disease varies significantly between individuals, ranging from severe weakness and hypotonia in neonates, to individuals who only develop mild symptoms in adulthood.

Method: Case report: hereditary neuromuscular disorder and the impact of an early intervention

Results: Male, 2 years old. Dystocic delivery, APGAR 3/8 at 1st and 5th sec, with reanimation support. Medical history of hypotony, laryngomalacia, club foot and respiratory insufficiency after delivery. He was hospitalized for the first 2months, at the time NM diagnosis was done. He started Bilevel Positive Pressure Airway support(BPPA), 16hours/day, being accompanied by a multidisciplinary team including pediatrician, orthopedic, otolaryngologist, psychiatrist and rehabilitation team. He started a rehabilitation programme during the hospital period, being continued in ambulatory regimen. The rehabilitation programme was initially directed to neuromuscular rehabilitation and respiratory kinesiotherapy. It was thereafter included speech and occupational therapy, as well as physical therapy. Nowadays, he presents a better functional status, with good sitting balance and autonomy in alternating between sitting to standing, independent gait, although for short distances. He still maintains axial and limb hypotonia, keeping the BPPA during the night.

Conclusion: Patients with neuromuscular disorders require a precocious multidisciplinary approach, including a rehabilitation team to offer better clinical support and to avoid worsening of functional status. The rehabilitation programme should be focused on supporting physical functions which are negatively affected by muscle weakness and respiratory support. Swallowing and talking should be assessed and accompanied by a speech therapist. The environment should be adapted to the needs of the individual and mobility aims should be prescribed if necessary.

Keywords: Nemaline myopathy, neuromuscular, myopathy

P-04: EFFECTS OF SPECIFIC EXERCISES AND RELAXATION TECHNIQUES ON PERICRANIAL SENSITIVITY AND CERVICAL MOBILITY OF PATIENTS WITH TENSION HEADACHE

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Spain

Purpose: Non-drug treatments get good results in the control of tension headache, however, the literature is still limited. This research tries to demonstrate the efficacy of physical therapy, based on cervical training and

postural self-correction instructions, which aims to increase the positive results obtained from traditional relaxation techniques (Schultz Autogenic Training).

Method: A non-pharmacological randomized controlled trial was conducted with blinded evaluation of the response variables. The sample consisted of 152 university students (Complutense University of Madrid), 84 women (55.3%) and 68 men (44.7%), with a mean age of 20.42 years (SD = 2.36). They were randomly selected among those who were diagnosed with tension headache, according to the criteria of the International Headache Society. We compared the results of two parallel and independent samples. Autogenic Training (AT) was applied to one of the groups, while the other group received a combined programme of AT, plus cervical kinesiotherapy and postural education. Pericranial and cervical mechanical sensitivity, as well as cervical mobility, were measured before and after treatments, at 4 weeks and at 3 months.

Results: Both interventions performed well. However, the combined treatment group obtained further significant reduction in mechanical sensitivity (suboccipital and upper trapezius) ($P < 0.05$) and more range of cervical mobility (flexion -global and craniocervical-, extension and rotations) ($p < 0.001$).

Conclusion: The active, non-invasive therapies, like Autogenic Training and physical exercise, and especially the combination of both, allow to improve physical parameters associated with tension headache. In future studies it would be interesting to assess the maintenance of longer-term benefits.

Keywords: tension-type headache, relaxation techniques, physical therapy

P-05: TRENDS IN REHABILITATION: SUMMARIZING THE FIRST 18 MONTH OF ACTIVITY IN THE NEW DEPARTMENT IN THE SOUTH OF ISRAEL

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Israel

Purpose: On March 2015, a new rehabilitation department was established in Soroka University Medical Center. The new Department operates as part of a Regional Rehabilitation Service (RRS), emphasizing the continuity of care from the patient's bed to the community. Here, we summarize the Department's outcomes following the first 18 months of activity.

Method: 318 patients (133 females) were admitted to the Department between March 2015 and November 2016. Patients were referred following CVA ($n=117$, 37%), deconditioning ($n=51$, 16%), neurological disorders ($n=48$, 15%), hip fractures ($n=24$, 8%), spine cord injuries ($n=26$, 8%), fractures ($n=27$, 8%), amputee ($n=14$, 4%) and TBI ($n=11$, 3%). Functional level was assessed upon admission and at discharge using the Functional Independence Measure scale (FIM). Length of Stay (LOS) and after-discharge destination were examined.

Results: Average LOS was 27.3 ± 20 days. Average FIM at admission and discharge were relatively high (77 and 104, respectively). LOS positively correlated with the change in FIM ($r = .28$, $p < .00$). This correlation was significant in patients following CVA ($r = .26$, $p = .004$); fractures ($r = .6$, $p = .001$); and deconditioning ($r = .45$, $p = .001$). Following discharge, the majority of patients (54%) were referred for further rehabilitation at community services.

Conclusions: 1) Although LOS generally predicted change in FIM, patients suffering from CVA, fractures and deconditioning gain the most out of the length of their hospitalization. 2) The high percentage of patients referred to community rehabilitation post hospitalization is in line with the RRS as a working model.

Keywords: length of stay, rehabilitation department, community rehabilitation

P-06: AN EXPLORATION OF THE LIVED EXPERIENCES OF PARENTS WITH MULTIPLE SCLEROSIS

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Malta

Purpose: Multiple sclerosis (MS) is “a chronic, [immune-mediated,] often disabling disease of the central nervous system (the brain and the spinal cord)” (National Multiple Sclerosis Society, 2016b, p.2). It is common around child-rearing age and its presentation includes unpredictable cycles of relapsing and remitting nature of manifested symptoms. An individual who has acquired impairments in view of a chronic, unpredictable disease such as MS may experience a profound impact in multiple life domains such as parenthood. Therefore, this study sought to explore the lived experiences of parents with MS, according to the meanings they ascribed to them.

Method: This was done through a qualitative research approach under an existential-hermeneutic phenomenology conceptual framework, along with emancipatory disability research principles. An advisory group comprising four parents with MS met twice for a focus group; at the beginning of the study in order to devise an interview guide, and following data collection to discuss the findings. Individual, face-to-face semi-structured interviews were carried out with six different parents with MS. All study participants were recruited through purposeful intensity sampling procedures.

Results: Five superordinate themes were generated following an interpretative phenomenological analysis, including The Experience of Living with MS, The Importance of Being a Parent: ‘Children were a blessing in this whole thing’, Parenting Roles: A Social Construct? Concerns Around the Child’s Well-being and their Families, and Availability of Support. Some of the lived experiences could be compared and contrasted; however, each experience was unique in its own way, where existential dimensions of being-in-the-world were fundamental to create the unique sense-making of each person’s lived experience.

Conclusion: As proposed by the participants in this study, there is the need to improve public awareness about both MS and disability awareness in general through the use of the media and disability-awareness campaigns, in order to address the actual realities of living with MS and its effect on life domains, and enable effective social change, such as in the socio-cultural attitudes, political policies, agendas and services.

Keywords: multiple sclerosis, parenthood, phenomenology, emancipation, IPA.

P-07: THE USE OF VIRTUAL REALITY IN REHABILITATION OF PEOPLE WITH LOWER LIMB AMPUTATION: A REVIEW

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Turkey

Purpose: The aim of this study was to review and summarize the use of the virtual reality in rehabilitation of people with lower limb amputation.

Method: The search was conducted in Pubmed, Sciencedirect, Medline and Scopus. Search terms were virtual reality, amputation, rehabilitation, Computer Assisted Rehabilitation Environment (CAREN). The studies included only related with gait and balance rehabilitation.

Results: 8 publications were elicited that met our criteria. CAREN system used in 6 studies, Wii Fit system used in 2 studies. 3 of them were case reports, and others had small sample groups (3-14 people). The number of sessions applied ranged from 6 to 30 sessions. Treatment duration ranged from 20 to 30 minutes. In the results of these studies, participants' balance and postural stability, prosthesis safety, walking speed, spatio-temporal characteristics of gait were improved. Rehabilitation in the virtual environment has been found effective in preventing falls and improving performance.

Conclusion: Nowadays the use of technological rehabilitation systems is widespread. VR systems that motivate participants and enhance compliance with treatment may be an effective treatment method in terms of effective use of prostheses of lower extremity amputees. It is considered that the use of virtual reality in rehabilitation, which plays an important role in the development of technological prosthetics (microprocessor prosthesis etc.), will become widespread in the current literature and the number of studies to be done in this regard will increase.

Keywords: virtual reality, amputation, rehabilitation

P-08: PELVIC FLOOR PATHOLOGY

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Spain

Purpose: Analysis variables of incidence on pelvic floor pathology by different causes and results with conservative techniques throughout the year 2015.

Method: Data and analysis from 56 patients was gathered. Gynaecological and obstetrical data from women and urological surgery from men, clinical urinary incontinence, hypertonia of sphincters, pain and prolapses. Valoration perf (power, endurance, resistance, fast) initial and final after treatment. The SPSS statistical programme was used to collect data and analyze variables.

Results: The age of patients and the urinary incontinence type did not statistically keep a significant relationship with initial and final perf. Patients with a caesarean section showed hypertonia with statistical significance ($p = 0,003$) but not on patients with multiparity. On individualised parameters, pre and post perf treatments showed statistically significant results with global improvement.

Conclusion: In our sample the incidence of sphincter hypertonia on patients with surgical delivery (caesarean sections) shows a statistically significant correlation. The established conservative treatment has clinically improved our patients.

Keywords: urinary incontinence, pelvic pain

P-09: THE IMPLEMENTATION OF THE CANADIAN MODEL OF OCCUPATIONAL PERFORMANCE – ENGAGEMENT IN THE MALTESE ISLANDS

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Malta

Purpose: The purpose was to implement the introduction of the Canadian Model of Occupational Performance as a model of practice for occupational therapists (OTs) in the Maltese Islands.

Method: For many years the occupational therapy profession has felt the need to have a model of practice to underpin the service. Following a national exercise on the vision of the Occupational Therapy Services, during which all OTs were invited to reflect on their practice, a consensus was reached whereby one model of practice would be selected in order to align the services. A steering group was set up to work on this vision. The team identified the Canadian Model of Occupational Performance and Engagement (CMOP-E) as the most appropriate model that would fit the needs of all service users. The steering group organised the first phase of training for staff by giving a presentation of the model in various departments. The second phase of training was coordinated by Dr. Gail Boniface from Cardiff University. Dr Boniface has been involved in the implementation of other models with a number of services in the UK, and specifically with the implementation of the CMOP in Gloucestershire. A number of training workshops were held for all staff to discuss the use of the model in practice

using a number of case studies. The workshops included an explanation of the process and experiences in adapting this model in Gloucestershire. From these workshops feedback from staff was gathered and compiled into reports. Prof. Sue Baptiste was then contacted and kindly accepted to come to Malta. This led to the organisation of 5 days training for OT staff and senior staff. All OTs attended a two day workshop in two groups. The fifth day was dedicated to train the trainer workshop.

Results: A clinical audit of the implementation of the CMOP-E will be carried out by the facilitators in collaboration with the steering group of OTs in 2017.

Conclusion: Positive outcomes emerged from the initial phases of implementation and has brought a shift in the outlook amongst staff on the method of practice to move towards a more client-centred and occupation-based approach.

Acknowledgement: Prof. Sue Baptiste; Prof. Gail Boniface

Keywords: CMOP-E; client-centred practice

P-10: THE EFFECTS OF THE CONTINUOUS PASSIVE MOTION MACHINE ON KNEE RANGE OF MOTION FOLLOWING A TOTAL KNEE REPLACEMENT

D. Gauci

Malta

Purpose: The aim of this study was to investigate whether the CPM machine helps patients regain 90° of knee flexion ROM earlier than patients who have not received CPM treatment following a TKR. This study also aimed to explore the feasibility of further research related to CPM use. The objectives of this research included the following: Obtain permit to perform the study; Review the literature regarding the use of the CPM machine post TKR; Measure ROM for patients following CPM use; Analysis and interpretation of the data obtained; Identify the feasibility for further studies

Method: The study had a total of 20 individuals. The inclusion criteria are as follows: 1. Patients aged between 65 and 85 years; 2. Patients who underwent a TKR for the first time due to OA; 3. Patients who were able to consent and adhere to the treatment regimen of the study; 4. Patients who had a period of hospitalisation of not more than three days. These were then divided into 2 groups- Group 1 and Group 2. Group 1 was given, standardised, evidence-based Physiotherapy treatment only. Group 2 were provided with 2 hours of CPM treatment daily starting with 60° from day 1 with 10° daily increment with additional standardised, evidence-based Physiotherapy treatment. The period of data collection occurred throughout a 5- month period and all individuals had a total inpatient post-operative period of 3 days. All patients had their active knee flexion ROM values measured on the day of discharge and during every appointment at the outpatients' clinic. The day in which patients reached the 90° of active knee flexion ROM was then recorded and compared between the two groups. The number of Physiotherapy treatment sessions was also recorded and compared between the two groups

Results: The independent samples t-test was used and these are the results: The mean number of days (duration) taken until gaining 90° of knee flexion ROM since the TKR, is 1.2 days less for group 1 (18.5 days) than for group 2 (19.7 days). However, this difference is not statistically significant since the P value of 0.665 exceeds the 0.05 level of significance. The mean number of treatment sessions the patients have undergone until they reached 90° in active knee flexion ROM for the CPM group is 5.70 treatment sessions, this is exceeded by 0.2 for the no-CPM group (5.50). However, this difference is not significant since the P-value is of 0.665, exceeding the 0.05 level of significance.

Conclusion: This study concludes that the CPM machine should only be implemented following proper liaison with both the surgeon and the Physiotherapist in order to maintain the level of ROM gained from subsequent therapy. CPM should thus only be used based on clinical reasoning only when indicated. It would be anticipated that proper application of CPM would, indeed, be cost-effective as it can potentially decrease the need for additional physical therapy and later rehabilitation or surgical intervention to treat stiffness. The therapist should always keep in mind that the CPM alone cannot address disability. Good surgical management, combined with a proper rehabilitative input of active exercises from a qualified and trained Physiotherapist is key for a successful TKR.

Acknowledgments: supervisor, Mr. V. Grixti; Dr. G. Abela; staff of Orthopaedic Ward 2; Physiotherapists at the Orthopaedic Outpatients Department and K. Stivala.

Keywords: CPM, TKR, ROM, Physiotherapy, Rehabilitation

P-11: EFFECTIVENESS OF PHYSICAL REHABILITATION IN PATIENTS WITH PERIPHERAL ARTERY OCCLUSIVE DISEASE

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Serbia

Purpose: Peripheral artery occlusive disease (PAOD) is one of the most common cardiovascular diseases. Effectiveness of medical therapy is often insufficient and it is important to find additional therapeutic methods in order to achieve the best possible functional outcomes for these patients. The aim of our research was to show the effect of physical therapy procedures (electrical therapy, magnetic therapy and exercises) in patients with PAOD.

Method: Sixty five patients with PAOD were randomly assigned to treatment group(receiving conventional and physical therapy) and control group (conventional therapy). Patients in treatment group underwent 15 physical therapy procedures, every day for 1 hour. Patients were assessed before and right after treatment using claudication distance values, ankle brachial indexes(ABI) and subjective measure of improvement.

Results: There were no statistical differences between the groups in age, sex and comorbidities. However, treatment group showed lower claudication distance values and ABI indexes After the end of treatment there was statistically significant improvement in all outcome measures in treatment group compared to control group.

Conclusion: Physical therapy treatment influence improvement of both, subjective and objective parameters of PAOD. Our findings suggest that it could be considered as one of the additional therapeutic approaches in treatment of these patients.

Keywords: peripheral artery occlusive disease, physical therapy

P-12: THE EFFECT OF LOW MAGNETIC FIELD ON SELECT PARAMETERS AS CONSERVATIVE TREATMENT MODALITY IN PATIENT WITH DIABETES POLINEUROPATHY (DPN)

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Serbia

Purpose: Diabetes polyneuropathy is the most common complication in patients diagnosed with Diabetes mellitus. Therapy using low-intensity pulsed electromagnetic field (IEMP)-small induction (1mT-100mT) and low frequency (up to 1000Hz) -IEMP do not have significant thermal effects but a strong biomodulating effect. In this

paper there was a statistically significant improvement in most of the parameters monitored in the treatment of patients with diabetic neuropathy.

Method: In this prospective randomized clinical study, 37 patients (average age 61.4 years) with Type 2 Diabetes mellitus (mean duration of 12,3 years) were included with clinical and electrophysiologic confirmed diagnosis of diabetic polyneuropathy. Patients were randomly distributed in the experimental (n = 22) and control (n = 15) group. Patients from the experimental group, other than exercise and motion therapy, were subjected to IEMP therapy Induction 5 mT, frequency 25 Hz for 15 min. MAGNEMED 2K, torus diameter 500mm) The application of IEMP lasted for three weeks, a total of 15 treatments. In the control group, there were 15 patients who performed exercise at home conditions

Results: After the completion of the IEMP series in the patients of the underlying group there was a statistically significant reduction in pain (VAS), and a statistically significant reduction in neuropathic total score (NSS = Neuropathy symptom score +NDS =Neuropathy disease scor). In our study, there was a statistically significant increase in the M amplitude/Electromyoneurography verified response (impact on axon recovery) while the motor speed of n. peroneus in our sample was not statistically significantly changed

Conclusion: The study showed that IEMP therapy can be used as an adjuvant therapy in patients with diagnosis Diabetes polyneuropathy, as it reduces pain as well as neuropathic symptoms, and has also partially led to the improvement of electrophysiologically-monitored parameters and can slow the progression of neuropathy.

Keywords: diabetes, polineuropathy, electromagnetic therapy

P-13: THE IMPORTANCE OF VITAMIN D IN THE DEVELOPMENT OF OSTEOPOROTIC FRACTURES

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Serbia

Purpose: The purpose of this paper is to determine the correlation between serum 25(OH)D concentrations in the development of osteoporotic fractures. Reduced concentration of 25(OH)D in serum is considered a value below 30ng/ml (75nmol/l).

Method: The analysis included 310 patients with osteoporosis. It included 92% women (310/285) and 8% men (310/25), median age 63. The study was conducted during one year. Serum 25(OH)D concentrations were measured by ELISA method. For patients with decreased values of serum 25(OH)D results were analysed by osteodensitometry. The data of the frequency of fractures were obtained on the basis of anamnestic data and X-ray. In statistical analysis, descriptive statistical methods were used (average value, standard deviation).

Results: Mean measured in total serum 25(OH)D was 31.05 ng/ml. 102 patients had concentration of vitamin D in serum above 30ng/ml, while with 208 the value was less than 30ng/ml. Presence of fractures in patients with reduced values of vitamin D was 58%(121/208), while 42%(87/208) were negative. 46% (56/121) had one fracture, 21% (25/121) two, while 12% (15/121) had more than two fractures. Vertebral fractures had 46,2% , while nonvertebral fractures had 53,8% patients. The most common location of fracture was in the area of the forearm, recorded in 52 patients (43%).

Conclusion: These results indicate the importance of measuring the concentration of serum 25(OH)D as well as close connection to lower serum 25(OH)D in the occurrence of osteoporotic fractures.

Keywords: vitamin D, osteoporosis, fractures

P-14: BASILAR ARTERY OCCLUSION DUE TO FACTOR V LEIDEN MUTATION: PAEDIATRIC CASE REPORT

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Turkey

Purpose: Factor V Leiden gene mutation is considered as a risk factor for stroke in childhood since it causes hypercoagulability. Often venous structures are affected, but occasional basilar artery involvement can be seen [1]. The incidence of cerebrovascular disease in childhood has been reported to be 2.6-3.1: 100000 [2]. The majority of paediatric stroke is due to middle cerebral artery involvement [3]. Basilar arterial occlusions are seen in adults as well as in children with poor prognosis [4]. In this case report, we aimed to present a case of paediatric stroke in which basilar artery thrombosis due to Factor V Leiden gene mutation developed.

Method: A seven-year-old boy was admitted to our clinic because of difficulty in keeping his head straight, inability to speak and dysphagia. According to his history, about 3 months ago, sudden loss of consciousness developed without any trauma or infection. Pontine infarct area was detected in the cranial magnetic resonance (MR) examination while MR angiography revealed a complete occlusion in the distal part of the basilar artery, and anterior circulation was normal. Acetylsalicylic acid and enoxaparin were prescribed. Homozygous Factor V Leiden mutation detected in the investigations for aetiology, other conditions that may cause thromboembolic tendency were excluded. Improvement of the patient's alertness was observed with medical treatment. On physical examination, there was no head and sitting balance, there were spasticity and involuntary movements in lower extremities. At the same time, there was marked dysarthria and dysphagia. In the control MR angiography examination at 3 months, it was found that the arteries and branches of the bases were recanalized.

Results: The patient continued rehabilitation programme for about 8 weeks, and the head balance and sitting balance without support were improved.

Conclusion: Despite the basilar artery involvement, which is considered as a poor prognostic factor, and recanalization in the late period, rehabilitation programmes can provide positive results in these cases.

Keywords: factor V Leiden mutation, paediatric stroke, stroke

P-15: OSTEOGENESIS IMPERFECTA AND CENTRAL CORE DISEASE: A CASE REPORT

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Turkey

Purpose: Osteogenesis Imperfecta is a connective tissue disorder characterized by low bone mass and increased bone fragility due to genetic mutation responsible for osteogenesis imperfecta type 1 collagen production. Its prevalence is about 1/20000 [1]. Central core disease is a rare neuromuscular disease in the group of congenital myopathies. Generally, the first finding is postnatal weakness and hypotonia [2]. Ryanodine receptor-1 (RYR 1) gene mutation is responsible for this disease [3]. In this case report, we aimed to present a case of osteogenesis imperfecta and central core myopathy.

Method: A 6-year-old boy was admitted to our clinic with complaints of walking difficulty. According to his history, he was born at 38th week of pregnancy by caesarean section. His birth Weight was 3200 grams and he was found to be hypotonic at birth. Bilateral humerus fracture was detected in postpartum chest x-ray. The patient gained head balance at 4-5 months. He was able to sit supported at 7-8 months, and unsupported at 1 year. The bone mineral density measurement of the patient revealed a z score of - 6.6 SD and when he was 1 year old, he was diagnosed as osteogenesis imperfecta. Alendronate 35 mg / week treatment was prescribed. The patient had a long myopathic face and a high arched palate, and at the same time lower extremity weakness was more prominent than the upper extremity. When he was 1.5-year-old, muscle biopsy was performed and

severe myopathic changes were detected. In the molecular genetic analysis of the patient, a mutation was detected in the RYR 1 gene and myopathy was diagnosed. Physical examination revealed muscle weakness in the upper and lower extremities, which is more prominent in the proximal muscle groups.

Results: With the rehabilitation programme, the proximal muscle strength, balance and coordination of the lower extremity was improved. The patient, who could ambulate with maximal assistance while admission to our clinic, became able to ambulate with bilateral PKAFO and reverse walker. In addition, there was improvement in the patient's fine hand skills with hand rehabilitation.

Conclusion: To date, osteogenesis imperfecta and central core myopathy coincidence is reported in a few case presentations. It should be kept in mind that muscle diseases can be seen together with connective tissue diseases.

Keywords: osteogenesis imperfecta, central core myopathy, myopathy

P-16: FLUDROCORTISONE TREATMENT FOR ORTHOSTATIC HYPOTENSION DUE TO SPINAL CORD INJURY: A CASE REPORT

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Turkey

Purpose: Orthostatic hypotension is one of the most common autonomic dysfunction syndrome following spinal cord injury. When switched from the supine position to the upright position, a decrease of 20 mmHg or more in systolic blood pressure or a decrease in diastolic blood pressure of 10 mmHg or more is defined as orthostatic hypotension, although it is not symptomatic [1]. In most cases of cervical spinal cord injury, the autonomic system does not respond adequately to changes in body position. This prevents achievement of goals such as achieving vertical positioning and sitting balance, which is an important part of the rehabilitation of spinal cord injured patients. In order to treat orthostatic hypotension, elastic socks and abdominal binders are used to prevent venous pooling in peripheral and splanchnic areas [2]. In addition, medical agents are used in patients not responding to these applications [3,4]. The most commonly used agent in the medical treatment of orthostatic hypotension is midodrine, which is alpha 1 adrenergic. In this case report, we aimed to present a case in which midodrine treatment was discontinued because of frequent autonomic dysreflexia and orthostatic hypotension was controlled with fludrocortisone.

Method: A 56-year-old male patient was admitted to our clinic with diagnosis of tetraplegia due to an motor vehicle accident. According to physical examination, the neurological level of the patient was identified as C3 tetraplegia ASIA-A and rehabilitation treatment was planned. The patient was attempted to position on the tilt table with elastic stockings but symptomatic orthostatic hypotension occurred. Orthostatic hypotension could not be prevented with abdominal binder and midodrine 2, 5 mg twice daily was prescribed. Since orthostatic hypotension did not improve, the dose was increased to 5 mg twice daily. Severe autonomic dysreflexia was observed with dose increase, and midodrine therapy was discontinued because no other noxious stimulus was present for autonomic dysreflexia. Subsequently, the patient was treated with fludrocortisone 0.1 mg / day. The fasting blood glucose, Na, K and arterial blood pressure values of the patient were monitored and the dose was increased to 0.2 mg / day.

Results: Symptoms of orthostatic hypotension were relieved, tilt tolerance and sitting time on the wheelchair was improved.

Conclusion: These findings suggest that treatment with fludrocortisone may be effective in appropriate tetraplegic patients for the treatment of orthostatic hypotension.

Keywords: fludrocortisone, orthostatic hypotension, spinal cord injury

P-17: PROGRESSIVE PSEUDORHEUMATOID DYSPLASIA: IS IT ALWAYS PROGRESSIVE? PRESENTATION OF FOUR CASES WITH SLOW AND RAPID PROGRESSION AND EFFECTS OF EARLY REHABILITATION PROGRAMME.

E. Giray

Turkey

Purpose: Progressive pseudorheumatoid dysplasia (PPD) is a rare hereditary musculoskeletal disorder which is usually misdiagnosed due to its clinical resemblance to juvenile idiopathic arthritis. It has been reported to have high incidence in Middle East, Gulf States and countries of Mediterranean basin. To date, to the best of our knowledge, 13 case reports from our country, Turkey, have been published. Here we present four cases of PPD (two sisters and their two second cousins) in two related families from Turkey. With this case report we would like to draw attention to the different types of disease course and effects of early rehabilitation programme on disease course.

Method: Case 1, the index case, is a 23-year-old female. Case 2 is younger sister of Case 1 and the third and fourth cases are two brothers who are second cousins of index case. Case 3 living in more rural area without sufficient access to hospital showed more progressive, severe disease course. He had a more crippling joint disease with severe scoliosis that progressively worsened.

Results: Four cases had common and separate aspects. Except one of the cases, all of them were misdiagnosed as JIA. Before the deformities were noticed, complaints about difficulty in particularly standing up from a seated position was the first emerging symptom of the disease. The hand appearance at the time of presentation to physicians was the main reason why physicians misdiagnosed. The loss of ROM was progressing over time. Effective physical activity was received by case 1, since she had more hospital access. During the follow-up period, for the case 1, clinical picture presenting with loss in ROM was observed to be recovered instead of progression.

Conclusions: These four cases of PPD reaffirms the clinical heterogeneity and variable expressivity of PPD. More progressive disease course may be explained with both not having undergone early rehabilitation programme and variable expressivity. We have observed that if patients with PPD underwent early rehabilitation programme, patients may present with a less severe disease course. If early rehabilitation treatment is started the progress of disease may be slowed. This hypothesis can only be proved by rehabilitative management and follow-up of two younger cases.

P-18: VOCATIONAL REHABILITATION: CASE STUDY

S. Herceogvac

Malta

Purpose: Empowerment paid work social participation

Method: one participant – case study; work experience survey; Cognitive assessment of Minnesota; clinical observations; Canadian Model of Occupation; Person Occupation Environment model

Results: Analysis of the used of standardized assessments to create the patient vocational profile for identifying vocational guidance and needs. Supporting employment services are beneficial for coping of the individual in the community.

Conclusion: The value of vocation rehabilitation in occupational therapy intervention results in empowering individuals towards employment

Keywords: vocational rehabilitation, occupational therapy

P-19: THEMED GROUP PROGRAMME ON GERIATRIC REHABILITATION WARDS

S. Herceogvac

Malta

Purpose: Group therapy participation; Rehabilitation; Yearly planned programme

Method: Description of groups and themed weeks with plan of intervention

Results: Patient participation during in-patient rehabilitation

Conclusion: Encouraging social participation and orientation

Keywords: group therapy, occupational therapy, themed weeks

P-20: BALNEOTHERAPY IN TREATMENT OF PERSONS WITH POLYTRAUMA.

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Bosnia and Herzegovina

Purpose: The aim of study was: to show and compare the results of medical rehabilitation between the two independent groups (of polytraumatic persons) in relations with: 1. the time between the injury and beginning of rehabilitation, and 2. the ISS-score.

Method: In the prospective clinical study we compared two independent groups: A (n=85) – the time from the injury and beginning of rehabilitation < 30 days; B (n=94) – that time was > 90 days. The functional assessment and ISS-score were carried out for both groups. The applied treatment consisted of: sulphurous mineral water, interferential current, magnetic therapy and kinesiotherapy. The parameters registered and analysed at admission, after 14 and 28 days were: pain, range of motion in joints (of injured extremity), strength and velocity of muscles, need for orthopaedic aid, ventilation of lungs and duration of rehabilitation.

Results: The balneotherapy had a good effect on all studied polytraumatic persons (for ISS > 12, r=0,82). The results are statistically significantly better in the early group (p<0.05) after 14 days as well as after 28 days of treatment (p<0.01) in all analysed parameters.

Conclusion: On the basis of the analysed results of this study, the authors came to the next conclusions: Balneotherapy has positive effects in the rehabilitation of persons with trauma. The rehabilitation should start as early as possible after trauma.

Keywords: polytrauma, ISS, balneotherapy, rehabilitation

P-21: FATIGUE ASSOCIATED FACTORS IN TUNISIAN POST-POLIO PATIENTS

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Tunisia

Purpose: To assess fatigue and determine the associated factors.

Method: A cross-sectional descriptive study performed on patients with PPS followed at the Physical Medicine and Rehabilitation Department, University Hospital of Monastir, Tunisia. The variables analyzed were epidemiological, clinical and functional with a fatigue assessment by the Multidimensional Fatigue Inventory

(MFI20) and the Borg RPE scale, pain (VAS pain), functional capacity by Six-minute walk test (6MWT) and functional independence measurement scale (FIM) and anxio-depressif state by the Hospital anxiety and depression scale (HAD).

Results: Our population consisted of 45 patients with an average age of 52.4 ± 7.5 years with a female predominance (57.8%). The majority of our patients (91%) experienced fatigue (Borg scale RPE 12-20). It was present in all areas evaluated by the MFI20. Physical fatigue and general fatigue were the highest with an average of 13.5 and 12.8, respectively. Fatigue was positively correlated with age, BMI, pain and anxious and depressive disorders. It was negatively correlated with age at onset of poliomyelitis. There was also a negative association between the functional capacity evaluated by the 6.M.W.T and the fatigue evaluated by the Borg RPE scale and the areas of the IMF20: general fatigue and reduced motivation.

Conclusion: The factors associated with fatigue in post-poliomyelitis patients were multiple. Various relationships were reported in the literature. These differences can be explained mainly by the methodology and scales used.

Keywords: post-polio syndrome, fatigue, associated factors

P-22: SEXUAL DYSFUNCTION (SD) AMONG PATIENTS SUFFERING FROM SPINAL CORD INJURY IN A TUNISIAN POPULATION

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Tunisia

Purpose: to analyze sexual problems after spinal cord injury (SCI)

Method: This is a cross-sectional study concerning 26 patients with SCI patients followed at a physical medicine and rehabilitation department. In addition to an interview, we used 2 indexes to measure sexual function: MSHQ for males and FSFI for females. Other information was collected concerning the duration of the SCI, the level of disability and the repercussions on the couple's relationship and quality of life.

Results: Only eleven patients (57, 69%) manage to lead a sexual relationship with variable level of satisfaction caused by several troubles. The prevalence of SD was 47, 36 % for males and 42, 85 % for females. The most frequent problem for males was erectile dysfunction. Women experienced mainly a reduction in satisfaction and a lowering of lubrication. The median MSHQ score was 60, 17 (30-88). The SCI itself affected all the SF-36 items but no correlation was found between the SD and quality of life. Neither did we note significant repercussions on the couple's relationship

Conclusion: SCI leads to significant changes in almost all aspects of life. Rehabilitation specialists need to understand the importance of satisfaction with sentimental and sexual life and its influence on people with SCI re-entering the community and restoring their wellbeing.

Keywords: spinal cord injury, sexual dysfunction, quality of life

P-23: A BIDIRECTIONAL HAND PROSTHESIS WITH TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION SENSORY FEEDBACK

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Serbia

Purpose: Sensory feedback is amongst the most important features lacking from commercial prostheses. Although restoration of touch by means of implantable neural interfaces has been achieved, these approaches

require surgical interventions, and their long-term usability still needs to be fully investigated. Here, we propose a non-invasive alternative, which maintains some of the advantages of invasive approaches, such as a homologous sensory restitution scheme. We used transcutaneous electrical nerve stimulation (TENS) to induce referred sensations to the phantom hand of amputees and test it during the bidirectional prosthesis control.

Method: In order to study the performance of the proposed TENS-based bidirectional prosthesis setup, we performed three functional tasks involving both motor control and sensing, putting the subjects in situation of every day living tasks. In the location recognition task, subjects were asked to close their hands around an object, and determine if it had been placed in the ulnar side of the hand, the median side or across the entire hand. In the force generation task, subjects were asked to grasp a dynamometer with a low, medium or strong grip force. We then investigated the performance of bidirectional prosthesis setup, in a more complex functional task. In this task ("sensory blocs"), subjects were asked to move as many blocs as possible over a central separation during a 2-minute period.

Results: Both subjects tested were able to perform localization recognition with high accuracy (84-85% correct answers). This high level of performance indicated that the sensations elicited through stimulation of the ulnar or the median nerves were easily distinguishable for all subjects. When asked to generate four distinct levels of force, the subjects often complained that the task was hard and that they were unsure about how well they were performing. Although performance was lower (75% correct levels on average) they were still able to perform this task successfully (capable of generating four statistically different levels of force). In a more complex functional task ("sensory blocs"), the blocs were not always placed in the hand, thus forcing the subjects to rely on their artificial sense of touch to decide whether or not to move their hand to the other side. The average score in the first session was 8 (corresponding to eight blocs moved within a period of two minutes), while after four sessions, the mean score moved up to 17 in the same period of time. Similarly, the mean number of errors decreased from session to session as the subjects gained confidence with the setup. In the last session, no errors were observed.

Conclusions: Pulse width modulation with TENS is a suitable candidate for prosthesis sensory feedback, enabling subjects to localize where an object touched the hand, generate three statistically different levels of force and perform more complex manipulation tasks.

Acknowledgement: Special hospital for rehabilitation and orthopedic prosthetic

Keywords: Sensory Feedback, TENS, Amputees, Hand Prosthesis.

P-24: CARDIAC REHABILITATION IN A PATIENT WITH ANKYLOSING SPONDYLITIS: SINGLE PROGRAM, DOUBLE EFFECT

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Turkey

Purpose: Ankylosing spondylitis (AS) is a chronic inflammatory disease which is characterized by the primary involvement of axial spine and sacroiliac joints and also extraarticular involvements including ophthalmologic, cardiac, pulmonary or neurologic. Cardiac involvement in patients with AS has been reported to be 2-10%. Although ventricular dysfunctions have been reported in patients with AS previously, there is only one case report describing primary cardiomyopathy due to AS and management with better control of inflammation and medications. Here we present a case of cardiomyopathy in AS whose ejection fraction and New York Heart Association (NYHA) functional class improved and disease activity was decreased after cardiac rehabilitation programme.

Method: The 46-year-old male patient applied to our clinic with inflammatory back pain. He had inflammatory back pain, positive HLA-B27 and pelvic radiograph showing grade 4 sacroileitis. He was diagnosed with axial spondyloarthritis. Initially the BASDAI score was 7, indomethacin 150 mg/day and sulphasalazine 2 gr/day treatment was given. Despite the treatment with indomethacin for three months, BASDAI score didn't improve and it was above 4 points and levels of C-reactive protein (CRP) were increased. It was decided to start biological agent but the patient had dyspnea and his functional capacity (FC) was class III according to the NYHA. Before starting anti-TNF therapy, because of his complains of shortness of breath and chest pain during exercise he was evaluated by a cardiologist. There were no abnormalities on his electrocardiogram and cardiac enzymes. Because he had both hypertension and diabetes mellitus he was under risk of atherosclerotic cardiovascular diseases. His serum lipid levels were normal. Coronary angiography was normal in search of ischemic heart failure etiology. He denied a history of rheumatic fever, excessive alcohol consumption, myocarditis which also could be attributed to ventricular dysfunction and dilatation. Decreased left ventricular systolic function, ejection fraction 25%, dilation of left cavities of heart, moderate mitral valve insufficiency and normal right ventricular systolic function were reported on his echocardiogram. He was given a diagnosis of non-ischemic cardiomyopathy by the cardiologist. Starting anti-TNF therapy was avoided when he was diagnosed with cardiac failure. So, indomethacin treatment was continued. CR program was organized for the patient due to cardiac failure and AS. The program consisting of stretching, low-intensity interval ergometer and strengthening exercises of 32 sessions was applied with weekly modifications. Before treatment, 6-minute walking distance was measured as 510 meters, BASDAI as 5.2, MET level as 4.2, maximal loading as 80 watts.

Results: After the CR program, 6-minute walking distance of the patient was calculated as 680 meters, MET level as 5.7, maximal loading as 120 watts. During this period, the pain and morning stiffness of the patient decreased significantly and BASDAI score decreased to 1.3. The ejection fraction had increased to 33% after 11 weeks-therapy. His FC regresses to class I from class III. The patient still ongoing Phase-3 CR program and disease activity is low. After cardiac rehabilitation, biological agent usage became to be not necessary any more.

Conclusions: Cardiac involvement in AS may be a factor increasing the disease activity. Cardiac rehabilitation program may provide an improvement much beyond the known good effects of exercise in AS.

Acknowledgement: None

Keywords: Ankylosing spondylitis, cardiac rehabilitation, cardiomyopathy

P-25: MECHANICAL PROPHYLAXIS – THE IMPORTANCE IN THE PREVENTION OF VENOUS TROMBOEMBOLISM IN SURGERY OF THE KNEE AND HIP

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Serbia

Purpose: Surgery of the knee and hip, lead to a high risk (40% – 60%) for the occurrence of venous thromboembolism (VTE). The aim of this paper is to show the importance of mechanical prophylaxis of venous thromboembolism in surgery of the knee and hip.

Method: The study was carried out in the period 2009 to 2012 on 100 patients who were hospitalized at the Clinic for Orthopedic Surgery and Traumatology, Clinical Center, and had surgery of the hip and knee (50 in the knee region, 50 in the hip region).

Results: Elastic stockings, as a form of mechanical prophylaxis, was used by only 6.7% of patients operated in the hip, and in 14.5% of patients operated in the knee ($p = 0.177$). From the patients operated of the knee, two of them developed a deep vein thrombosis, while 48 were without DVT. From the patients operated of the hip, 2 developed DVT, and 48 were without this complication ($p = 0.884$). After knee surgery three patients had

pulmonary embolism, while 47 were without this complication. After hip surgery two patients had EP and 48 were without this complication ($p = 0.674$).

Conclusion: By applying recommendations for diagnostic and treatment of acute and chronic venous disease there is a reduction in the high risk of VTE in patients operated of the hip and knee.

Keywords: hip, knee, elastic stockings, VTE

P-26: EXTRACORPOREAL SHOCKWAVE THERAPY FOR FRACTURE NON-UNIONS

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Portugual

Purpose: Explore the evidence available on the use of extracorporeal shockwave therapy (ESWT) for fracture non-unions and its advantages over the current golden standard treatment.

Method: The PubMed database was searched for the terms “extracorporeal shockwave” and “non-unions”, selecting the articles from the past 10 years.

Results: Although surgery still represents the golden standard on the treatment of non-union fractures, with a healing rate of up to 86-94%, the related invasiveness and potential complications prompted the need for other therapeutic methods. ESWT have been used in this context, through a hypothesized mechanism of mechanotransduction. Studies refer up to 63.3% (atrophic non-union group only) to 94% of healing rate, mostly after 6 months of treatment. In most studies one single session of ESWT was applied. The use of ESWT on hypertrophic and atrophic non-union fractures classically reveals different treatment outcomes. The latter with apparently lower rates in the literature (76% vs 29% in an older meta-analysis). This technique has revealed practically no appreciable side effects, with reports of occasional petechial bleeding and hematomas without clinical impact. It is difficult to draw correlations between different studies, as treatment parameters and post-ESWT immobilization care differ.

Conclusion: ESWT has been shown as a promising treatment approach of non-unions, proving an effective and safe procedure with scarce side effects. Newer studies and generally accepted guidelines for ESWT are necessary to clarify some conflicting details.

Keywords: extracorporeal shockwave therapy, fracture non-union

P-27: THREE YEARS FOLLOW UP OF NEW FRACTURES IN ELDERLY WOMEN WITH OSTEOPOROSIS AND VERTEBRAL FRACTURES

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Serbia

Purpose: Prospective follow up with three years of examination of patients with osteoporosis and vertebral fractures treated with bisphosphonates on the incidence of new fractures.

Method: 77 post-menopausal women older than 65. Upon completed densitometry examination of lumbosacral part of the spine (LS) L1-L4 and the hip, X-ray test of the Th4 – L5 portion of the spine was made, AP and profile, which have been analyzed by semi-quantitative method (Genant,1993); Patients were treated with weekly (82%), monthly (13%) and intravenous (5%) bisphosphonates, 5600 weekly vitamin D3 supplementation and calcium carbonate 500 IU daily. During three years of treatment, follow up was done for vertebral fractures, any new fractures and BMD changes.

Results: Average age of the patients ranged between 70,4±6,8 years, at the beginning, and average age at the end of study ranged between 73±7,2 years. BMI 24.4±5.9kg/m², at the end 22± kg/m², height 155.8±4.5cm, at the end 154±3,2, menopause started 18.9±5.4 years ago. Vertebral fractures were found in 21 patients (27.27%). Symptomatic fractures were reported by 4 (19.04%) 5,1%, patients whereas 17(80.95%) 22,1% patients had the asymptomatic ones. One fracture was registered with 11 (53%) patients, 2 fractures with 6 (29%), and 3 and more with 4 (19%) patients. 1st degree fractures, according to Genant, were found out in 12 (57%), 2nd degree fractures were registered with 8 (38%) patients and 3rd degree fractures with 1(5%) patient. Study was finished after three years, and same diagnostic procedures were made (RTG, DXA). On follow up there were 71 (92,2%)patients, one developed colon carcinoma (1,2%), 2 died from cardiovascular death (2,5), and 3 left study due to gastrointestinal reasons 3,8%. Since it concerns fractures, one had fracture of femur (1,3%), two (2,7%) fractures of radius loco typico, and there were no new vertebral fractures. New fractures occurred in a group which did not have registered vertebral fractures at the beginning of the study. Increase of BMD and Tscore was noticed. The follow up is statistically significant in regard to the beginning on LS 6%, on hip 4% P<0,01.

Conclusion: The results obtained from research indicate a high percentage of asymptomatic vertebral fractures. After three years of treatment with bisfosfonates they had low percent of new fractures, there was increase of BMD registered, no new vertebral fractures, and three new non-vertebral fractures.

Keywords: elderly women, vertebral fracture

P-28: STRUCTURAL DIABETIC NEUROPATHIC FOOT ULCER RISK FACTORS ASSOCIATED WITH ELEVATED FOREFOOT PEAK PLANTAR PRESSURE.

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Spain

Purpose: To hypothesizing that structural diabetic neuropathic (DN) foot ulcer (FU) risk factors are correlated with elevated forefoot (FF) peak plantar pressure (PPP) among persons with diabetes mellitus (PwDM).

Method: A case series study with a 103-PwDM sample, medium age 74 (range: 33-90), 41male, 62 female. Exclusion criteria: previous FU, peripheral artery disease, inability to FF and/or rearfoot support while walking, conditions preventing neurophysiology test conduction. Outcome Measures: foot deformity (FD) – claw/hammer toes -, plantar hyperkeratosis (HK), selected ankle-foot (AF) joints range of movement (ROM) – together considered as structural deformity (SD) -, DN, FF PPP. The BIOFOOT/IBV baropodometric system (BS) was used to measure PPP. A multivariate analysis was performed.

Results: PwDM with SD showed an average both FF PPP increase of 337, 29 (PwDM without DN) – 424,73 (PwDM with DN) Kpa vs those with no SD, right and left (RL) FF p = 0,008 and 0,007, respectively. SD increased RL FF PPP 720,91 Kpa, p=0,006 and 579,41 Kpa, p=0,002, respectively, vs not presenting SD. HK increased RL FF PPP 405,70 Kpa, p=0,008, and 521,08 Kpa, p=0.004, respectively, vs not presenting HK. No significant difference was found regarding single FD+/AF ROM limitation. PwDM with neither DN nor SD average FF PPP was 999,59 Kpa.

Conclusions: SD and HK, the latter as a single FU risk factor, correlated with elevated FF PPP. DN contributed to FF PPP increase. An average 999,59 Kpa FF PPP may be considered as a data to achieve within a preventive approach, in this sample and using BIOFOOT/IBV BS.

Keywords: Diabetes mellitus, diabetic neuropathies, diabetic foot, risk factors, biomechanics

P-29: EFFECTS OF MOBILIZATION WITH MOVEMENT, ACCORDING MULLIGAN CONCEPT, IN TENNIS ELBOW (LATERAL EPICONDYLITIS): A SYSTEMATIC REVIEW.

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Portugual

Purpose: Lateral epicondylitis, also known as tennis elbow or epicondylalgia, is one of the most common lesions in upper limb. Lateral epicondylitis is defined as pain syndrome on lateral epicondyle localized in the insertion or muscular body carpal extensors. The present systematic review aims to reflect on the effectiveness of mobilization with movement as described by Mulligan concept (MWM) in elbow lateral epicondylitis.

Method: Systematic review of the literature indexed in the databases Medline, PEDro, Scielo and Lilacs. To achieve study purpose, only Randomized Clinical Trials (RCT) were included, with participants older than 18; defined as suffering from LE and whose treatment included the MWM. The methodological quality of the included studies was evaluated according to PEDro scale.

Results: The systematic review included 6 studies involving the total of 194 patients, (mean methodological quality of 5.17 on PEDro scale). From the studies included in this review it was found that 3 analyzed the effects of MWM included in a physiotherapy treatment program and 3 as an isolated physiotherapeutic technique. All the studies reported satisfactory results, in short and medium term, regarding pain relief, grip strength and / or functionality.

Conclusions: MWM seems to be effective in the short and medium term in the treatment of Lateral epicondylitis.

Keywords: mobilization with movement, Mulligan concept, elbow, tennis elbow, lateral epicondylitis.

P-30: ENDURANCE EXERCISE, HIGH-IMPACT ACTIVITY AND RESISTANCE TRAINING TO PROMOTE BONE HEALTH IN POSTMENOPAUSAL WOMEN: A REVIEW

J. Cardona

Wales

Purpose: Osteoporosis is a major health concern in women within the menopausal stage which predisposes them to an increased fracture risk. One in three women over the age of 50 will suffer from an osteoporotic fracture globally, with millions being spent in fracture management linked to this silent bone metabolic condition. Exercise is an inexpensive method which can reduce the risk of fractures and healthcare costs postmenopause by boosting or maintaining bone mineral density (BMD). The optimal type and most efficient prescription of physical activity is however still equivocal. Objectives: The aim of this literature review is to attempt to conclude on the most osteogenic type of activity from high impact exercise, low to moderate endurance activity, resistance exercise or a combination in fracture prevention.

Method: Various databases and reference lists within a number of publications published from 2001 to 2016 were analysed. All literature appraised included investigations of the above listed types of exercise performed by postmenopausal women.

Conclusion: The ability of bone to undergo remodelling and osteogenesis under optimal loads allows for the control of low bone mineral density post menopause through exercise. Improvement in BMD may take longer than one year of frequent exercise to be noted. A combination of exercise involving high impact and resistance training with recommended medication produces the best outcomes within a postmenopausal population. Even if no improvement in bone mass is noted in most studies, improved postural control, cardiovascular fitness and balance is adequate to reduce osteoporotic fracture risk through reduction in the number of falls.

Keywords: osteoporosis, post-menopausal, exercise, fracture prevention

P-31: BROWN–SEQUARD SYNDROME DUE TO STAB INJURY: A CASE REPORT

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United Kingdom

Purpose: To describe the mechanism of injury in this case and its clinical features. Magnetic resonance (MR) images in spinal cord injury due to stab wound are discussed.

Method: We describe the case of a 23-year-old gentleman who was stabbed in the right side of his neck and developed left-sided Brown–Sequard syndrome plus loss of bilateral proprioceptive sensation.

Results: MR images showed mild expansion in the C4-5 region of the spinal cord with ill-defined high T2 signal seen within the cord at this level. No definite inter-medullary contusion/haemorrhage was identified. There was high STIR signal in the right para-spinal muscles at C5. A C5 lamina fracture was difficult to appreciate. MR imaging was performed serially at 7 days, 6 weeks, and 3 months after trauma. High signal intensity on T2-weighted images was consistent during the 12 weeks after incidence of trauma.

Conclusion: Spinal cord injuries (SCI) following stab wounds are rare. MR imaging is definitely useful for recording and monitoring the pathology of SCI. Motor improvement was noted between admission and discharge ASIA scoring.

Keywords: Brown–Sequard syndrome, stab injury, MRI

P-32: MEDICAL COMPLICATIONS IN ACUTE SPINAL CORD INJURED UNDERGOING REHABILITATION AT A SPINAL TREATMENT CENTRE IN THE UNITED KINGDOM

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United Kingdom

Purpose: As healthcare professionals caring for individuals with spinal cord injury (SCI) know too well, medical complications can occur and will interfere with treatment programmes and therapy. This can impact outcomes, length of stay and early transfer of SCI patient. We aimed to review morbidity load/secondary medical complications in acute SCI patients undergoing rehabilitation.

Method: Retrospective review of prospectively documented medical complications logbook. Reviewed complications documented between 1st September 2015 and 31st August 2016.

Conclusion: The incidence of DVT/PE is minimal; could be due to awareness and prophylaxis. UTI is commonest; no renal complications documented; could be due to no radiological investigation being organised. These findings indicate and we can speculate that as a result of impetus on early transfer to SCI centre, the rate of complications normally occurring in acute care setting may increasingly be encountered whilst on the SCI centres. Education, anticipation, close monitoring and early intervention can minimise limitations to recovery or functional outcome

Keywords: spinal cord injury, medical complications, complications

P-33: EFFECTIVENESS OF REHABILITATION IN MULTIPLE SCLEROSIS RELAPSE ON SELF EFFICACY

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Serbia

Purpose: Self-efficacy is a belief that one can successfully cope with challenging situations and is found to be a strong predictor of health status in people with multiple sclerosis. It should thus be targeted in rehabilitation programmes. Effectiveness of rehabilitation programmes on SE has not been investigated so far in the context of relapse. The aim of our study was to examine if a rehabilitation programme in addition to high dose methylprednisolone (HDMP) during relapse of disease, influences SE more than corticosteroid therapy alone.

Method: Forty-nine patients diagnosed with relapse of the disease were included and 39 of them completed the study. Patients were randomised in a control group receiving only HDMP and an experimental group that was in addition included in a 3-week rehabilitation programme. The Multiple Sclerosis Self Efficacy Scale was completed at baseline, one and three months later.

Results: The mean self-efficacy for function (MSSEF) and self-efficacy for control (MSSEC) improved significantly in the treatment group after one month (807.1 ± 96.8 , $p=0.005$; 665.3 ± 145.1 , $p=0.05$) and 3 months (820 ± 83.5 , $p=0.004$; 720.0 ± 198.2 , $p=0.016$.) compared to baseline values. In the control group there was no statistically significant change for either MSSEF or MSSEC in both time points. There was no statistically significant difference between groups at any of the follow-up time points.

Conclusion: Rehabilitation started along with corticosteroid treatment induced noticeable changes in self efficacy. However, it seems that therapy input in this form of rehabilitation is insufficient. Thus, further examination of additional rehabilitation strategies is necessary in order to influence improvement of self efficacy in relapse of the disease.

Keywords: multiple sclerosis, corticosteroids, relapse, self efficacy, rehabilitation

P-34: AN INVESTIGATION OF THE PATIENT'S PERSPECTIVE ON THE PHYSIOTHERAPY TREATMENT RECEIVED FOLLOWING A TOTAL KNEE REPLACEMENT SURGERY

K. Cassar

Malta

Purpose: Following total knee replacement surgery (TKR), patients would receive physiotherapy treatment, first at the inpatient setting then at the outpatient one. The physiotherapy management given to patients following a TKR surgery varies according to the patients' needs and limitations. Some participants are currently receiving CPM treatment. Research regarding the effectiveness of the CPM machine is very contradictory, therefore, the patients' perspectives with regards to the physiotherapy treatment received, including the CPM, was investigated in this study using the Knee injury and Osteoarthritis Outcome Score (KOOS).

Method: Twenty-one participants were included in the study. The participants had to satisfy a number of pre-set inclusion criteria. The data was collected on the last day of physiotherapy treatment at the local rehabilitation hospital. All participants had to complete the tool and subsequently the total score of the tool was calculated. The participants in the experimental group were also asked at which stage of the rehabilitation process did they received the CPM treatment and whether they found its use to be beneficial for their health.

Results: Data was then evaluated and the results formulated.

Conclusion: It was concluded that there was no significant difference between the control and the experimental group. Hence it was found that the use of the CPM had no effect on the patient's perspective.

Acknowledgement: Mr. V. Grixti; all participants in this study; the physiotherapist at the musculoskeletal outpatient's department (at the local rehabilitation hospital), Profs. L Camilleri

P-35: EVALUATION OF PAIN, QUALITY OF LIFE AND PATIENT'S SATISFACTION IN PARENTERALLY TREATED PATIENTS WITH POSTMENOPAUSAL OSTEOPOROSIS

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Turkey

Purpose: We aimed to evaluate the effects of parenteral denosumab, zoledronic acid (ZA) and ibandronic acid (IA) on pain, quality of life (QoL) and patient's satisfaction (PS) in postmenopausal osteoporosis.

Method: We retrospectively studied 31 denosumab, 31 ZA, 26 IA prescribed women with postmenopausal osteoporosis who were treated over a year. QoL data were compared with 88 non-osteoporotic controls of concordant age.

Results: The participants' demographics and clinical characteristics were similar. No significant difference in terms of VAS and BPI pain interference scores were found between the patients although denosumab users had a lower mean compared with overall. The BPI pain intensity scores were significantly lower in denosumab ($p=.040$). Patients showed a significantly reduced QoL compared to healthy controls for QUALLEFO-41; Pain ($p=.006$), daily activities ($p=.021$), chores ($p=.00$), mobility ($p=.00$), general health perception ($p=.021$) scores were higher in ZA, but social activity, mental function scores were higher in all patients ($p=.00$). Total scores of Qualeffo were observed higher in denosumab users ($p=.00$). In PSQ denosumab presented higher percentage for treatment satisfaction (%61.3), drug usage form (%74.2), both ZA and denosumab was higher for frequency of drug usage (%58.1).

Conclusion: This study revealed that Denosumab seems to be more convenient administration but further randomized, controlled studies with a large group are needed.

Keywords: osteoporosis, quality of life, pain, patients' satisfaction

P-36: TOEWALKING IN AUTISM SPECTRUM DISORDER (ASD): TREATMENT BY BOTULINIC TOXIN INJECTION

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Italy

Purpose: Autism Spectrum Disorder (ASD) is a prototypic pervasive developmental disorder characterized by social interaction, and communication deficits, repetitive, stereotypic patterns of behaviour, and impairments in language and development. Sometimes motor trouble is present, such as Toe Walking. The aim of this study is to propose a treatment with botulinic toxin injection (BTI) to improve walking performance, modifying peripheral afferences.

Method: Two subjects (5 and 7 years old), suffered by ASD, with associated toe walking were enrolled. Informed consent was obtained by parents, and to both patients a BTI dose has been administered in muscles most involved: calf, and posterior tibialis. Both patients daily performed stretching exercises and manual therapy for 15 days, to improve the botulinic toxin uptake.

Results: After treatment in both patients we observed an improvement of walking, characterized by lost of Toe Walking and recovery of complete foot placement on ground.

Conclusion: Using BTI it was possible alter peripheral stimuli to change the mental representation of the pitch, improve walking performance, facilitate rehabilitation and prevent complications resulting from non-physiological walking. This encourages the use of BTI in the treatment of Toe Walking in ASD.

Keywords: autism spectrum disorder, toe walking, Botulinic toxin injection

P-37: THE VALUE OF PROVOCATIVE TESTS IN DIAGNOSIS OF CERVICAL RADICULOPATHY AND CARPAL TUNNEL SYNDROME

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Serbia

Purpose: This study assessed the accuracy of provocative tests in diagnosis of Cervical Radiculopathy (CR) and Carpal Tunnel Syndrome (CTS), based on an electrodiagnostic reference criterion.

Method: The diagnostic values of Bikele's, Tinel's and Phalen's test were assessed in 182 patients/267 symptomatic limbs who met the electrodiagnostic criteria for CR and CTS, and were classified according to electrodiagnostic findings (CR in 43.44%, CTS in 18.73%, and simultaneous presence of CR and CTS in 37.83% of cases).

Results: There was no significant difference in Bikele's test findings in relation to the final diagnosis ($p=0,060$). Sensitivity of the Bikele's test for the diagnosis of CR in our study was low (13%), with high specificity (83%). Between the groups of patients with CTS, isolated or combined with CR, there was no significant difference in relation to Tinel's and Phalen's test findings ($p=0,528$; $p=1,000$). In contrast, comparison between groups of patients with isolated CR and CTS, and between groups of patients with CR isolated or combined with CTS, showed statistically significant difference in relation to Tinel's and Phalen's test findings ($p<0.001$). In our study, the sensitivity of the Tinel's test for the diagnosis of CTS was 58%, and specificity 85%, while the sensitivity of the Phalen's test was 72%, and specificity 91%.

Conclusion: Our results suggest that it is easier to exclude than accurately diagnose CR and CTS based on clinical examination only. Accordingly, in the case of diagnostic doubt, the patient should be referred to neurophysiological evaluation.

Keywords: Bikele's test, Tinel's test, Phalen's test, cervical radiculopathy, Carpal Tunnel Syndrome

P-38: EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVES BASED ON EVIDENCE

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Spain

Purpose: Extracorporeal shock wave therapy (ESWT) has been successfully used for over 20 years to manage a variety of orthopaedic conditions. The objective of this review is to identify the evidence for effectiveness of extracorporeal shock waves (ESWT) in the treatments Inflammatory and calcifying diseases of the soft tissues and to verify the capacity of this therapeutic technique to diminish pain.

Method: A thorough search of the literature was performed to identify studies of adequate quality to assess the evidence base for shockwave therapies on pain in specific soft tissue injuries. The systematic review and bibliographic search has included: Medline, Embase, PEDro, Cochrane Controlled Trials Registrar and Cochrane Musculoskeletal Review Group Specialised Trials Database from 2000 to May 2007

Results: Articles of musculoskeletal pain treatment and with ESWT were included: plantar fasciitis 15 (effectiveness 11, not 3 and doubt 1); radial epicondylitis 10 (effectiveness 7, not 1 and doubt 2); ulnar

epicondylitis 2 (effectiveness 2); calcifying tendinitis of shoulder 9 (effectiveness 9); not calcifying tendinitis of shoulder 4 (effectiveness 1, doubt 3); non-union chronic achilles tendinopathy or delayed 2 (effectiveness 2).

Conclusion: ESWT has been proven as effective and safe non-invasive treatment option for tendon and other pathologies of the musculoskeletal system in a multitude of high-quality randomized controlled trials. At present there is evidence for the effectiveness of ESWT in: plantar fasciitis, radial epicondylitis, ulnar epicondylitis, calcifying tendinitis of shoulder, chronic achilles tendinopathy and non-union or delayed fractures. There is low level evidence in non-calcific rotator cuff disease

Keywords: extracorporeal shock waves, evidence, rehabilitation

P-39: THE IMPORTANCE OF PHYSICAL THERAPY FOR IMPROVING THE BALANCE IN PATIENTS WITH KNEE OSTEOARTHRITIS.

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Purpose: The objective of this study is to demonstrate the importance of physical therapy to improve balance and reduce the risk of falls in patients with knee osteoarthritis.

Method: 21 patients mean ages 61 ± 7.57 were included in this prospective study. Risk of fall was assessed using Tinetti Falls Efficacy Scale (TFES) and Five Times Sit to Stand Test (FTSST). All patients were treated with physical therapy 15 days treatment. Physical therapy programme consisted of magnetotherapy which was applied to the intensity of 3 mT, frequency 20 Hz and a 15-minute daily duration, laser therapy by GaAlAs diode laser of 830 nm, daily dose of 10 J/cm², frequency 3000 Hz the first 3 days and then frequency 2000 Hz and exercise programme for increasing and maintaining range of motion, strengthen the thigh muscles and exercises for improving balance

Results: Mean value of TFES before therapy was 31.81 ± 8.38 , after 23.62 ± 8.74 . Median of FTSST before 20.22 (12.47-45.00) and after 17.36 (10.66-37.09). We found statistically significant difference between mean of TFES before and after therapy ($t = 6.479$, $df = 20$, $p < 0.01$), median FTSST before and after ($V = 231$, $p < 0.01$). There is a significant moderate positive correlation between TFES and FTSST before ($S = 837.09$, Spearman's rank correlation coefficient 0.456 $p < 0.05$) and after therapy ($t = 3.592$, $df = 19$, Pearson's correlation coefficient = 0.636, $p < 0.01$).

Conclusion: Physical therapy reduces the risk of falls in patients with knee osteoarthritis and improves balance during activities of daily living.

Keywords: balance, knee osteoarthritis, risk of falls

P-40: THE OVER-TIME CHANGES OF KNEE MUSCLE STRENGTH AND PAIN PERCEPTION IN RECREATIONAL ATHLETES AFTER KNEE INJURY

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Slovenia

Purpose: The aim of the study was (i) to determine overtime changes of the knee muscle strength and Short Form Health Survey (SF-36) score and (ii) to assess the ability of the SF-36 to predict knee muscle strength improvement during rehabilitation.

Method: 43 recreational athletes after unilateral knee injury took part in an observational prospective study. Toward the end of the outpatient rehabilitation programme they performed isokinetic dynamometry and filled

in the SF-36 before and after 4.1 months of strengthening programme. Improvement was analysed using exact Wilcoxon signed-rank test and objective changes were compared with perceived ones through Pearson correlation (r) and Receiver operating characteristic (ROC) analysis.

Results: Peak torque deficit (PTD), dynamic control ratio (DCR) of the injured knee, the SF-36 Physical Health subscales (except General Health) significantly improved ($p \leq 0.001$) after the strengthening programme. On the other hand, DCR of the uninjured knee was initially lower compared to the standard (0.85) and remained unchanged. Recovery of PTD of extensors positively correlated with improvement in Body Pain (BP) subscale score of SF-36 ($r = 0.51$, $p < 0.001$). ROC analysis indicated that reduction of perceived pain by at least 9 points (from 100) predicted at least 10% reduction of extensors PTD. The BP subscale overtime change showed poor (56%) sensitivity and high (86%) specificity.

Conclusion: Primary low DCR of knee muscles might indicate increased risk of knee injury. My results also showed that diminished perceived pain predicted injured knee extensors strength improvement with poor sensitivity and high specificity.

Keywords: recreational sports; isokinetic knee muscle strength; risk of knee injury; responsiveness of SF-36

P-41: ONCOLOGICAL REHABILITATION AFTER STROKE. CAN IT BE SUCCESSFUL?

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Purpose: To demonstrate the unique results of one-month multidisciplinary intensive day-rehabilitation programme after recurrent stroke in oncological patient.

Method: A 65-year-old man (LV) underwent laparoscopic pancreatectomy due to adenocarcinoma of the pancreas. Five (5) days after surgery acute ischemic stroke with left hemiparesis occurred and one week later it was followed by a second ischemic stroke with right hemiparesis. The patient was discharged home and arrived at the Multidisciplinary Center of Rehabilitation two (2) months later. At admission, LV was medically stable, but very cachexic, weak and totally dependent. A one-month intensive rehabilitation programme (21 treatment days, 4 one-hour sessions a day) was performed by multidisciplinary team, including a rehabilitation doctor and nurse, a kinesio-therapist, an occupational therapist, a neuropsychologist, a speech therapist and a dietitian. Individual hands-on sessions were combined with technological rehabilitation (Bioness-Vector, Antigravity Alter-G, Armeo-Spring and Virtual Reality).

Results: Despite suffering from severe injuries, significant limitation of activities & participation restrictions, LV showed an impressive improvement through the rehabilitation programme. The FIM increased from 40 at admission to 120 at discharge and the patient returned home as an independent person. LV's walking ability improved dramatically, at the end of the programme he was able to walk independently with a stick, Berg Balance Scale was 44 (2 at admission) and 6 minutes' walk test 300 meters. Motricity index for left hand increased from 50 at admission to 82 and for left leg from 64 to 100. In addition, LV gained 17 kg due to dietitian's intensive management.

Conclusion: A short multidisciplinary intensive programme in a day rehabilitation setting can be extremely successful even in oncological patients after recurrent stroke.

Keywords: Oncological Rehabilitation, Stroke, Day Rehabilitation

P-42: IMPACT OF PHYSICAL THERAPY ON SERUM MAGNESIUM CONCENTRATION AS MARKER OF METABOLIC DEPLETION MYOCARDIAL CELLS IN PATIENTS SUFFERING ACUTE MYOCARDIAL INFARCTION

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Montenegro

Purpose: Magnesium (Mg) is an element with significant roles in fundamental processes of cellular metabolism. It is important as a physiological regulator cardiovascular system especially during ischemia. Enzyme glycogen phosphorylase type bb (GP-BB) is high sensitive and specific as marker of early myocardial ischemia, according to recently published studies. The aim of study was to point out the importance of measuring and monitoring of Mg and GP-BB serum concentration in patients suffering myocardial infarction after moderate intensity exercise.

Method: The study included 20 patients who have had acute myocardial infarct in the past six months. They were divided into two groups: the first group (experimental group) was exposed to moderate intensity exercise and the second group served as control (control group). Applied physical therapy lasted for 3 weeks and entailed a combination of active (strength and aerobic exercise in gym and swimming pool, breathing exercise, walking and bicycling) and passive (massage manual and underwater) procedures. Testing materials were blood samples (5 ml) collected at defined time intervals: 1, 30 and 60 minutes after strenuous exercise (same for control group) and from serum were measured Mg and GP-BB concentration. Obtained results were analyzed using SPSS version 17.0.

Results: Immediately after testing exercise, 1 minute later, there were significantly increased serum concentration of Mg and GP-BB compared to its concentration before exercise ($p<0.001$; $p<0.011$). Obtained serum concentration of Mg and GP-BB after testing exercise were in significantly positive correlation: after 1 and 30 minutes ($p<0.05$; $p<0.01$) and after 30 and 60 minutes ($p<0.05$; $p<0.05$). However, only 1 minute after testing exercise, concentration of Mg and GP-BB were in significant positive correlation ($p<0.05$).

Conclusion: Metabolic depletion of myocardial cells caused by moderate intensity exercise are reversible. Adequate, individually dosed physical treatment and magnesium supplementation is recommended in order to maintain homeostasis of cardiovascular cells through rapid recovery of metabolic intracellular processes in patients who suffered acute myocardial infarction in last six months.

Acknowledgments: Institute "Dr Simo Milosevic" laboratory department

Keywords: physical therapy, acute myocardial infarction and magnesium

P-43: EFFECTIVENESS OF PROPRIOCEPTIVE TRAINING AFTER ACUTE GRADE II SPORT INVERSION ANKLE SPRAINS

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Romania

Purpose: To assess the impact of 4-weeks added proprioception training to a standard physical therapy programme on the pain free active range of motion (ROM) and lower limb functional ability for grade II subacute inversion ankle sprains.

Method: 33 sport players (football, basketball, volleyball, athletes) were randomized in two physical treatment groups without (control group CG, $n=16$) or with proprioception exercises (proprioception group PG, $n=17$: single leg stance initially with, then without additional support, in progression taking away vision, eyes closed, and ankle disk training). After 4 weeks of therapy (T1, physical, electro- and laser therapy), the main outcome

measures were: pain score using VAS, ankle active range of motion (ROM) and Lower Extremity Functional Scale (LEFS) score; the follow-up examination was performed at 4 weeks after the end of therapy (T2).

Results: Activity limitation improved over time for both groups with no statistically significant difference between groups (at 4 weeks follow-up mean PG LEFS score 10.9, 95% CI=7.4-14.4, mean CG score 12.1, 95% CI=8.8-15.4, $p>0.05$). Proprioceptive exercises resulted in greater improvement in plantar dorsiflexion than the application standard physical therapy alone at 4 weeks (mean T1 dorsiflexion of PG 10.6, 95% CI=9.4–11.7, CG 8.4, 95% CI=6.9–9.9, $p=0.01$), and at 4 weeks follow-up (mean T2 dorsiflexion PG 16.2, 95% CI=14.8-17.5, CG mean 14.4, 95% CI=13.1-15.6, $p=0.03$).

Conclusion: Addition of proprioceptive training to a standard rehabilitation programme in the management of grade II ankle sprains was more efficient in achievements of pain-free dorsiflexion and plantar flexion than classical physiotherapy alone.

Keywords: proprioception, ankle sprain, physical therapy

P-44: COMPARISON OF LIFE QUALITY, PAIN INTENSITY AND FATIGUE WITH PATIENTS SUFFERING FROM RHEUMATOID ARTHRITIS AND KNEE OSTEOARTHRITIS

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Serbia

Purpose: Comparison of life quality, pain intensity and fatigue intensity of patients with rheumatoid arthritis (RA) and knee osteoarthritis (OA).

Method: 150 patients have been examined: 75 patients with RA and 75 patients with knee OA. Groups were homogenous regarding gender and age. Life quality has been estimated by means of questionnaire- Short Form Medical Outcomes Instruments (SF 36) SF 36F-physical sphere and SF 36M-mental sphere. Pain and fatigue intensity was estimated by scale VAS.

Results: Average value of SF 36F with patients suffering from RA was 35.62 ± 21.73 and with respect to patients suffering from knee OA it was 61.72 ± 18.85 , $p<0.001$. Average value of SF 36M with patients suffering from RA was 44.79 ± 24.18 compared to patients with knee OA having 68.12 ± 20.77 , $p<0.001$. Pain intensity with patients with RA was 47.79 ± 24.66 compared to patients with knee OA ranging 46.08 ± 18.82 , $p=0.622$. Fatigue intensity with patients suffering from RA was 48.28 ± 25.64 compared to patients with knee OA having 29.23 ± 15.58 , $p<0.001$.

Conclusion: Patients with RA have significantly less quality of life and greater fatigue intensity compared to patients with knee OA. Pain intensity was not statistically significantly different. Although patients with RA have poorer values of quality of life, taking into account a big number of patients with knee OA, a significant implication of this disease is recognised. Pain is a significant predictor of poor quality of life.

Keywords: quality of life, rheumatoid arthritis, osteoarthritis

P-45: NEURO-ORTHOPAEDIC DISORDERS IN CHILDREN WITH CEREBRAL PALSY

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Tunisia

Purpose: The aim of this study was to assess the prevalence of neuro-orthopaedic disorders in children with CP followed in the department of Physical Medicine and Rehabilitation (PRM) of Mahdia and to determine orthopaedic and preventives treatment modalities through a review of the literature

Method: A prospective study conducted during the last four years (2012-2016) on children with CP referred to the PRM department of Mahdia. The assessment was based on physical examination, functional assessment with the Gross Motor Function Classification System (GMFCS) and radiographic analysis (spine and anteroposterior pelvic X-Ray). A rehabilitation protocol was implemented and adjusted according to clinical assessment.

Results: Fifty-two children were enrolled in this study with the mean age of 4 years and a sex ratio (M/F) of 2.2. The most frequent types of CP were quadriplegia (61%) and paraplegia (32%) and the majority of the children were GMFCS level III (42%). Neuro-orthopaedic deformities predominated in the lower limbs mainly in hips (75%) and feet (67%). Spinal deformities were associated in 50% of cases with a scoliosis in 41,4 % of the cases. All the children had benefited from rehabilitation and suitable orthosis. Botulinum toxin injections were prescribed in 92% of the cases. Dislocations were referred to the surgeon.

Conclusion: The orthopedic manifestations of children with cerebral palsy are wide and varied. The underlying injury may result in a loss of selective motor control, an increase in muscle tone, and muscle imbalance, which lead to neuro-orthopaedic deformities. Rehabilitation as well as the Botulinum toxin injections, hold a special place in prevention and management.

Keywords: cerebral palsy, child, orthopaedic disorders, treatment, prevention

P-46: WORK-RELATED SPINE PAIN AMONG PHYSIOTHERAPISTS

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Tunisia

Purpose: The purpose of this study was to determine the prevalence and nature of spine disorders among physiotherapists (PTs) and to explore the influence of personal and professional factors

Method: A self-administered questionnaire (i.e. demographic data, details of work related pain, work setting, and effect on professional activities) was sent to PTs working in the town of Mahdia (Tunisia), either in hospital or private practice.

Results: The 43 respondent PTs comprised 27 females and 16 males (age range 24–54 years). The median of seniority at work was 6 years [1-15 years]. Prevalence of spine disorders was 92.2% with a female predominance (70%). The most common complaint was neck pain (50%) followed by low back pain (33.3 %) and 16.7 % of participants reported middle back pain. Main factors revealed were prolonged standing (50%), treating a large number of patients in a single day and poor posture (41.7%). Discomfort at work was reported in 75% of cases and 25 % of physiotherapists required sick leave.

Conclusion: This study shows the high prevalence rate of musculoskeletal disorders affecting the spine mainly neck and low back pain among PTs. The results confirmed the female predominance reported in the literature. The major risk factors were: lifting, transferring, awkward and static postures, physical load, and intense workload. Mechanical aids used for a patient transfer should be adopted by PTs and new strategies should be developed to reduce their work related spine disorders without compromising the quality of treatment.

Keywords: work, spinal pain, physiotherapists

P-47: TIME OF REHABILITATION IN CHILDREN WITH OBSTETRIC UPPER TRUNK BRACHIAL PLEXUS PALSY

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Turkey

Purpose: Initiation time of rehabilitation in children with obstetric brachial plexus palsy is controversial. The aim of the present study is to evaluate the effect of rehabilitation time to functional outcomes of patients with obstetric upper trunk brachial plexus palsy.

Method: 29 patients who did not receive any rehabilitation programme previously and consulted to our outpatient clinic were included for the study. Electrophysiological findings, obstetric and demographic features of the patients were recorded. Range of motion (ROM) of shoulder, elbow and wrist with muscle strength were evaluated. Modified Mallet Scale (MMS) was used for functional evaluation. 4 weeks of rehabilitation schedule was performed with 2 months interval twice. Patients were divided into 3 groups according to their ages as 1-3 years old (group 1), 3-5 years old (group 2) and 5-7 years old (group 3). ROM, muscle strength and MMS scores of the patients in and between groups before and after rehabilitation programme were evaluated

Results: 2 of 29 patients were girl (6.9%) and 27 were boy (93.1%). All of the 29 patients had right upper extremity palsy (100%). At the end of four months, MMS scores, ROM and muscle strength of upper extremity were improved in all groups compared to the initial evaluation.

Conclusion: Rehabilitation programme is the best choice of treatment before surgical procedures in patients with mild to moderate obstetric upper trunk brachial plexus palsy.

Keywords: brachial plexus, upper extremity, rehabilitation

P-48: THE VALUE OF HYDROTHERAPY IN THE TREATMENT OF FIBROMYALGIA IN MALTA

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Malta

Purpose: The aim of the study is to investigate the effectiveness of hydrotherapy in the treatment of fibromyalgia. It will observe the value of the current hydrotherapy class that is being carried out locally, for patients diagnosed with fibromyalgia, and its impact on the patient's quality of life.

Method: The study is planned to observe the value of current hydrotherapy treatment for 24 participants referred with diagnosed fibromyalgia, recruited from the Rheumatology Unit. As per current practice, they will be randomly assigned into 4 groups of 6, assessed on land by the Rheumatology Unit and referred to the Hydrotherapy Unit. Following the average 6 weeks waiting list time, the same participants will be treated with the current established 6-week hydrotherapy programme for fibromyalgia. The study will not impact the currently established flow of patient treatment, except for a brief FIQR assessment during the first assessment, on the day of the first hydrotherapy appointment and on the day of the last hydrotherapy appointment. The period between the first and second FIQR assessment is designed to be the control, whilst the period between the second and third FIQR is designed to be the test. The proposed Participant Information Sheet and Participant Consent Sheet are detailed and informative, yet easy to understand and address any concerns the participants may have, in full respect of the participant's autonomy. It will be emphasized that participation in the study is entirely voluntary, that the participants are under no obligation to participate, and that they can withdraw at any time without affecting their quality of treatment or rights. Data collected will be stored under password protection, in strict confidentiality, and will be used solely for academic and research purposes. It will be deleted after the completion of the study. The tool chosen for this study is the FIQR. This validated tool is an updated

version of the well-established FIQ that has good psychometric properties, can be completed in less than 2 minutes and is easy to score. It has scoring characteristics comparable to the original FIQ, making it possible to compare past with future FIQR results.

Results: The study has been proposed and permission granted by the Head of the Physiotherapy Department, Mr. Bezzina and Professional Lead Allied Health Practitioner, Physiotherapy Services, Ms. Victoria Massalha. It is currently being evaluated by the RHKG Research Committee, chaired by Dr. Fiorini and RHKG Data Protection Officer, Ms. Messina following which it will be subject to final approval by RHKG CEO, Dr. Zammit. The time frame involved will allow ample time to finalise data collection and evaluation of the results, to participate in the Congress.

Conclusion: The study seeks to examine the value of hydrotherapy in assisting people suffering from fibromyalgia to improve their quality of life, and to evaluate the effectiveness of the local hydrotherapy classes in the treatment of fibromyalgia.

Keywords: hydrotherapy, rheumatology, fibromyalgia, pain, groups

P-49: THE IMPORTANCE OF CARDIAC REHABILITATION, RISK FACTORS FOR ACUTE MYOCARDIAL INFARCTION

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Montenegro

Purpose: Cardiac rehabilitation in patients with acute myocardial infarction(AMI) consists of a combined programme of physical training and modification of coronary risk factors.

Method: The aim is to investigate the prevalence of coronary risk factors in patients with AMI. Cardiac rehabilitation including: physical training and modification coronary risk factors (control of lipid status, hypertension, quit of smoking) which brings to reduction cardiovascular mortality, improve functional capacity, can reduce myocardial ischemia, slowing down progression and encourages reversal coronary atherosclerosis, reduce risk for further coronary event. Many studies show a 20-25% higher rate of survival in patients included in a programme of cardiac rehabilitation.

Results: The study was conducted at Clinical Center Montenegro and included 144 patients. Examined parameters were age, sex, smoking, blood pressure, diabetes, and cholesterol. Patients were divided in two equal groups: group with AMI and control group. Group with AMI which were hospitalized in a coronary unit and diagnosed with AMI. Control group consisted of patients who on examination, based on subjective and objective indicators, did not show clinical sings of ischemic disease. From the examined coronary risk factors in the results of elevated cholesterol and blood pressure were significantly more present in the AMI group ($p=0.044$, $p=0.008$).

Conclusion: In our examination higher rates of cholesterol and blood pressure were more significant then other coronary risk factors. Registering the prevalence of coronary risk factors is an important parameter in the rehabilitation of patients with AMI.

Keywords: coronary risk factors, myocardial infarction, cardiac rehabilitation

P-50: CORRELATIONS BETWEEN FUNCTIONAL STATUS, DISEASE ACTIVITY AND QUALITY OF LIFE IN PATIENTS WITH MODERATE ACTIVE RHEUMATOID ARTHRITIS AFTER BALNEOPHYSICAL THERAPY

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Serbia

Purpose: To analyse the relationships between functional status, disease activity and quality of life in patients with moderate active rheumatoid arthritis after balneophysical therapy applications.

Method: A prospective study was performed in 90 patients treated at Specialized Rehabilitation Hospital 'Bukovicka banja' Arandjelovac, between October 2010 and February 2014. Balneophysical therapy administered for 24 treatments day and involved clay packs -hot or cold for 1-hour, underwater massages and exercises in the mineral water therapy pool 34 °C for 30 minutes, magnetic therapy, interferential current therapy and kinesiotherapy as individual or group exercises. Patients with moderate and low active disease activity treated with stable dose of DMARDs and corticosteroids were included. Research instruments were: DAS28, SF36, HAQ, Wilcoxon Signed Ranks test and nonparametric Spearman's correlation coefficient.

Results: There is a statistically significant correlation between HAQ and DAS28 at discharge ($p = 0.426$, $p = 0.000$), between DAS28 and physical health at discharge ($p = -0.510$, $p = 0.000$), DAS28 and mental health at discharge ($p = -0.494$, $p = 0.000$), between HAQ and physical health at discharge ($p = -0.705$, $p = 0.000$) and HAQ and mental health at discharge ($p = -0.536$, $p = 0.000$).

Conclusions: Low and moderate disease activity has enabled application of balneophysical therapy with favorable effects. There were no side effects nor complications that would require discontinuation of therapy which is results of proper selection of patients, properly dosed balneophysical therapy and stable dose of DMARDs and corticosteroids.

Keywords: balneophysical therapy, correlation, DAS28, SF36

P-51: NEUROPSYCHOLOGICAL DISORDERS, FUNCTIONAL OUTCOMES AND QUALITY OF LIFE IN TUNISIAN TRAUMATIC BRAIN INJURY (TBI) PATIENTS

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Tunisia

Purpose: The assessment of neuropsychological and behavioral disorders outcomes, functional outcomes and quality of life in TBI victims. The aim was also to study correlations between neuropsychological and behavioral disorders with injury severity, functional status and quality of life.

Method: This was a cross-sectional study including 50 patients with TBI conducted in the (PMR) department. Memory disorders were performed by the (MMS) test. Executive functions were evaluated by the DEX scale. The psychological profile was evaluated using the HAD scale and behavioral disorders were tested by the agitated behavior scale. Glasgow Outcome Scale (GOS) has allowed the assessment of TBI severity in terms of disability. Otherwise, functional capacity was measured by FIM scale. Finally, health-related quality of life was measured using the QOLIBRI scale

Results: In this study all patients have benefited for the first time of neuropsychological assessment. Abnormal executive functions were noted in 41 patients (82%) with a DEX average score of $33,20 \pm 22,74$. About psychological profile, depressive symptoms were found in 32 patients (64%). Behavioral disorders such as aggressiveness and agitation were noted respectively in 32 (64%) and 8 patients (16%). The global social functional evolution was considered as unfavorable (GOS 3-4) in 42% of the patients. Regarding to Functional

Independence Measure (FIM) scale, 92% of the victims showed impairment (FIM<126). Memory impairment (MMS/ GOAT) and abnormal executive functions (DEX) were statistically correlated with TBI severity evaluated by Glasgow Coma Scale, and coma length. Our study showed that patients with severe memory impairment (MMS), abnormal executive functions (DEX) and depressive mood (HAD) had significant functional dependence (FIM) as well as a poor overall evolution (GOS).

Conclusion: Executive function disorders, depressed mood and the memory disorders seemed to be the most frequent among neuropsychological disorders in Tunisian TBI patients. We noted that it is so important to evaluate neuropsychological disorders in TBI because they were underestimated.

Keywords: traumatic brain injury, neuropsychological assessment

P-52: NEUROPSYCHOLOGICAL AND BEHAVIORAL DISORDERS OUTCOMES AFTER TRAUMATIC BRAIN INJURY AND THEIR CORRELATIONS WITH RADIOLOGICAL ASPECTS

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Tunisia

Purpose: The assessment of neuropsychological and behavioral disorders outcomes in TBI victims and to study their correlations with radiological aspects in a Tunisian population.

Method: This was a cross-sectional study including 50 patients with moderate or severe TBI conducted in the (PMR) department. Memory disorders, executive functions and psychological profile were evaluated using the MMS, DEX and HAD scales respectively. All of the patients underwent (CT) scan immediately after the trauma. The nature, extent, and location of the traumatic lesions were classified on the basis of the Traumatic Coma Data Bank criteria (Marshall et al., 1983). Magnetic Resonance Imaging (MRI) was not performed to all patients. In fact, it has been done in 14 patients; those who had delayed awakening post artificial ventilation or patients which CT scan results needs further examination by MRI.

Results: There were correlations between the elementary brain injury lesions shown on CT and memory disorders (MMS) especially for temporal ($p<0,05$, $r=0,37$), cortical brain contusion ($p<0,05$, $r=0,39$) and diffuse axonal injury (DAI) ($p<0,05$, $r=0,45$). Furthermore, frontal contusions lesions were correlated with behavior disorders such as agitation ($p<0,05$, $r=0,63$). The highest DEX scores were associated with frontal contusions and diffuse axonal injury but there were not significant correlations. In our study, the extent of CT lesions mentioned by the Marshall classification was not correlated with memory impairment severity (MMS), neither with the achievement of executive function (DEX) nor with behavior disorders (ABS). Lobar white matter abnormalities shown in MRI were correlated with memory disorders (MMS<23) with ($p<0,02$, $r=0,53$).

Conclusion: This study suggests that diffuse axonal injury, temporal and cortical lesions play a part in the development of cognitive impairment after TBI.

Keywords: TBI, neuropsychological outcomes, radiological aspects

P-53: INITIAL MANAGEMENT AND ORIENTATION POST RESUSCITATION CHARACTERISTICS IN TBI VICTIMS

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Tunisia

Purpose: Evaluate the initial means of care and orientation post resuscitation characteristics in TBI victims in Tunisia and to compare them with those used worldwide to identify insufficiency and to perform better care

Method: This was a cross-sectional study including 50 patients with moderate or severe TBI conducted in the (RMR) department between January and July 2016. All patients were contacted by telephone. A minority was already followed in our department. We have established a data sheet for each patient. We collected through it; epidemiological data, clinical data and orientation post resuscitation characteristics.

Results: A total of 50 patients including 40 (80%) male and 10 (20%) female were enrolled with an average age of 32.19 ± 12.37 . Patients were reviewed with an average follow up of 4 years. Referring to the Glasgow coma scale (GCS) in patients during admission, 66% had a severe accident with a score <8 . In our series, we found that only 2 patients (4%) were admitted in a private Physical Medicine and Rehabilitation (PMR) structure; there was no hospitalization in the PMR department of Sfax which does not yet include any hospitalization bed since 1994. The remaining 96% returned to their homes directly after ICU hospitalization. Initial investigations showed that only 36% of these patients had an ambulatory follow up in our PMR department. Their management consisted in botulinum toxin injections (55%), physiotherapy (70%), ergotherapy (14%) and orthophonie (11%). Otherwise, 60% escaped from any assessment and have been reintegrated into their families without follow-up. It should be noted that none of these patients have had a neuropsychological assessment

Conclusion: The discrepancy between the number of TBI cases and follow up by a rehabilitation setup is reported by several studies. Thus, the care pathways of TBI are quite random in our population; they depend not only on the patient's clinical condition but especially on the non availability of beds in our PMR structure.

Keywords: traumatic brain injury, orientation, initial management

P-54: URINARY AND BLADDER DISTURBANCES IN PARKINSON'S DISEASE

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Tunisia

Purpose: To evaluate the prevalence of urinary and bladder disturbances in Parkinson's disease, specify their nature, their impact on the quality of life and their modalities of care.

Method: A prospective study including 25 patients with Parkinson's disease conducted in the Neurology department of Mahdia. Motor disorders were evaluated by the UPDRS III scale, urinary and bladder disturbances by Urinary Symptom Profile (USP) scale and their impact on the quality of life by Ditrovie scale.

Results: The mean age of our patients was 65.9 ± 10.2 years with a sex ratio of 3, 5. The mean age of the voiding disorders beginning was 63.13 ± 12.4 years and the mean UPDRS was 23 ± 17.23 . Urinary and bladder disorders were found in 17 patients (68%). USP total score was $8, 3 \pm 6, 2$. Thirteen (52%) patients had clinical overactive bladder, three (12%) had obstructive signs and one (4%) had stress urinary incontinence. Nocturia was the most common symptom (48%), followed by urgency urinary incontinence (44%) and pollakiuria (36%). USP sub-score of bladder overactivity was positively correlated with age ($p < 0.05$, $r = 0.42$) and disease duration ($p < 0.01$, $r = 0.32$). An impaired quality of life was observed in patients who had urinary and bladder disturbances with a mean Ditrovie score of 4.23. Only five patients (20%) were followed in physical medicine and rehabilitation department for motor impairment, none of them had urinary and bladder symptoms. It should be noted that no patient had an urodynamic assessment. Otherwise, 23% of patients with bladder overactivity (3 patients) were treated with an oral anti-cholinergic drug (ditropan).

Conclusion: Urinary and bladder disturbances in Parkinson's disease may go undetected or remain unrecognized for a long time. Thus, early screening seems necessary for better care.

Keywords: urinary disturbances, Parkinson's disease

P-55: ANKLE SPRAIN IN VOLLEYBALL FEMALE PLAYERS

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Purpose: The most common acute injury in volleyball is ankle sprain. There are limited data about the ankle sprains and muscle strength after injury in female volleyball players. The aim of this study was to investigate correlation between the number of the ankle sprain with the age, height, weight, BMI and strength of plantar and dorsal flexors in female volleyball players.

Method: This study included 25 professional female volleyball players, average age of the $19 \pm 3,4$ years. The number of the ankle sprains, side of the injury, age, height, weight, BMI and the strength of plantar and dorsal flexors using isokinetic dynamometer were tested. The Pearson correlation was used for estimate correlation between these parameters.

Results: The main findings of our study indicate that the number of the ankle sprain on the right side statistically significantly correlate with deficit of the dorsal flexors on the $60^\circ/\text{sec}$ ($r = -0,420$, $p < 0,05$) and on the left side with age ($r = 0,464$, $p < 0,05$).

Conclusion: The results are suggesting that deficit of the dorsal flexors are risk factors for the number of the ankle sprains in female volleyball players on the right side and that age was often associated with the number of injury on the left side in our research. These findings would be important in the planning of the preventive training programmes in female volleyball players.

Keywords: volleyball, ankle sprain, isokinetics

P-56: THE EFFECT OF REHABILITATION IN A PATIENT SUFFERING FROM DIABETES MELLITUS TYPE II

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Serbia

Purpose: To determine the effect of dynamic exercises on tolerance of effort, blood glucose level and ankle brachial index in patients with diabetes.

Method: The research included patients with diabetes. The first group of 30 patients had claudication disorders. The second group of 38 patients was free of claudication disturbances. Patients were analyzed with the following parameters: tolerance of effort (W), length of physical activity test(sec.), glycemic values (mmol / l), values of ankle brachial index before and after rehabilitation treatment.

Results: At the end of the rehabilitation treatment, a statistically significant difference was noted: in the tolerance of physical effort: I 57.00 ± 8.70 ($p < 0.05$), II 75.05 ± 12.55 ($p < 0.001$); In the duration of the test with physical load: I 369.78 ± 98.86 ($P < 0.001$), II 596.80 ± 138.38 ($P < 0.001$); Glycemic values I 7.26 ± 1.85 ($p < 0.05$), II 5.80 ± 1.46 ($p < 0.001$); Values of ankle brachial index: I 0.6 ± 0.07 ($p < 0.05$), II 0.8 ± 0.04 ($p < 0.001$).

Conclusion: Physical activity, as a non-medical therapeutic procedure in the treatment of diabetes and reduction of claudication disturbances, is applied in the form of a specially programmed and repeated exercise. People with diabetes who are physically active on a daily basis have the same oxidative, stressful and working muscular capacity and metabolic response during exercise.

Keywords: diabetes, rehabilitation

P-57: LOSS OF BODY WEIGHT AS A RISK FACTOR FOR COMPRESSIVE NEUROPATHY NERVUS PERONEUS

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Serbia

Purpose: Compressive neuropathy is nerve damage caused by pressure on the nerve due to disproportion between the volume of the peripheral nerve and the space through which the nerve passes.

Method: In acute muscle weakness resulting from peroneal nerve innervation, in the differential diagnostic consideration an important factor is the detailed history that can focus on the compressive neuropathy. Clinical examination and electro diagnostic tests can confirm this. A patient of 64 years old, due to difficulties in walking. On first examination, in objective status, was noted a discreet spasm of paravertebral muscles, mobility of the spine in lumbosacral spine area was satisfactory. Ishiadicusa nerve stretch test and femoral stretch test on both lower extremities were negative. On the right foot strength in myotome L4 and L5 was assessed at 0/5 on MMT and the left 2 – / 5 on the right. Achilles and patellar reflexes bilaterally decreased. From the history it is noted that the patient in the last few months lost 20 kilograms. From diagnostic tests there are: MRI lumbosacral spine indicating polidiscopathia on several levels, EHO abdomen, and blood tests. Electromyoneurography indicates compressive neuropathy nervus peroneus. Therapy: electrical stimulation, magnetic therapy, heat and kinesiotherapy. After the first examination right peroneal orthosis was fitted.

Results: After three months there is improvement and the right to assess -3 / 5 and left 4/5 on MMT test. Walks better, no further use of orthosis.

Conclusion: The rapid loss of body weight may be a risk factor for nerve compression neuropathy.

Keywords: loss of body weight, compressive neuropathy

P-58: EFFECTIVENESS OF ELECTRICAL STIMULATION IN UPPER LIMB SPASTIC SYNDROME OF CEREBRAL PALSID CHILDREN

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Romania

Purpose: To evaluate and compare the effects of electrical stimulation (ES) in the rehabilitation treatment of upper limb spasticity of CP diagnosed children, hypothesizing that ES added to a conventional physical therapy programme will have a superior impact on upper limb functional parameters.

Method: 37 children were included with spastic cerebral palsy (CP), age range 7-14 years; 19 received standard physiotherapy (control group CG: regular stretching, braces, muscle strengthening exercises, myorelaxation laser, pulsed electromagnetic therapy); 18 received surface ES to antagonists muscle in upper extremity in addition to standard rehabilitation, daily, 4 days/week, for 6 months (ESG group). Evaluation was conducted at the therapy beginning (T0), 3 months (T1) and 6 months (T2), by the Modified Ashworth Scale (MAS) for the pectoralis major, biceps brachial, flexor carpi ulnaris, pronator quadrates/teres, and passive range of motion (ROM).

Results: Important differences were noticed in spasticity mean score of elbow flexors at T2 with a value of 2 (CI95% 1.78-2.22) for the ESG comparing with 2.26 (CI95% 2.05-2.47) for the CG after 6 month of therapy ($p<0.05$), and a significant decrease of the average spasticity for the ulnar flexor: ESG mean score 2 (CI95% 1.73-2.27) comparing with 2.47 (CI95% 2.24-2.70) for CG (ESG:CG for T2 $p=0.006$).

Conclusion: ES combined with physical therapy proved to be more effective for spastic upper limb of CP children. The results of this study are encouraging suggesting that the application of electrical stimulation associated with the physiotherapy can modify the spasticity degree for the upper limb involved muscles.

Keywords: electric stimulation, spasticity, cerebral palsy

P-59: BALNEO AND HYDRO THERAPY IN MANAGEMENT OF FIBROMYALGIA

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Montenegro

Purpose: Fibromyalgia (FM) is a disorder characterized by widespread musculoskeletal pain accompanied by fatigue, sleep, memory and mood issues. Balneotherapy (BT) and hydrotherapy (HT) offer interesting treatment alternatives and are commonly used as additional interventions in the management of FM, despite ongoing debate about their efficacy. The aim of this study was to analyse the effect of balneotherapy in the treatment of the patients suffering from FM.

Method: The study included 24 patients who fulfilled the criteria for FM. Applied physical therapy lasted for 4 weeks in the Institute "Dr Simo Milosevic" Igalo, Montenegro and had entailed a combination of active (strength and aerobic exercises in gym and swimming pool, breathing exercises) and passive (peloid application, peloid bath and mineral bubble bath) procedures. Patients were divided into two groups: the first group (thermal TG; n=12), peloid warm to 38-39 °C, and second group (hyperthermal HTG; n=12) with peloid temperature of 41-42 °C. All patients had a clinical examination before and after physical treatment.

Results: Before the balneo treatment widespread musculoskeletal pain (WMP) was reported in 75.7% of the patients. After treatment, WMP was present in only 41% of the patients. Therefore BT and HT significantly reduced WMP ($p<0.05$), also significantly increased the number of patients without pain ($p<0.01$). HTG had achieved significantly decreased WMP in comparison to TG ($p<0.05$).

Conclusion: According to these results, hyperthermal and thermal peloid applications and baths achieved significant analgesic and antispastic effect in patients suffering FM.

Acknowledgement: Institute "Dr Simo Milosevic" Igalo, Montenegro.

Keywords: fibromyalgia, balneotherapy, hydrotherapy

P-60: THE ROLE OF INTERFERENTIAL ELECTRICAL STIMULATION AND DIAPHRAGMATIC BREATHING EXERCISES IN CHRONICALLY CONSTIPATED CHILDREN WITH DYSFUNCTIONAL VOIDING

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Serbia

Purpose: To evaluate the effects of interferential current (IC) stimulation and diaphragmatic breathing exercises (DBEs) in children with dysfunctional voiding (DV) who were chronically constipated.

Method: A prospective, randomized, clinical controlled study enrolled 79 children with DV and chronic constipation. All the children were checked for their medical history regarding urinary symptoms and bowel habits. Physical examination including abdominal and anorectal digital examination were performed. Children kept a bladder and bowel diary, and underwent urinalyses and urine culture, the ultrasound examination of bladder and kidneys and uroflowmetry with pelvic floor electromyography. Eligible children were divided into 3 groups (A, B, C). All groups were assigned education and behavioral modifications. Additionally, group A underwent DBEs and IC stimulation, while group B received DBEs only. In all 3 groups, the treatment was

conducted for 2 weeks in the Clinic. Behavioral modifications and DBEs were continued at home for one month. After this period, all the children had scheduled visit in the clinic and they were reevaluated. Clinical manifestations, uroflowmetry parameters and post voided residual urine were analyzed before and after 6 weeks of therapy.

Results: After the treatment, significant improvement in defecation frequency and fecal incontinence was noticed only in group A ($P<0.001$, $P<0.05$, respectively). These children demonstrated significant improvement in urinary symptoms and post voided residual urine ($P<0.001$, $P<0.05$, respectively). Bell-shaped uroflowmetry curve was observed in 73.3% group A patients ($P<0.001$).

Conclusion: IC stimulation and DBEs are beneficial in chronically constipated dysfunctional voiders. Further trials are needed to define the long-term effects of this programme.

Acknowledgments: This work has been supported by the Ministry of Science and Technological Development of the Republic of Serbia, under the project 43011.

Keywords: chronic constipation, dysfunctional voiding, physical therapy, diaphragmatic breathing exercises, interferential current

P-61: THE EFFECTS OF THE PHYSICAL THERAPY ON THE ELECTRODIAGNOSTIC PARAMETERS OF PATIENTS WITH DISTAL SYMMETRIC SENSORIMOTOR DIABETIC POLYNEUROPATHY

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Serbia

Purpose: To determine the effects of physical therapy on the electrodiagnostic parameters of peroneal and sural nerves (comprising conduction velocities, distal latencies and action potential amplitudes) of patients with distal symmetric sensorimotor diabetic polyneuropathy (DSMN).

Method: The prospective clinical study, conducted in the Center for Physical Medicine and Rehabilitation, of the Clinical Center Kragujevac between September 2012 and November 2013 has included 30 respondents who suffer from the type 2 diabetes mellitus and who have been diagnosed with DSMN based on the clinical symptoms, signs and parameters of the nerve conduction study. Electromyoneurographic testing was performed by the latest-generation appliance (2000) Medtronic Keypoint appliance (Denmark, Skovlunde, www.medtronic.com). With the reception of hospitalised patients and upon the completion of the last (third) diagnostic and therapeutic cycle (after 6 months) an analysis of EMNG sensitive and motor nerves of the lower extremities was conducted (n. peroneus and n. suralis). Each of those 30 patients have been treated with the identical combination of physical agents: pulsed electromagnetic field and kinesitherapy. The study protocol implied that the study had been conducted during three diagnostic and therapeutic cycles, each of which lasted 16 days and the period of time between cycles was 6 ± 1 week (total study duration is six months).

Results: After completion of all three series of the physical therapy, the statistics indicated a significant increase of conduction velocity in n. peroneus – left ($p=0,027$) and n. suralis – both sides (right $p=0,0063$, left $p=0,005$) and a significant reduction of latency for n. peroneus both sides (right $p=0.003$; left $p=0,006$).

Conclusion: Physical therapy causes positive changes of electrodiagnostic parameters: increased conduction velocity through motor and sensory nerves, increased amplitude and shortened latency. The results attained in this research encourage further use of physical therapy agents in treatment of DSMN. The results attained in this research encourage further the use of physical therapy agents in treatment of sensorimotor diabetic polyneuropathy.

Keywords: diabetic polyneuropathy, physical therapy, electrodiagnostics

P-62: DIABETIC AMYOTROPHIC NEURALGIA – A CASE REPORT

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Turkey

Purpose: Amyotrophic neuralgia is an idiopathic and inflammatory neuropathy characterised by acute-subacute onset pain and weakness. It can rarely occur in diabetic patients as a form of diabetic neuropathy. In this study, we aimed to present clinical, electromyographic and radiological features of a case with diabetic amyotrophic neuralgia.

Method: A 58-year-old patient was admitted to the Physical Therapy and Rehabilitation Research and Training Hospital, in Ankara, Turkey, with low back pain. Her medical history revealed that the pain had started a month ago and radiated from the low back to the bilateral hips and left lower extremity significantly. Visual Analog Score (VAS) of low back pain was 100 mm. She specified that her mobility was restricted by muscle weakness and pain. She also reported that she had the diagnosis of diabetes mellitus for ten years.

Results: On physical examination, the movements of the lower back were decreased and painful. The muscle strength of lower extremities was 1+/5 proximally and 2+/5 distally. Tendon reflexes were hypoactive and there was hypoesthesia in the left lower extremity. Electromyographic assessment was compatible with sensory-motor axonal polyneuropathy on lower extremity and diabetic amyotrophic neuralgia. Magnetic resonance imaging (MRI) was used to evaluate the lumbosacral plexus and exclude the differential diagnoses. The MRI findings were reported as both side of the lumbosacral plexus had the same intensity and course. A medical treatment consisting of pregabalin as 150 mg per day was administered to the patient. VAS of pain was decreased to 10 mm after the treatment.

Conclusion: Diabetic amyotrophic neuralgia is a rare complication of diabetes mellitus. Clinicians should take into consideration this pathology in cases who have diabetes mellitus, pain and weakness. Electromyography and MRI findings can be useful in differential diagnoses.

Keywords: amyotrophic neuralgia, diabetes mellitus, pain

P-63: PAINFUL HEMIPLEGIC SHOULDER: CAUSES AND MANAGEMENT

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Tunisia

Purpose: To determine causes, prevention and management of hemiplegic shoulder pain (HSP) through a review of the literature and the experience of the department of Physical Medicine and Rehabilitation (PRM) of Mahdia

Method: Prospective study during the last three years relating to hemiplegic patients after stroke addressed to the PRM department of Mahdia. The assessment was based on clinical examination (assessment of spasticity of the adductors of the arm and elbow flexor according to the modified Ashworth scale, a joint assessment of the shoulder, a pain assessment using visual analogue scale (VAS)) and X-ray analysis (shoulder radiograph with AP view in neutral rotation). A rehabilitation programme was initiated with reassessment after 4 months.

Results: Fifty-seven patients with a mean age of 67 years were collected with a sex ratio (M/F) of 3.4. In 90% of the cases the ischemic stroke has occurred since an average of 4 weeks. The shoulder was affected in 81% of cases: pain (77%) with a mean score (VAS) of 75 mm, a shoulder-hand syndrome (55%) or subluxation (33%). Spasticity of the adductors was found in 35% of the cases. Corticosteroid intra-articular injections were performed in 16% of cases. After 4 months of rehabilitation, there was an improvement in VAS pain with a 20-mm decrease and an improvement in joint mobility.

Conclusion: The painful hemiplegic shoulder pathogenesis remains unclear. It has generated much controversy through literature regarding causes and treatment. Rehabilitation has a crucial role in its management.

Keywords: hemiplegic, painful shoulder, management

P-64: THE ROLE OF “MEMORY HARNESS” FOR SCOLIOTIC POSTURE IN ADOLESCENTS: A RANDOMIZED CLINICAL TRIAL

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Romania

Purpose: Scoliotic posture among adolescents has an extremely high incidence and represents the most common postural disorders of the locomotor apparatus of young school children. Postural status control, bracing and kinetic programme is the mainstay for conservative treatment and prophylactic method for vertebral postural disorders. The aim of our study is to compare the effects of three therapeutic approaches in these young patients in terms of pain and self-control. We take into consideration the literature data about the evidence-based primary care options for dorsalgia and control posture in school children spine deformities.

Method: 90 school children (mean age 16.8 years, 68 % girls and 32% boys) with scoliotic posture were evaluated and randomly assigned to the three groups in accordance to the type of treatment: I (45 adolescents) – only educational programme, II (24 adolescents) – educational and kinetic programme, III (24 adolescents) – educational, kinetic programme and special back brace – a “memory harness”. The kinetic programme was represented by 12 aerobic posture training sessions (3 sessions / week). The global posture of each patient was assessed with GPS-400. Outcome measures were BMI (body mass index), VAS pain, and Arthritis Self-Efficacy Scale (ASES). All assessments were performed pre-post intervention and at six months follow-up.

Results: The first and second groups showed similar decrease in pain on the final assessment. Adolescents with back brace had significant decrease of VAS in final evaluation. The third group also showed significant improvement in ASES score at six months follow-up ($p < 0,01$). All studied adolescents proved great emphasis and understood the role of conscious correction of posture during routine daily living, not only during strenuous exercise periods.

Conclusion: All of the three therapeutic approaches were found to be effective in diminishing pain in scoliotic posture patients with dorsalgia but aerobic training with “memory harness” was found to be more effective in functional and psychological status. Our results confirm the literature data that back brace is an efficient device for posture control and physical activity in adolescents with bad spine posture. It has no adverse side effects, it is low cost, and it confers additional benefits such as postural stability. Back brace and kinetic programme are two devices that are able to prevent the real postural disturbance of vertebral alignment and global posture in school children.

Keywords: scoliotic posture, adolescents, kinetic programme, memory harness

P-65: MORPHOPHYSIOLOGICAL EVALUATION OF PATIENTS WITH DIFFERENT CLINICAL EXPRESSIONS OF OCCULT SPINAL DYSRAPHISM

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Serbia

Purpose: Occult spinal dysraphism (OSD) is considered to be of multifactorial origin. It has different degrees of expression from mild paresis to paralysis. This study aimed to evaluate morphophysiological expressions between OSD patients with different degrees of clinical expression.

Method: 42 patients with OSD were evaluated from the Serbian population. Regarding the degree of clinical expression, the study group was divided into 3: mild, moderate and severe. Presence of 9 homozygous recessive traits (HRT) from head region in each individual was analyzed.

Results: Presence of tested morphophysiological traits was significantly more frequent in patients with severe (Median HRT=5) OSD compared to those with mild (Median HRT= 3) ($p<0.05$) and moderate (Median HRT=4) ($p<0.05$) degrees of clinical expression. There were no significant differences in the presence of tested morphophysiological traits between those with mild and moderate degrees of OSD clinical expression.

Conclusion: The results pointed out that there was an increased homozygosity for tested genes in the group of OSD patients with severe clinical expression.

P-66: ENURESIS IN CHILDREN AS A SYMPTOM OF OCCULT SPINAL DYSRAPHISM

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Serbia

Purpose: Normal miction is the balance between sphincter and detrussor function and is under a person's central nervous system willing control. During maturation of central nervous system there is induction of miction control that is completed until 4 years of age. Among causes of dysphunctional voiding is disbalance in synchronisation between sphincter and detrussor activity. The aim of this study was to evaluate the presence of enuresis as a diagnostic parameter in children with occult spinal dysraphism (OSD).

Method: The prospective longitudinal study included 105 patients diagnosed with enuresis that were treated at the University Children's Hospital in Belgrade, between 2010-2016. Patients ranged between 4 and 13 years. All patients underwent a complete diagnostic protocol for enuresis and only those with non-neurogenic bladder were included. The presence of OSD and detrussor sphincter dyssinergy was evaluated.

Results: From the evaluated group of patients 79 (75.2%) with enuresis were with OSD, 18 (17.1%) detrussor sphincter dyssinergy and 8 (7.6%) of them were diagnosed with an infection.

Conclusion: This study demonstrated that most frequent anomaly associated with enuresis is OSD. Thus it is important to timely evaluate these children in order to prevent possible complications including tethered cord syndrome.

P-67: ELECTRODIAGNOSTIC STUDIES IN CHILDREN WITH TYPE 1 DIABETIC POLYNEUROPATHY

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Serbia

Purpose: In pediatric population there is increase in diabetes type 1 (DT1). Polyneuropathy is one of the most frequent complications in poorly regulated DT1. Early detection of polyneuropathic changes by electrodiagnostic studies (EDS) is of great importance for continuous physical and rehabilitation as well as medical treatment. The aim of this study was to evaluate sensitivity of electrodiagnostic studies in children with polyneuropathy (DT1-P).

Method: We have evaluated 63 patients with DT1-P, age ranged between 8-18 years. The mean duration of DT1-P at EDS was between 12-18 months. All of the patients were clinically assessed and EDS were performed: motoric conduction velocities (MCV), distal motor latency (DML), amplitudes of compound muscle action potential (CMAP), sensory conduction velocities (SCV), amplitudes of sensory nerve action potential (SNAP) and sensory latencies (SL). The following nerves were evaluated: median, ulnar, fibular, tibial and sural nerves.

Results: MCV for fibular nerve were prolonged in 9 (14.3%) patients, for tibial nerve in 5 (7.9%) patients while for median and ulnar nerve MCV were in normative range. DML for fibular nerve were prolonged in 12 (19%) patients, for tibial nerve in 5 (11.1%) patients, for median nerve in 5 (11.1%), while for ulnar nerve values were in normative ranges. CMAP amplitudes for fibular nerve were decreased in 17 (27%) patients. SCV for sural nerve were prolonged in 37 (58.7%) patients, SCV and SL for median nerve in 35 (55.6%) patients and ulnar nerve in 10 (21.3%) patients. SNAP amplitudes for sural nerve were reduced in 11 (17.4%) patients, while for median and ulnar nerve were in normative ranges.

Conclusion: The most frequently affected sensitive nerve was sural nerve and fibular nerve of motor nerves. The most sensitive EDS parameters for DT1-P were SCV and SL. EDS is a sensitive parameter for timely diagnosis of DT1-P and evaluation of disease progression.

Keywords: electrodiagnostic, children, polineuropathy, type 1 diabetes

P-68: THE PRESENCE OF PAIN AT THREE MONTHS FOLLOW UP AFTER DISTAL RADIUS FRACTURE OF FEMALE AGED GROUP PATIENTS

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Serbia.

Purpose: To evaluate pain presence of wrist after distal radius fracture at the three month follow up after fracture

Method: A prospective study was carried out of 40 female patients with distal radius, average age 63.57 ± 13 treated conservatively (cast four weeks and physical therapy (cryotherapy, interferential current of 10 minutes pulsed electromagnetic field of 25 minutes, exercises during 8 to 10 weeks). Patients themselves rated pain by PRWHE (Patient Rated Wrist Hand Evaluation) questionnaire: at rest, when doing a task with a repeated wrist movement, when lifting a heavy object, when it is at worst, how often have pain, on scale 0 to 10 after cast removal and at three months follow up Zero (0) means no pain, and ten (10) means the worst pain ever experienced or could not do activities because of pain.

Results: The average value pain decreased at rest from 2.27 to 0.97, from 5.08 to 2.04 when doing a task with a repeated wrist movement, from 5.57 to 2.07 when lifting a heavy object from 6.52 to 3.82 the worst pain, from 3.98 to 1.72 at frequency of pain after cast removal to three months follow up. The results of all aspects of pain showed statistical significance ($p = 0.000$).

Conclusion: A statistically significant reduction of pain was found at three months follow up of distal radius fracture. Presence of pain means that distal radius fracture affects quality of life of aged population, decreasing independence in activity of daily life. Also, have great impact on society at all increasing medical care expenses regarding increasing incidence of distal radius fracture of aged population at last decades epidemiology of fracture.

Keywords: pain, distal radius fracture, PRWHE questionnaire

P-69: REHABILITATION GUIDELINE FOR OSTEONECROSIS OF THE FEMORAL HEAD

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Romania.

Purpose: The purpose was the development of a guideline of operational standard procedures in rehabilitation of osteonecrosis of the femoral head.

Method: After a detailed bibliographic search we have done an analysis of the current scientific and clinical information and accepted approaches on the matter. Then we created a prototype protocol that included: the rationale for each procedure, role of medical diagnosis and functional assessment, preliminary recommendations, rehabilitation timing and methodology (steps), early postoperative exercises and prevention of complications, intermediate exercise programme, advanced exercises and activities, communication with patients. For each procedure there is a correspondent video, capturing in real practice the manoeuvres presented in the guide, enabling the user to watch the procedure that is presented in the text and ensuring a better connection between knowledge and skills development.

Results: The guide, in which the recommendations associated with each procedural step are aligned to the existent medical evidence, is accompanied by the correspondent videos and is available on Cor-skills web site <https://www.cor-skills.org/>.

Conclusion: Rehab guideline for osteonecrosis of the femoral head is an online information resource designed to help medical doctors- trainees and specialists in Physical and Rehabilitation Medicine and therapists to provide an improved rehabilitation programme based on best practices and evidence-based research.

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Keywords: rehabilitation, guideline, osteonecrosis, femoral head

P-70: THE EFFECTS OF BALNEO-PHYSIOTHERAPY IN PATIENT WITH ANKYLOSING SPONDYLITIS IN THE INSTITUTE 'DR SIMO MILOSEVIC' IGALO- MONTENEGRO

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Montenegro

Purpose: Objective was to investigate the effect of physiotherapy as non-pharmacological therapy in patients with ankylosing spondylitis.

Method: A total of 72 patients were enrolled, 75% male patients and 25% female patients, who fulfilled ACR criteria for AS were on 4 week rehabilitation and physical treatment in Institute „Dr Simo Milosevic “Igalo. The average age was 53 (25-71). Applied physical therapy have entailed a combination of active (mobilising and strengthening exercise in gym and swimming pool, breathing exercises and brisk walking) and passive (peloid application, jacuzzi, massage-manual and underwater and electrotherapy) procedures. The participants were evaluated clinically before and after rehabilitation period (week 0 and 4). The treatment response were measured by ASDAS score.

Results: At the beginning of rehabilitation (0 week) we had 13,64% patient with moderate disease activity (MDA), 27,27% patient with high disease activity(HDA) and 59,09% very high disease activity (VHDA). After 4 week of physical treatments there was a significant reduction ($p<0,001$) in the number of patients with high disease activity and very high significant improvement ($p<0,0001$) in the number of patients with moderate disease activity (MDA= 59,09%; HDA=36,36%; VHDA=4,55%). Clinically important improvement had a 47.73% patient.

Conclusion: Applied physical therapy modalities led to a significant improvement in diseases control in AS and general health condition. As physical medicine has an important role in non-pharmacologic treatment of AS, implementation of a regular balneo-physiotherapy treatment once a year is strongly recommended.

Keywords: ankylosing spondylitis, physical therapy, ASDAS score

P-71: THE MANAGEMENT OF LUMBAR SPINAL STENOSIS IN PHYSICAL AND REHABILITATION MEDICINE

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Tunisia

Purpose: The purpose of this study is to describe the epidemiological, radiological and clinical profile of lumbar spinal stenosis (LSS) in a Physical and Rehabilitation Medicine (PRM) department and to determine the therapeutic modalities.

Method: A retrospective study carried on the records of patients with LSS referred to the PRM department of Mahdia, from July to December 2016. Demographic data, clinical, radiological and therapeutic modalities were studied.

Results: Thirty-two patients were included (21 women and 11 men), with a mean age of 57 years. The majority of the patients (47%) were unemployed and only 25% were classified as having a profession at risk. Radiculalgia was the most common symptoms (78%): unilateral in 14 cases and bilateral in 13 cases with a limitation of the walking distance in 50% of cases. Chronic low back pain was found in 27 patients, with an average duration of evolution of 30 months. The physical examination revealed a postural syndrome in 75% of the cases, a spinal syndrome in 54% of the cases and a radicular syndrome in 46% of the cases. Neurological signs (muscular deficit or anomalies of osteotendinous or cutaneous reflexes) were noted in 17.3% of the cases. The lumbar spine X-Rays revealed indirect radiological signs of LSS in 87.5 % of the cases. A lumbar scan was realized in 43.7% of the cases and a magnetic resonance imaging to 4 patients, confirming the LSS. All patients had medical treatment associated with a rehabilitation programme. An epidural steroid injection was prescribed to 15 patients and surgery was indicated for 2 patients.

Conclusion: This study concluded that LSS is a common pathology referred to Physical and Rehabilitation Medicine specialists. Its management is multidisciplinary based on the association of medical and physical treatment while surgery is rarely indicated.

Keywords: Lumbar spinal stenosis, Rehabilitation, Management

P-72: COMPARISON OF HAMSTRING AND QUADRICEPS FUNCTIONAL TORK RATIOS IN KNEE OSTEOARTHRITIS

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Turkey

Purpose: We aimed to investigate functional Hamstring/Quadriceps(H/Q) ratio in knee osteoarthritis(OA) and its importance for knee OA.

Method: Twenty healthy women and twenty women with grade 2 or 3 primer knee OA between the age of 50 and 80 were included into the study. We performed power analysis to calculate the sample size. Concentric and eccentric peak torque of quadriceps and hamstring muscles were evaluated for all individuals in patient and control groups with a Cybex isokinetic device. Individuals performed 5 maximal concentric-eccentric extensions and 5 concentric-eccentric flexion for 90°/sn angular velocity. Then functional H/Q ratio is calculated manually.

Results: There was no difference between the two groups for age, weight, height, and body mass index. The values of peak torque of hamstring concentric and eccentric and quadriceps concentric for patient group were significantly lower than the control group ($p < 0,05$). No statistically important difference was found for quadriceps eccentric peak torque between two groups ($p > 0,05$). H/Q ratio for extension in patient group was

significantly larger than the control group ($p < 0,05$). Whereas the H/Q ratio for flexion in patient group was significantly lower than the control group ($p < 0,05$).

Conclusion: This study demonstrated the weakness of quadriceps and hamstring muscles in patients with knee OA. Based on these findings, we recommend that the combination of functional H/Q ratio with hamstring and quadriceps muscles concentric and eccentric strength values will help to analyse the knee functions.

Keywords: hamstring, quadriceps, osteoarthritis, knee, torque ratio

P-73: THE COMPLEX MANAGEMENT OF FIBROMYALGIA FEMALES – A RANDOMIZED CONTROLLED TRIAL.

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Romania

Purpose: Fibromyalgia (FM) – a chronic condition causing pain, stiffness, and tenderness of the muscles, tendons, and joints – affects 2% of adults and represents 10 to 20% of rheumatology outpatients, especially in primary care. The key to unlocking the mystery of FM has yet to be found. Since the symptoms of FM are diverse and vary among patients, treatment programmes must be individualized for each patient. A single blind randomized controlled trial was conducted to evaluate: the correlation between ultrasound exams (US) of three of the tender points in females diagnosed with FM and clinical and functional parameters (pain with algometer and FIQ scale) and the individualized programme efficacy in the rehabilitation of FM patients.

Method: 28 females diagnosed with FM by ACR criteria (average age 45,6 years) were randomized into two groups: group 1 – 16 patients (G1) was treated by complex therapy (patient education, stress reduction, medications, and regular aerobic exercise – 8-week home-training programme), and group 2 – 12 patients (G2) control receiving only pharmacotherapy. Clinical and functional parameters were collected by a physiotherapist and an US examination was performed by a physiatrist within 72 hours of the clinical examination. We performed ultrasonography (the linear sound of 12.5 MHz) of muscle attachments to upper medial border scapula, upper outer quadrant of gluteal muscles and medial fat pad of knee proximal to joint line. All collected clinical data were analysed as raw data, or transformed into binary variables.

Results: The improvements were found FIQ (42.3 % in G1 and 30.3 % in G 2, respectively) ($p < 0.05$) and improvement in G1 was significantly higher than G2 ($p < 0.01$). Pain values reduced in all patients; this reduction was significantly higher in G1. In all studied patients, tender points had specific ultrasound pattern, inhomogeneous hyperechogen aspects in muscle, with variable dimension. We established significant correlation between ultrasound aspects and pain value ($p < 0.01$). Multivariate analysis showed that ultrasound muscle patterns were correlated statistically with functional parameters (FIQ scale scores)

Conclusion: Exercise programme in shorter daily scheme can lead to long-term success in the FM management, especially for quality of life and clinical status. Treatment programmes are most effective when they combine patient education, stress reduction, regular exercise, and medications. US could be successfully used for quantitative evaluation of changes in muscle pattern of tender points in patients with FM, and permits the monitoring of the rehabilitation programme results.

Keywords: fibromyalgia, individualized rehabilitation programme.

P-74: HETEROTOPIC OSSIFICATION

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Bosnia and Herzegovina

Purpose: To present the role of physical medicine in a very difficult case of heterotopic ossification- post traumatic.

Method: Follow-up case presentation. Traumatic fracture of the elbow, with dislocation of proximal ulna, operative treatment, long immobilization, active physical rehabilitation.

Results: Very hard work, Little improvement in functional status. No evidence of good result in physical treatment

Conclusion: There is no evidence of a good result in the case of heterotopic ossification after fracture of the elbow X-ray shows enlargement of extra articular ossification after manipulation.

Keywords: fracture, immobilisation, heterotopic ossification, physiotherapy

P-75: IMPORTANCE OF ULTRASONOGRAPHY IN CARPAL TUNNEL SYNDROME DIAGNOSTICS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Bosnia and Herzegovina

Purpose: Carpal tunnel syndrome (CTS) and rheumatoid arthritis (RA) often overlap in clinical practice. In addition to electromyoneurography (EMNG), there is an increased use of ultrasonography in the CTS confirmation. The aim was to determine the importance of ultrasound diagnostics of CTS in patients with RA.

Method: The study included 50 female patients, mean age 54 years, with RA and suspect CTS. The study was conducted at the Department of Physical Medicine and Rehabilitation "Dr Miroslav Zotović", Banja Luka, Bosnia and Herzegovina. Ultrasonographically median nerve was monitored at the level of the distal radioulnar joint and pisiform bone. The surface marking was the superficial flexor tendon for the index finger. The circumference of the median nerve and its cross-sectional area were calculated automatically by the software. Cross-sectional area ranging between 9 and 15 mm² were considered as nerve enlargement. Ultrasound measurements were followed by standard EMNG. Statistical analysis was performed using IBM SPSS Statistics 20, using methods of descriptive statistics, chi-square test and Spearman's correlation test for the level of statistical significance of 5%.

Results: In majority of patients (70%) ultrasound has detected changes of median nerve. EMNG has confirmed CTS in 38% of patients- 20% had unilateral and 18% bilateral CTS. There was a statistically significant, strong correlation ($r=0.64$, $p=0.000$) between ultrasound and EMNG findings.

Conclusion: Ultrasonographic diagnostic may indicate an edematous change of the median nerve, localize nerve lesion and determine possible causes of the damage. This confirms its importance in the diagnosis of CTS.

Keywords: Carpal tunnel, syndrome, Electromyoneurography, musculoskeletal ultrasound, rheumatoid arthritis

W-01: WORKSHOP 1 - RECENT IMPROVEMENTS IN DIAGNOSIS OF RADICULOPATHIES FROM IMAGING AND ELECTRODIAGNOSIS PERSPECTIVE

I. Yagci

Turkey

Recent improvements in diagnosis of radiculopathies from imaging and electrodiagnosis perspective shall be discussed.

Details of workshop:

- a) General perspective of radiculopathies: clinical assessment – Prof İlker Yagci 30 minutes
- b) Imaging in radiculopathies -interactive session – Dr Tugba Ozsoy Unubol MD 45 minutes
- c) The role of electrodiagnosis - Assistant Professor Dr Ozge Kenis Coskun 45 minutes

W-02: WORKSHOP 2 – MANAGEMENT OF CHRONIC PAIN SYNDROMES AND NEUROPATHIC PAIN: HOW TO MANAGE?

A. Gulseren, E. Giray, Y. Bahar Ozdemir

Turkey

Pain is an unpleasant sensory and emotional experience that can be defined with the existing or potential tissue damage or with the damage. Chronic pain syndromes (CPSs) are complex conditions that present a major challenge to physicians because of their unknown etiology, and poor response to all kinds of therapies. It has been suggested that chronicity should be considered when pain persists longer than the acceptable healing time. The impact of chronic pain on patients' lives varies from minor limitations to complete loss of independence. The rehabilitation of chronic pain syndromes involves physical therapy, occupational therapy, manual therapy, hydrotherapy, cognitive/behavioral therapy, biofeedback, psychotherapy and some new therapies such as functional restoration and neurostimulation. Combination of several methods has been tried, but long-term evidence-based studies are needed for new treatment modalities. Neuropathic pain (NP) has a complex, severe and persistent character with varying intensity and duration changes and it is usually unresponsive to treatment. NP can accompany to many diseases and can also be related with an injury. NP syndromes according to anatomical involvement can be divided into three groups: peripheral nervous system, central nervous system and mixed. Pharmacological and non-pharmacological treatment options have been tried extensively. First-line medication choice in NP includes tricyclic antidepressants (TCAs), serotonin-norepinephrine reuptake inhibitors (SNRIs), anticonvulsants, opioids, cannabinoids and topical agents. Physical therapy modalities such as superficial and deep heat applications, traction, laser, transcutaneous electrical nerve stimulation (TENS), diadynamic and interferential electrical currents are more helpful when combined with therapeutic exercises. As it is well known, the main goals of pain rehabilitation programmes are to reduce pain and the amount of analgesic medication, improve dysfunction, increase quality of life and physical capability. Since the new rehabilitation techniques addresses the cortical neuroplastic changes, their roles in the treatment of NP are being increased. Graded Motor Imagery (GMI) including mirror therapy could be accounted as a new therapeutic method for NP. Psychotherapy, cognitive behavioral therapy (CBT) and relaxation therapy are also recommended. Non-invasive (repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS)) and invasive neurostimulation techniques (i.e. deep brain stimulation (DBS), motor cortex

stimulation (MCS), and spinal cord stimulation (SCS)) are focused on the treatment of NP. Neurostimulation techniques promise hope for the treatment of NP. Cancer is increasingly being viewed as a chronic disease requiring long-term management, and there is a growing need for evidence-based rehabilitation interventions for cancer survivors. In various stages of cancer, the patients can have many physical, functional and psychological problems which are related cancer itself or its treatment. Immobilization, central/peripheral nervous system involvement, myopathy, bone invasion, lymphedema, anemia, psychosocial and sexual problems among the reasons of disabilities can be seen in the cancer patients. Cancer pain is present in 51% of patients (74% in advanced stage) and it effects quality of life and functionality negatively. It has psychological, cognitive and behavioral components. In cancer patients, a) pain related with direct tumoral involvement, b) pain related with cancer treatment (postoperative, postchemotherapy and postradiation problems) can be seen. Rarely, pain is nonrelated to cancer and treatment, it can be seen due to comorbidities, paraneoplastic syndrome or postherpetic neuralgia. Medical treatment in cancer pain differs according to intensity of pain. When it is necessary for functionality, ROM excersises, muscle stretching and strengthening excersises, balance and coordination excersises should be added to treatment programme. Psychological support has several advantages in cancer pain management. It enhances patients' sense of self efficacy, reduce emotional reactions to pain, improve quality of life and increase compliance of cancer patients to all kinds of treatment methods.

W-03: WORKSHOP 3 – MUSCULOSKELETAL ULTRASOUND IN INTERVENTIONAL PHYSIATRY

Prof Levent Özçakar

Turkey

After "seeing is believing", the second rule in musculoskeletal ultrasound is "if you see, you can have access to it". Considering the fact that a wide range of interventions is commonplace in the daily clinical practice of physiatrists, the use of ultrasound guidance is -for sure paramount in our realm.

The process starts with optimal imaging (for better diagnosis and clinical decision making), then comes precise targeting and lastly ends up with close monitoring of treatment outcome.

In this sense, this workshop is planned to give an overall idea of these issues and to provide hands-on practice using different skills of interventional ultrasound.