4th Baltic and North Sea Conference on
Physical and Rehabilitation Medicine

Riga, Latvia
September 16–18, 2015

TABLE OF CONTENTS

Immunology and Rehabilitation  767
Communication in rehabilitation teams  767
Avoiding monoprofessional thinking in teamwork  767
Rehabilitation across borders – round table discussion  768
Communication and assistive devices  768
Acceptance & Commitment Therapy (ACT) as a first line intervention for lifestyle changes to treat and prevent chronic changes  768
Habilitation – transition from childhood to adulthood  769
Robotics and rehabilitation  770
Journal of Rehabilitation Medicine Symposium: Stroke rehabilitation  771
Qualitative research in rehabilitation medicine  771
Dysphagia management  773
Free oral presentations  774
Poster presentations  784
Author index  800
Conference President
Professor Aivars Vētra, Riga

President of Baltic and North Sea Forum
Professor Aivars Vētra, Riga

Vice President of Baltic and North Sea Forum
Professor Kristian Borg, Stockholm

Abstract Review Committee
Jan Ekholm, Kristina Schüldt Ekholm (SE) (chairpersons)
Guna Berzina (LV) (secretary)
Frans Nollet, Katharina Stibrant Sunnerhagen, Michael Quit-tan, Roary O’Connor, Boya Nugraha, Anne Chamberlain, Anita Vētra, Alvydas Jucevičius, Jaan Korgessar, Jan Lexell, Ulrich Smolenski, Jürgen Linder

The conference is organized by
Baltic and North Sea Forum on Physical & Rehabilitation Medicine (BNF-PRM) in cooperation with Riga Stradins University, Karolinska Institutet, Stockholm and Latvian Rehabilitation Board.

Scientific Committee
Chairman:
Kristian Borg (SE)

Members:
Guna Berzina (LV)
Matthias Bethge (DE)
Gunilla Brodda-Jansen (SE)
Anne Chamberlain (GB), Alain Delarque (FR)
Jan Ekholm (SE)
Gunnar Grimby (SE)
Christoph Gutenbrunner (DE)
Galina Ivanova (RU)
Ieva Eglė Jamontaitė (LT)
Alvydas Jucevičius (LT)
Olga Kamaeva (RU)

Carlotte Kiekens (BE)
Jaan Korgessar (EE)
Aleksandras Krisciunas (LT)
Ireneusz Marek Kowalski (PL)
Angela McNamara (IR)
Thorsten Meyer (DE)
Frans Nollet (NL)
Boya Nugraha (DE)
Jozef Opara (PL)
Anselm Reiners (DE)
Tiina Rekand (NO/EE)
Kristina Schüldt Ekholm (SE)
Bengt Sjölund (DK)
Katharina Stibrant Sunnerhagen (SE)
Henk Stam (NL)
Johan K Stanghelle (NO)
Guy Vanderstraeten (BE)
Anthony Ward (GB)
Aivars Vētra (LV)
Anita Vētra (LV)

Local Organising Committee
Chairman:
Aivars Vētra (Chairman), Guna Berzina (Secretary), Anita Vētra, Signe Tomsonie, Daina Šmite, Andreta Slavinska

Congress Organisation
Latvia Tours, Riga

Board of Baltic & North Sea Forum, BNF-PRM
Aivars Vētra (President), Kristian Borg (Vice President), Alvydas Jucevičius, Anne Chamberlain, Ireneusz Kowalski, Gunilla Brodda Jansen, Boya Nugraha.

Advisory Board of BNF-PRM
Christoph Gutenbrunner (Chairman), Jan Ekholm, Kristina Schüldt Ekholm, Alain Delarque, Anthony Ward
Introduction: Epiphyseal fractures of proximal tibia are rare, with an incidence of 0.5–3% of all epiphyseal fractures and they occur mostly in older children and adolescents during sports activities. Case report: A 15-year-old boy was admitted in the emergency department with bilateral knee pain and inability to stand after a jump in a trampoline. There was no significant medical history, including joint or bone pathologies. No previous clinical symptoms of Osgood-Schlatter disease were reported. On physical examination, he had swelling and intraarticular effusion of both knees, with tenderness to palpation. The knees were held in a semiflexed position and any attempt of motion provoked severe pain. No neurovascular deficits were present. X-rays showed bilateral fractures of the proximal tibial epiphysis, classified as Salter-Harris type II on the left tibia and as Salter-Harris type IV on the right tibia. The patient underwent bilateral closed reduction and internal fixation with cannulated screws. Long-leg casts were applied in extension position. Six weeks later, casts were removed and x-rays showed good healing. He presented small effusion of right knee, bilateral pain at femoral quadriceps contraction, bilateral atrophy of femoral quadriceps and sural triceps muscles, limitation of 10° in left knee’s flexion and 20° in right knee’s flexion. He underwent a rehabilitation program, with pain control, passive and active-assisted mobilization, strengthening of quadriceps and hamstring muscles, gait training with progressive weight-bearing and proprioceptive training. Four months later, he reported improvement of pain, but still showed limitation of 10° in right knee’s flexion, with functional repercussion only in squatting. He had no limitations in daily activities. There were no signs of growth disorders. Discussion: While fractures of the infantile and adolescent distal tibia are common, the proximal tibia is rarely involved, due to high intrinsic stability. The mechanism of injury and the type of lesion are age-dependent. In late adolescence a flexion type injury is more usual, because the posterior part of the growth plate is usually closed and the anterior part is still open. Complications and neurovascular injuries are rare, and the result of treatment is generally good.

PP24
DIRECT ELECTRICAL STIMULATION OF THE INJURED ULNAR NERVE VIA ACUPUNCTURE NEEDLES COMBINED WITH REHABILITATION MAY ACCELERATE NERVE REGENERATION AND FUNCTIONAL RECOVERY – A CASE REPORT

You Jen Tang, BM1, Chen-Jei Tai, PhD2
1School of Chinese Medicine, China Medical University, Taichung, Taiwan; 2School of Reproductive Endocrinology, University of British Columbia, Vancouver, Canada

Introduction: Poor function recovery and long time of return to work (RTW) are the most common complaints for those who underwent immediate peripheral nerve repair surgery of upper extremities. Alternating current electrical stimulation (ACES) has been used to manage patients with peripheral nerve injury for the prevention of joint contractures but the nerve regeneration. Many studies already showed good recovery of nerve repair surgeries post direct electrical stimulation in animal and human models. This case study described a 32-year-old male suffering of total rupture of the right ulnar nerve. We used direct ACES and daily rehabilitating activities to see whether the recovery can be improved promptly. Patient case presentation The 32-year-old male suffered of total rupture of right proximal forearm ulnar nerve, and partial rupture of flexors. After 2 weeks of the repair surgery, the wound and the suture sites were in good condition so we started intervention of acupuncture combined with functional trainings. Direct ACES on the route of the injured ulnar nerve were transmitted by the 2 acupuncture needles inserted in the cubital tunnel was applied. Other needles were placed according to the origins and insertions of the muscles. All needles were connected to electrical stimulators as electrodes. We executed these procedures one time per week and daily rehabilitating activities. The Rosén and Lundborg protocol, DASH scores and electromyography were used to measure the outcomes. Discussion: The patient had distal ulnar nerve lacerated and immediate repair surgery. This may explain why the patient returned to the former job in 3 months and achieved satisfactory recovery in 6 months. Two probable mechanisms for the relation between the acceleration of axon regeneration and direct ACES are (1) axon outgrowth across the suture site, and (2) the number of newly regenerated motor units as well as the affiliated axons significant increase. No prominent side effects were found in the treatment course. Conclusion: Direct electrical stimulation of the injured nerve may augment nerve regeneration by three possible mechanisms. Though direct ACES contributed to dramatic effects with minimal adverse in this case, further investigation of treatment protocols and definite mechanism still needs to be established.

PP25
INSTITUTIONALIZED ELDERLY REHABILITATION – EFFECTS ON PHYSICAL FITNESS AND QUALITY OF LIFE

Claudia Alves, Master, Eugénia Mendes, Master, André Novo, Dr, Leonel Preto, Dr
School of Health, Polytechnic Institute of Bragança, Portugal

Physical activity is important for healthy ageing and may help to maintain good function in older age. Institutionalization is often due to functional decline and institutions frequently do not provide activities to maintain or regain functionality. Exercise therapy is an important component of rehabilitation programs for elderly and helps reduce pain, improve joint stability, functional ability, muscle strength and endurance, and aerobic capacity; preventing bone loss and fractures, and improving or maintaining quality of life. This study aims to investigate if a physical exercise program improves self-perception of health status, physical fitness, muscle strength and body composition in a group of institutionalized elderly. A quasi-experimental study was conducted using the Portuguese version of the Short Form-36 Health Survey (SF-36v2), the Rikli Jones Senior Fitness Test, hand dynamometry and bioelectrical impedance before and after a physical exercise program. A total of 20 elderly aged 76.1±8.7 years with 18.3±13.3 months of institutionalization, participated in a two-month of physical exercise program. Results show that scores of SF-36v2 after the program had significantly increased in physical and mental components. They also increased significantly in scales such as physical functioning, bodily pain, vitality, social functioning, general health and mental health. Physical fitness results show that all components improve after the intervention. Noteworthy are aerobic endurance, lower flexibility, superior flexibility and agility, speed and dynamic balance all with statistical significance. An increase in muscle mass and a decrease in body fat, metabolic age, visceral fat and body water was observed, but without statistical significance. Bone mass had no changes. Physical exercise programs can contribute to improve physical status and self-perception of well-being leading to autonomy and confidence in performing daily living activities. In institutionalized elderly population this is a very important step towards independent life.

PP26
EXPERIENCE OF A MOBILISATION AND ACTIVE EXERCISE PROGRAM ON THE RANGE OF MOTION OF BEDRIDDEN PATIENTS WITH DISUSE SYNDROME

Teresa Fernandes, BC1, Eugénia Mendes, Master2, Leonel Preto, PhD3, André Novo, PhD4
1Health Centre, Vinhais, 2Bragança, 3School of Health, Polytechnic Institute of Bragança, Bragança, Portugal

Introduction: Disuse syndrome is a disorder that is most often associated with acute or chronic disease complications. Despite disuse...
syndrome may affect all organs and systems, the impact of range of motion limitations caused by immobility on functional capacity to perform activities of daily living is often very severe. Mobilization and active exercise have beneficial effects that counteract the impact of immobility on the body. **Objective:** This study aims to assess the effect of a mobilization and active exercise program on the range of motion of bedridden patients with disuse syndrome. **Method:** A quasi-experimental pre-post study was developed. The sample consisted of 26 persons that have been bedridden for more than six months at home. A mobilization and active exercise program was designed, fitting patients’ individual needs and implemented 2 times/week for 2 months. Caregivers where trained to transfer the patient from bed to chair and to repeat active exercise every day. Data collection was performed before and after intervention, using the Barthel Index and a goniometer for range of motion evaluation. **Results:** 26 study participants, aged 77.19 ± 11.67 and bedridden for 18 months (18.73 ± 15.25) were enrolled, but only 24 completed the intervention program. There was a minimal difference in the sex distribution with 7.6% more women than men. The results showed a statistically significant increase on range of motion of the shoulder, elbow, wrist, hip and knee. There was significant statistical in plantar flexion but not on the dorsiflexion. Barthel Index score increased significantly (28.65±21.28vs31.46±23.28; p=0.035) after the mobilization and active exercise program. **Conclusion:** A mobilization and active exercise program implemented regularly may contribute to improve range of motion of bedridden patients with disuse syndrome.

**PP27**

**INSTITUTIONALIZED ELDERLY REHABILITATION – IMPROVING BALANCE ABILITY WITH A PLATFORM TECHNOLOGY**

Manuela Pimentel, BC\(^1\), Eugénia Mendes, MSc\(^2\), André Novo, PhD\(^3\), Leonel Preto, PhD\(^4\)

School of Health, Polytechnic Institute of Bragança, Bragança, Portugal

**Introduction:** Ageing is associated with a decrease in the functionality of all organic systems. One factor that affects the quality of life in the elderly is the decrease of balance that sometimes leads to falls and consequently the fear of falling. In this sense, it is essential to try to mitigate this progressive degeneration. Wii is a platform technology and method that can be used to improve balance and to reduce fear of falling. **Objective:** To use in older people the Nintendo Wii platform, and applied in 10 minutes session three times a week for two months. The program consisted of 26 persons that have been bedridden for more than six months at home. The results showed a statistically significant increase on range of motion of the shoulder, elbow, wrist, hip and knee. There was statistical significance in plantar flexion but not on the dorsiflexion. Barthel Index score increased significantly (28.65±21.28vs31.46±23.28; p=0.035) after the mobilization and active exercise program. **Conclusion:** A mobilization and active exercise program implemented regularly may contribute to improve range of motion of bedridden patients with disuse syndrome.

**PP28**

**IMPLEMENTING A PROPRIOCEPTIVE EXERCISE PROGRAM IN ELDERLY**

Sérgio Garcia, BC\(^{1}\), André Novo, PhD\(^{2}\), Eugénia Mendes, MSc\(^{2}\), Leonel Preto, PhD\(^{2}\), Marisa Cunha, MSc\(^{3}\)

School of Health, Polytechnic Institute of Bragança, Bragança, Portugal

**Introduction:** Ageing is associated with a decrease in the functionality of all organic systems. One factor that affects the quality of life in the elderly is the decrease of balance that sometimes leads to falls and consequently the fear of falling. In this sense, it is essential to try to mitigate this progressive degeneration. Wii is a platform technology and method that can be used to improve balance and to reduce fear of falling. **Objective:** To use in older people the Nintendo Wii platform, and applied in 10 minutes session three times a week for two months. The program consisted of 26 persons that have been bedridden for more than six months at home. The results showed a statistically significant increase on range of motion of the shoulder, elbow, wrist, hip and knee. There was statistical significance in plantar flexion but not on the dorsiflexion. Barthel Index score increased significantly (28.65±21.28 vs 31.46±23.28; p=0.035) after the mobilization and active exercise program. **Conclusion:** A mobilization and active exercise program implemented regularly may contribute to improve range of motion of bedridden patients with disuse syndrome.