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CNS-changes, pain and motor dysfunction in complex regional pain syndrome

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Complex Regional Pain Syndromes (CRPS) are characterized by a typical constellation of symptoms: autonomic and inflammatory changes, motor symptoms and sensory disturbances. There is accumulating evidence that the pathophysiology of CRPS may involve changes within the central nervous system (CNS). In this talk functional imaging studies will be presented assessing possible cortical reorganization within the primary somatosensory cortex (S1) in CRPS patients. The distance between the cortical representation of the hand and the lip was found to be markedly decreased on the affected CRPS side compared to the unaffected side. The extent of cortical reorganization was significantly correlated to the magnitude of CRPS pain and mechanical hyperalgesia. In follow up studies it has been demonstrated that these S1 changes are reversible and recover under successful treatment. Recently, cortical activations underlying motor dysfunction of CRPS were investigated. During finger tapping of the affected extremity, CRPS patients showed a significant reorganization of central motor circuits, with an increased activation of primary motor and supplementary motor cortices (SMA). Furthermore, the ipsilateral motor cortex showed a markedly increased activation. When the individual amount of motor impairment was introduced as regressor in the fMRI analysis, it could be demonstrated that activations of the posterior parietal cortices, SMA and primary motor cortex were correlated with the extent of motor dysfunction. In summary, there is accumulating evidence that substantial adaptive changes within the CNS may contribute to the puzzling symptoms of CRPS. Therefore, strategies interfering with maladaptive plasticity may be promising avenues for new treatment strategies.

Rehabilitation of persons with inflammatory rheumatic diseases

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The Austrian national insurance act defines "Rehabilitation" as medical action with the overall aim to reintegrate the health condition of an insured person or his affiliated persons to the extent, that he/ she will be able to find an appropriate place in social life preferably permanently and without support and assistance. Inflammatory rheumatic diseases comprise of various inflammatory diseases of the joints, connective tissues, muscles and blood vessels. The extent of the impairment of a person's functional health with such a condition usually depends on both the activity and the course of the disease. Rehabilitation is regarded as a structured process (Rehab-CYCLE®), which consists of four basic elements (assessment, assignment, realization and evaluation) and aims at optimizing a person's functional health. The concept of rehabilitation is based on an integrative biopsychosocial model which mutually interacts between the person's health problem caused by the inflammatory rheumatic disease, and is related to the impaired structures and functions, limited activities and restricted participation of the person, and his context factors, respectively (ICF, WHO 2001). A comprehensive assessment according to the ICF framework, which is a major core element within the rehabilitation process, is performed either by the rehabilitation doctor himself or under his supervision by the rehabilitation team. The information gathered as well as further ICD based diagnostics performed by the rehabilitation doctor or other MD specialists is intended to realistically estimate the person's rehabilitation potential and ability for rehabilitation. In a patient with rheumatoid arthritis, the following categories should be checked for impairment within the rehabilitation assessment, independently from the course of the disease: within the components of body structures and body functions these are the ICF categories s299, s710, s720, s730, s750, s810, b134, b280, b455, b710, b730, b740, b770, und b780. Limitations in activities and restrictions in participation are likely for the ICF categories d230, d410, d430, d 440, d445, d450, d470, d510, d540, d770, d850, d859, d920, e110, e115, e120, e 355, e540, e570, e580. All, the results from the assessment including the personal and environmental context factors, the ICD based diagnostics as well as the person's needs and demands are required to estimate the rehabilitation potential and – considering the available sources – his rehabilitation prognosis. Patients who are "uncomplex", i.e. impaired functional health is caused by one sole or few diseases only, like this is often the case in patients with rheumatoid arthritis who are younger than 50 years of age, the ICF core sets are a clinically feasible method to identify the respective impairments, limitations and restrictions in a standardized way and to predict a realistic rehabilitation outcome. Considering the resources available, the rehabilitation doctor himself or the rehab team identifies those mediators (e.g. muscle functions, joint function, cardiopulmonary functions, emotional function, coping strategy, etc) for the interventions, which have the highest potential to

solve the problems of the patients with rheumatoid arthritis. According to this procedure an individual rehabilitation plan will be arranged and realized.

In patients with rheumatoid arthritis the problems and rehabilitation targets may vary according to the course of the disease and the impaired structures and body functions, as well as the presence of further diseases. Treatments and interventions frequently included in a rehabilitation plan comprise of drug therapies and procedures intended to alleviate complaints like pain, or to reduce an acute worsening of joint inflammation, physiotherapy, physical modalities, occupational therapy, psychological, and dietary interventions. Identification of the rehabilitation targets, realization and coordination of treatments/ procedures and interventions which may be provided by different rehabilitation professionals and regular patients' evaluations are supervised by the rehabilitation MD. Both these regular evaluations intended to document the patients' rehabilitation progress and the problem oriented team meetings are important variables for the optimization of the rehabilitation program.

Physiology of pain

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Pain is a major symptom of musculoskeletal disorders. Currently clinically relevant pain is classified as either nociceptive when tissue is inflamed or injured, or neuropathic when nerve fibres themselves are damaged. The basic peripheral mechanism of nociceptive pain is the sensitization of nociceptive A - and C-fibres for mechanical, thermal and chemical stimuli. This process of "peripheral sensitization" can be induced by a variety of inflammatory mediators such as bradykinin, prostaglandins, cytokines and nerve growth factor (NGF). These mediators activate receptors in the membrane of the sensory endings of nociceptors and influence through second messengers ion channels which are involved in the transduction of stimuli and the generation of action potentials at the sensory ending. The basic peripheral mechanism of neuropathic pain is thought to be the generation of ectopic discharges either at the site of injury or in the cell body of the injured neurons in the dorsal root ganglion. The generation of ectopic discharges can be produced by altered expression of ion channels in the injured neuron, by an ectopic action of inflammatory mediators in the course of the axons, and by pathological activation via the sympathetic nervous system. As a result of pathophysiological nociceptive inputs nociceptive spinal cord neurons are often rendered hyperexcitable. This creates a process of "central sensitization" in pain pathways. The mechanisms of central sensitization depend on the nociceptive input. Inflammation-evoked central sensitization is mainly produced by an action of excitatory transmitters and mediators in the spinal cord, whereas under neuropathic conditions the loss of inhibitory mechanisms is discussed as a major component of central sensitization. Central sensitization enhances the activation of the so-called pain matrix in the thalamocortical system which generates both the sensory discriminative and the emotional aspects of pain.

Eccentric and conventional strength training in the elderly – functional, structural and molecular adaptations

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Sarcopenia is the age related loss of muscle mass and strength. It can be prevented and/or treated by intense strength training such as conventional resistance training (RET) or eccentric ergometer training (EET). EET is carried out on a motor driven eccentric cycle ergometer where the effort exerted by subjects is matched visually to an eccentric target load. EET has some advantages of particular benefit to the elderly: EET minimizes stress on joints due to the high angular velocity and the inclusion of multiple joints and it allows for high-load muscular training with moderate cardio-pulmonary demand due to the low metabolic costs of eccentric contractions. We hypothesized EET to be favourable for elderly subjects improving strength, coordination and body composition. Furthermore, we expected more pronounced structural and molecular changes with EET than RET. In a three month training study (2*45 min training/week), we compared RET with EET in 62 elderly subjects (81y). RET consisted of four classical exercises for the legs while control subjects performed non-physical computer based cognitive training. Significant improvements in maximal leg strength (+8%) loss of body fat content (-5%) as well as changes muscle fiber content could be recorded exclusively for EET subjects. Relative thigh lean mass was increased with both EET (+3%) and RET (+2%). EET resulted in a robust muscle transcriptome adaptation with an increased expression of repair/remodelling gene-transcripts along with a consistent decrease of metabolic and mitochondrial gene-transcripts. RET resulted in a small transcriptome adaptation with only a few up-regulated gene-transcripts.

An ongoing randomized controlled trial (RCT) of an interdisciplinary return-to-work program in back pain patients

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Forschungsgruppe «Ergonomie und Umwelt»

Aim: We report on an ongoing randomized controlled trial (RCT) testing the effect of an interdisciplinary return-to-work program in back pain patients.

Method: A work hardening and workplace intervention program was established at the University Hospitals in Zurich and Lausanne. Patients are followed for one year or longer. Success will be evaluated by days of absence after one year and the level of reintegration at the workplace. The intervention therapy as well as the control therapy is subject to an economic (cost-benefit) analysis. The RCT started in summer 2007 and patients will be included until middle of February 2009.

First results: Recruitment of cases proved to be difficult, and by December 2008 only 80 patients were included. First results indicate a high success rate of the combined work hardening and workplace intervention program.

Discussion: In Switzerland recruitment of sub-acute back pain patients is only achievable with the collaboration of large companies. Although the top management of many Swiss companies showed very positive attitudes towards the RCT, recruitment of patients was difficult. These difficulties were analyzed by a consulting company and it was revealed that company absence systems were newly installed and were not yet functional, leading to a loss of notification of potential patients. Based on exemplary cases the interdisciplinary return to work program shall be demonstrated. The difficulties encountered when implementing an RCT into industry shall be discussed.

Costs of long term disability in patients with chronic non-specific low back pain – Three year follow-up of a randomized controlled trial

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Objectives: Comparing the costs of a function centred and pain centred in-patient treatment (FCT and PCT) in patients with chronic low back pain (cLBP) over 3 years.

Design: Randomized controlled trial.

Patients: 174 cLBP-patients were randomized to FCT or PCT.

Methods: Direct and indirect costs were recorded by questionnaires sent to health insurances, employers and Swiss Disability Insurance Company.

Results: After three years indirect costs from days lost from work were € 6'354 lower (95% CI –20'892 to 8'392) and direct medical costs were €574 higher in the FCT group (95% CI –862 to 2'011), resulting in a net benefit of €5'780 (95% CI –18'363 to 6'477) in favour of the FCT. Indirect costs counted for € 22'737 in the FCT in the first year and € 49'725 in the second and third year (PCT € 26'601 and € 52'215 respectively). The mean degree of disability pension after three years was 12 percentage points lower in the FCT and average disability pensions were € 3'153 lower.

Conclusion: FCT reduced total costs over the three year follow-up period. The difference in total costs over the whole period amounts to € 5'780 less for the FCT, corresponding to approximately two monthly salaries of an average blue collar worker. In addition FCT also reduced the mean degree of disability pension and disability pension payments.

This work was supported by a grant from the Swiss National Research Foundation (grant NFP 53 405340-111500)

Self-treatment of chronic lower back pain with help of the Internet

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Literature ascribes to the Internet a great potential for helping patients to cope with chronic diseases in their everyday lives. Websites on lower back pain, however, are limited in most cases by an important feature: There often is a gap between the knowledge transferred by the site and its application by the patient – a gap that cannot be closed merely by information supplied on the web. Before this background, the project aimed at finding out to what degree an interactive website (available at www.oneself.ch) that offers users tailored information is an appropriate device for helping patients to cope with chronic back

pain in their everyday lives. The website offers several sections: a library with regularly updated information texts, a radio with short lectures, a gym illustrating exercises, a consultation room with patients' questions and doctors' answers, a section where users can post personal experiences, and a forum and a chat room for asynchronously respectively synchronically exchanging information. The website was operated in Italian and was regularly used, over a period of twelve months, primarily by patients from the Swiss canton of Ticino (N = 748). The intervention was evaluated quantitatively and qualitatively. 83% of the users report that ONESELF has contributed to increasing their knowledge of back pain. 70% of the users said that ONESELF had helped them to cope with their back pain in their normal everyday lives. One third indicated they exercised more since visiting ONESELF. The lessons taught by ONESELF show that new information technology can be effectively used to increase patients' abilities to cope with chronic health impairments.

European standards for the rehabilitation of scleroderma

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Background: Systemic sclerosis (SSc, systemic scleroderma) still has the highest case-specific mortality of any rheumatic disease. SSc is associated with substantial morbidity, and has many detrimental effects on health-related quality of life.

Objective: Early diagnosis and treatment of scleroderma is pivotal for an early and effective integrated approach to clinical management. Paramount in the treatment is the collaboration of an expert multi-disciplinary team with specific expertise in scleroderma, comprising doctors, physiotherapists, occupational therapists, sports therapists, speech and language therapists, dieticians, wound care nurses, as well as creative therapists and clinical psychologists.

Methods: In order to standardize SSc rehab in Europe an initiative has been started in Rheinfelden in November 2008 with 20 experts coming from 8 European countries and from Israel.

Results: Valid data is now available concerning UVA-irradiation, ergotherapy, quality of life, and education. Promising items for future research comprise of IRA-irradiation and lymphdrainage therapy. There is also a need for the development of ICF core sets in scleroderma rehab. The development of European standards for the rehabilitation of scleroderma will be alleviated by an appropriate internet based software solution.

Conclusions: European cooperation between centers with expertise in SSc rehab is necessary and will be carried out by regular expert meetings and ongoing multicenter trials. Moreover, the "Paul-Klee Award" has been established for excellent research focused on topics of rehabilitation of SSc and is conferred annually at the European Expert meeting on the Rehabilitation of Scleroderma.

Return to work

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Since the work from Spitzer 1987 and Abenheim 2000 return to work has become a more important goal in rehabilitation, especially in the rehabilitation of patients with chronic low back pain. As chronic low back pain is one of the most frequent reasons for persistent disability and lost workdays, efforts must be undertaken to increase the return to work rate of these patients.

To achieve this goal patients at risk for persistent disability have to be identified early with an interdisciplinary approach. Beside a careful medical examination patients have to be tested by trained ergonomic specialist to determine the physical capacity regarding work. For this purpose, Functional Capacity Evaluations (FCE) have been developed. FCEs consist of a standardised battery of functional tests that purport to measure a patient's physical ability for work-related activity. Physical capacity as found in the FCE testing is compared to the physical demands required in the patient's occupation. However, it must be stated that it may be questionable that physical factors alone can predict a safe return to work because contextual factors such as the level of education, occupation, income, job satisfaction, state of the economy and geographic location greatly influence a patient's ability to return to work.

After the assessments are done a stringent assignment procedure has to follow and patients should pass an interdisciplinary functional restoration program, if the goal of the therapies is return to work. In several publications and meta-analyses it has been shown that these functional restoration programs may decrease pain and disability and can increase the return to work rate. They are also cost-effective. Nevertheless, until now it is unclear which components of the program and which exercise types are best to achieve the goal of successful return to work. Further research is needed to answer this important question.

WS 8

New Disease modifying anti-rheumatic drugs (for Health Professionals)

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In the treatment of rheumatoid arthritis, ankylosing spondylitis and other arthritides great progress was achieved by new conventional disease modifying anti-rheumatic drugs, the use of combination therapies and especially the introduction of the so-called biologics. These agents are produced by the means of genetic engineering and allow excellent suppression of the disease activity, inhibition of structural damage and improvement or preservation of function. Their major advantages are the fast response and good overall tolerability. Because of the involved risk for infections and the high costs biologics should be reserved for patients who respond poorly to conventional disease modifying anti-rheumatic drugs or do not tolerate them. The changes in disease activity and physical function induced by these new drugs necessitate continuous fast adjustments of the rehabilitation measures. Therefore a tight collaboration between rheumatologist and health professional is mandatory. These new treatments and their impact on rehabilitation will be discussed.

WS 10/18

Mindfulness Based Cognitive Therapy (MBCT)

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Background: Experiences with treatment concepts for groups in the rehabilitation setting – where many (prevalence: 25–40%) suffer from recurrent depressive symptoms.

Objective: To share personal experiences and give an introduction to the group therapy practice of mindfulness based cognitive therapy as well as to discuss the theoretical foundations and practical principles of this approach.

Methods: Health Related Quality of Life (HRQL) measured before and after treatment in an inpatient rehabilitation setting (4 weeks) and 6 months after treatment for 3 different groups of patients (Stress/Depression, Chronic Pain, Obesity).

Results: In our clinic: Best short-term (i.e. 6 months) results with patients suffering from milder stress and depression symptoms, good results with patients with chronic pain and results not better than usual practice with obese patients, approach therefore abandoned for this group.

Conclusions: Good acceptance by patients was observed. Meditation is a technique to be learned (empowerment). Mindfulness can be characterised as paying attention in a certain way: On purpose, in the present moment and non-judgementally. In general MBCT has shown effectiveness in relapse prevention in depression and expands the possibilities of non-medication therapies for depressive symptoms as well as it adds to the variety of group psychotherapies.

WS 15/23

Drug treatment of chronic pain

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Pain is a subjective experience which is influenced by a number of variables that are difficult to control. One of the challenging issues in pain medicine is how to predict an individual's response to pain and analgesics so as to achieve an effective and timely relief of pain. Some of the strategies in pain drug treatment will be presented and discussed at the workshop.

WS 26/34

The importance of a goaling process for return to work during an outpatient work hardening program – a case study

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Background: Work-related musculoskeletal disorders (MSD) are a persistent and expensive health challenge in all industrial countries, including Switzerland. A relatively small group of patients causes high health services costs and long absenteeism from work. Published reviews recommend the intervention strategy Work hardening (WH). WH- programs seek to achieve a balance between the physical and mental demands of the job and the individual's abilities.

Purpose: The primary aim of this study was to improve the understanding of the effects of a goaling procedure during RTW-process. The secondary aim was to analyse the importance of different on work ability affecting factors during WH type of rehabilitation amongst a group of disabled CLBP patients with long term absenteeism due to back pain.

Methods: The cases for our study took all part in ongoing larger RCT. 5 participants from the intervention group suffering chronic low back pain (CLBP) who successfully returned to work after finishing the 8-week WH- program were selected. Data source were focus group outcomes and the individual's WH rehabilitation process reports.

Results: The goaling process enhanced the cooperation between the rehabilitation specialists, employee and employer. Despite the standardised program, it also possible to individualize certain elements in the WH- program supporting the most important on work ability affecting fields. All the case-patients improved their work ability and reached their RTW-goals. An individual follow-up was conducted 4 months after the WH-program and after working during this 4 month period.

Conclusion: The goaling process and its documentation are very important and useful guiding tools during a WH- program to find the best possible solution in order to improve individuals work ability and self-efficacy.

WS 27/35

Interventional pain management on the spine

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Interventional pain medicine in the first place has diagnostic value and may contribute to define the treatment pathway. Subsequently it may result in a minimal invasive therapy or lead to a precise surgical approach. On the other hand it helps to point out an underlying psychiatric diagnosis. Thus interventional pain settings are an integral part of an interdisciplinary multimodal treatment concept. Today we know that neuroplasticity evokes chronic pain conditions such as allodynia, sympathetic maintained pain and spreading of a local pain area. Interventional pain diagnostic requires a precise technique to block nerve conduction administering little amounts of local anaesthetics using fluoroscopy and contrast dye. The aim is to distinguish from peripher to central and from caudal to cranial, resp. plus to determine the quality of pain as nociceptive, neuropathic and sympathetic maintained. The three most common used methods are interlaminar epidural infiltrations, nerve route blocks and infiltration of the facet joints. In numerous cases a single infiltration can help to elucidate the right diagnosis. In others it is the definitive treatment. Especially in chronic pain conditions we have to apply discriminating algorithms which include further well established techniques.

WS 29/37

Workshop «IV-fremde Faktoren»

J. Jeger

MEDAS Zentralschweiz, Luzern

In expert opinions, for the federal social insurances a key question is which factors contribute to the legal definition of disability. In the therapeutic context, doctors are using a bio-psycho-social disease model, whereas in the medicolegal context a bio-psychological disease model is used by the Federal Court (Bundesgericht). Psychosocial and sociocultural factors are not insured as disability and cannot cause a disability pension. These factors are called "IV-fremde Faktoren": In 1981 a leading judgement (Leiturtel) of the Federal Court mentioned three exactly defined factors: age, lacking education and communication problems. A newer leading judgement of the year 2001 extended these factors and added the term "psychosocial and sociocultural factors;" without giving a clear definition of these terms. So doctors and judges do not always mean the same thing by using these words. The Federal Court should give a clearer definition of these terms. The medical definition of disease is wider than the juridical definition. In consequence there exists an insurance-juridical breakage («versicherungsrechtliche Bruchstelle»): Not all patients that are «unable to work» in the treating doctor's view are "disabled" in the view of jurisdiction.

WS 30/38

Back Schools: where do we stand in 2009?

S. Genevay

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The notion of Back Schools was first introduced in the early 80's. At this time it was the first attempt to change our view on low back pain, going from a biomedical concept to a more integrated biopsychosocial perspective. Most of the time Back Schools are given on a short term (2 to 4 sessions) by a multidisciplinary team. It includes some kind of information on the anatomy and function of the back, some ergonomic advices, promotion of exercise and, at time, psychological counseling. Thirty years later the biopsychosocial model is still vivid but the efficacy of Back Schools is seriously put into question (see the European Guidelines for the Management of Chronic Non-Specific Low Back Pain: www.backpaineurope.org). This workshop will analyse the different components of Back Schools and through the light of the current literature and from our personal experiences try to explore major points which could explain the lack of effectiveness. Whatever the context of the participant physician (private practice or part of a multidisciplinary team), this will help shaping new and more potent approaches for these patients.

FM 1

Timed get up and go as a simple predictor of discharge modality in post-acute orthopedic rehabilitation

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Background and objective: We examined the utility of the Timed Up & Go Test (TUG) in the post-acute rehabilitation setting in predicting discharge destination in a cohort of patients after lower extremity orthopedic intervention.

Subjects: 433 rather elderly patients, serially admitted to in-patient rehabilitation after lower extremity intervention (mean 12 ± 7 days from last surgery) of mixed indication, some with revision surgery and with numerous comorbidities (mean 5 ± 2) during the KIQ pilot period for patient-based quality control (mean age 75 ± 12 years, range 24–95). Patients retransferred to acute hospital for serious complications were excluded.

Methods: Time taken to complete TUG at rehabilitation admission and at discharge (mean length of stay 22 ± 9) was measured. Sensitivity and specificity of the TUG-test were calculated at a cut-off of 30 seconds, based on mean values of Hansen et al. (1999) and our own data.

Results: Admission TUG in the whole heterogenic cohort was found to be a sensitive (86.6%) but not specific (40.2%) measure for predicting discharge directly at home or not. Admission TUG in subgroups, namely mixed indication osteosynthesis subgroup (n = 136, mean age 75 ± 14 years) was found to be sensitive (97.3%), but not specific (21.2%), whereas it was highly sensitive (100%) and moderately specific (51.4%) in knee prosthesis (n = 109, mean age 74 ± 10 years). Discharge TUG for the whole cohort, mixed osteosynthesis and knee prosthesis groups showed sensitivities of 71.6%; 89.2% and 66.6%, and specificities of 76.1%; 65.6% and 90.5% respectively. Predictive values were also calculated for subgroups with elective hip prosthesis (n = 127) versus posttraumatic emergency hip prosthesis (n = 61).

Conclusions: The results suggest that admission TUG at the cut-off mentioned can help predicting discharge modality in polymorbid lower extremity patients in a post-acute orthopedic rehabilitation setting and as a simple instrument may assist planning discharge in subgroups, even in the context of restrictive insurance guarantees and different home settings as confounders.

Key Words: Discharge modality; post-acute orthopedic rehabilitation; Timed get up & go.

rehabilitation is required to achieve comparable functional outcomes. Further research is needed to investigate whether different timing, different intensity or different rehabilitation strategy could further improve the outcomes of rehabilitation after THA and TKA.

FM 3

Rehabilitation of low back pain in patients with a Southeast European cultural background – Patient's perspectives on rehabilitation using a constructivist approach

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Background: Previous studies show that function-centered treatment is more effective than pain-centered treatment in reducing work absenteeism. Results are generally poorer in patients with a Southeast European cultural background. This qualitative research explores possible barriers to return to work that are not identified and addressed adequately.

Objective: To explore experiences concerning function-centered rehabilitation in patients from Southeast Europe and to assess health professionals' views.

Methods: Semi-structured interviews were conducted in the patients' native language by a native speaker. Fields of interest covered patients' expectations of treatment, social and work aspects. Furthermore we assessed the view of health professionals by interviews and focus groups.

Results: Patients with a Southeast European cultural background do not consider psychological aspects to contribute to their health problem. Because of their limited knowledge of the German language many patients felt misunderstood by health professionals. Most patients have high treatment expectations and are disappointed that these were not fulfilled. Patients preferred passive treatment and disliked taking responsibility for their own health. Patients experienced a low degree of transdisciplinary individually adapted treatment.

Conclusions: The results suggest, that patients may need more motivational support to participate in active instead of passive treatment, and intensified coordination of transdisciplinary long-term management involving social workers, employers, medical and psychological care – beyond the currently applied therapy. Supported by a grant from the Swiss National Science Foundation (grant NFP 53 405340-111500)

FM 2

Effects of integrated care after primary implantation of hip and knee endoprosthesis

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Background: Multidisciplinary inpatient rehabilitation is usual care in Germany after total arthroplasty. The aim of this study was to assess the effects of integrated care strategy after implantation of hip (THA) or knee (TKA) arthroplasty in terms of their health-related quality of life and functional status.

Methods: Prospective observational study comparing the outcomes of integrated inpatient and outpatient rehabilitation in 57 patients following total hip and 40 patients following total knee arthroplasty (mean age 65.5 years). The primary outcome measures were SF-36, WOMAC and EQ-5D which were self-administered on admission, at discharge and 3, 12 and 18 months after discharge. Longitudinal changes as well as group differences for every point of assessment were computed. For statistical analyses we computed mean values and means of effective thickness for all different time points, each for the whole group as well as for the subgroups.

Results: We found considerable deficits in general (SF-36, EQ-5D) and specific health status (WOMAC) before surgery. Positive longitudinal changes with moderate to large effect sizes were observed for all outcome measures in both groups. There were significant differences between patients with hip arthroplasty and patients with knee arthroplasty, whereby patients with osteoarthritis of the hip show performed better especially at the end of the rehabilitation process. In summary, both groups profited from surgery as well as from rehabilitation.

Discussion: Our study had limitations. The samples were too small to allow generalisation of the results. However, our study shows that integrated care does improve function and participation in these two patient groups. It is an interesting result that patients with osteoarthritis of the knee do not improve as much as patients with osteoarthritis of the hip do. Many other co-variables as BMI, co-morbidities, sex and weight bearing could have confounded results. These seem to be in concordance with the literature showing better outcomes in the THA group at discharge as compared with the TKA group.

Conclusion: THA and THK represent two different states in terms of functional health. Therefore, flexibility in integrated therapy and

FM 4

Outcome and Predictors of early non-response after total hip replacement due to hip OA

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Background: Although total hip replacement (THR) is a highly effective procedure, problems of non-response have been described in the literature.

Objective: To evaluate what percent of individuals undergoing THR are non-responders for function and pain early after surgery.

Methods: The Swiss Hip study is an ongoing prospective multi-centre study. Early outcome at 2 to 5 month after surgery (mean days after surgery: 104, SD 20.8) was assessed for 347 individuals (mean age 70.4 yrs, 50% male). Function and pain were measured using the WOMAC score. Non-response was defined according to the American College of Rheumatology Response Criteria: decline in score of less than 20%.

Results: At 2–5 month of follow-up, 13.3% of individuals were non-responders for either function or pain (6.3% for both function and pain, 10.1% for function alone, and 9.5% for pain alone). Controlling for other covariates, the odds of being a non-responder for pain were 4-fold higher among individuals in the best quartile of pain (WOMAC pain <37) prior to surgery compared to those in the worst quartile (WOMAC pain >64; OR top/bottom = 4.3; p = 0.03). Similarly, those in the best quartile of function (WOMAC function <42) prior to surgery had a 4-fold increased odds of being a non-responder compared to those in the worst quartile (WOMAC function >67; OR top/bottom = 4.4; p = 0.04).

Conclusion: Early non-response to pain or function is present in 13% of individuals undergoing THR. Having good function or low pain prior to surgery may enhance the risk of early non-response.

FM 5

Treatment of the Cervical Spine with the Spineliner®. Comparison of a pilot study with preliminary results of a multicenter study

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Study design: Double-blind, randomized, placebo-controlled trial
Objective: To determine the efficacy of the Oscillating Percussion Technique used by the Spineliner® to treat chronic neck pain.

Summary of background data: Segmental dysfunction with restricted motion is considered to be an indication for manual therapy. Alternatively the Oscillating Percussion Technique analyses vertebral segmental mobility by transmission of percussive impulses. In the therapy mode it achieves resonance between the percussive sensor head and the restricted joint.

Methods: Fifty-one chronic neck pain patients were randomly assigned to two groups. The study group received segmental treatment of the cervical spine according to the results of the Spineliner® examination. The control group received sham-treatment determined by sham computer generated examination findings. Treatment was performed on a single occasion by an orthopedic physician trained in manual medicine. Clinical examinations were performed by a blinded physician, before and immediately after treatment and after one week. The main outcomes included a 1-0-1 numeric rating scale for neck pain and the range of cervical motion with a Goniometer.

Results: As compared with the sham treatment subjects, the patients who received treatment with the Spineliner® showed statistically significant improvements in neck pain and range of motion immediately after the treatment. After one week a slight but not significant improvement of range of motion was found.

Conclusion: Treatment with the Spineliner® is effective in order to improve ROM and to reduce pain as short term effects.

Posters

P 1

Hip abductor control in walking following stroke – the effect of canes, taping and theratogs on recovery of muscle activity

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Background: Canes are commonly used to in post-stroke rehabilitation to enable independent walking although studies have demonstrated a reduction in hip abductor activity on the hemiplegic side during walking with a cane in the unaffected hand. This reduction in muscle activity is contrary to the aims of rehabilitation.

Objective: This study aims to assess alternative treatment options which enable independent walking in stroke patients whilst simultaneously increasing muscle activity in the hemiplegic hip abductors.

Methods: A randomised, within participant, repeated measures experimental study was conducted in a movement analysis laboratory with 13 first stroke patients. Surface Electromyography (EMG) of the Gluteus Medius (GM) and Tensor Fascia Lata (TFL) muscles was collected as subjects walked for six gait cycles 1) without walking aids (baseline) and with 2) hip abductor taping 3) an elasticated hip orthosis (TheraTogs) 4) a cane. Peak EMG was calculated for each intervention and compared as a percentage change to peak EMG at baseline.

Results: Friedmans ANOVA identified significant differences for GM ($p = 0.000$) and for TFL ($p = 0.025$), between baseline and interventions. Wilcoxon Tests identified for GM significant differences between Cane – Baseline- TheraTogs ($p = 0.000$, Effect Size = -0.5), Cane – Baseline- Tape ($p = 0.001$, Effect Size = -0.46). For TFL a significant difference was identified between Cane – Baseline- TheraTogs ($p = 0.009$, Effect Size = -0.37)

Conclusions: Hip abductor taping and TheraTogs significantly increase GM and TFL activity on the hemiplegic side during walking in stroke patients compared to baseline. These interventions are more effective than canes for increasing hemiplegic hip abductor activity whilst enabling independent walking during gait rehabilitation.

P 2

The Western Ontario McMaster Osteoarthritis Index Questionnaire (WOMAC): clinical relevance for physiotherapy

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Background: In accordance with the Swiss Federal Health Insurance Act (KVG), Art. 32, healthcare providers are expected to deliver an effective, appropriate and cost-effective service. Using a goal-orientated and patient-orientated approach, the physiotherapist sets the individual therapy goals together with the patient, after taking the medical history and carrying out a clinical assessment. The Goal Attainment Scaling (GAS) is an established instrument for documenting the attainment of therapy goals. With disorders of the lower extremities, the outcome of treatment is frequently assessed using the WOMAC.

Objective: The aim of the study was to investigate whether the WOMAC delivers comparable information to the GAS, in terms of outcome after treatment.

Methods: This was a retrospective, longitudinal cohort study. The study population included 117 adult patients with complaints of the lower extremities for whom complete GAS and WOMAC data-sets were available. Data collection took place between 2000 and 2004 within the framework of the "Outcome Project" of physioswiss.

Statistics: Spearman Rank correlation coefficients were calculated to examine the relationship between the score differences for each of the WOMAC sub-scales (pain, stiffness and activity (physical function)) and the corresponding GAS score at discharge. Bonferroni corrections were used to correct for multiple comparisons.

Results: There were no significant correlations ($rs < 0.09$; $p > 0.11$) between each of the WOMAC subscales and the GAS.

Conclusion: The results of this study show that the achievement of goals after therapy, as measured with the GAS, is not reflected in the pre-therapy to post-therapy change scores recorded using the WOMAC. As such, the WOMAC can not be considered suitable as a clinically relevant instrument for assessing the achievement of therapy goals in this patient-setting.

P 3

Validation of the International Classification of Functioning, Disability and Health (ICF) Comprehensive Core Set for Osteoporosis: the perspective of physiotherapists

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Objective: The "Comprehensive ICF Core Set for Osteoporosis" is an application of the International Classification of Functioning, Disability and Health (ICF) and represents the typical spectrum of problems in functioning of patients with osteoporosis. The objective of this study was to validate this ICF Core Set from the perspective of physiotherapists.

Methods: Physiotherapists experienced in osteoporosis treatment were interviewed worldwide about the patients' problems, patients' resources and aspects of environment that physiotherapists take care of in a three-round survey using the Delphi technique. Responses were linked by established rules to the ICF.

Results: Fiftyseven physiotherapists in 25 countries in all World Health Organisations' Regions named 816 patients' problems, resources and environmental factors. 160 ICF categories were linked to these answers. Seventeen concepts were linked to the as yet undeveloped ICF component Personal Factors and 9 concepts were found to be not covered by the ICF. Twelve categories are not represented in the "Comprehensive ICF Core Set for Osteoporosis".

Conclusion: The validity of the "Comprehensive ICF Core Set for Osteoporosis" was largely supported by the participants. However, several issues were raised that were not covered and need to be investigated further.

The role of occupational therapy for chronic pain patients – a model

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Chronic pain is known as a complex and subjective phenomenon that challenges health care professionals who coach and support clients with chronic pain. Occupational Therapy has become a respected partner in the multidisciplinary treatment of chronic pain patients, since it was recognised that mind and body are considered as an integrated whole. The core concept of Occupational Therapy is engagement in meaningful occupations (self-care, work/productivity, leisure) as an essential part of human life having the potential to influence health and well-being. In order to realise this assumption within an interdisciplinary team it is essential to know the possibilities and limits of Occupational Therapy.

In this presentation a model of the role of Occupational Therapy in an interdisciplinary pain program will be presented. The core element of the model is the concept of *Occupational Balance*. On the one side there is *Adaptation* of painful, exhausting occupations to fulfil them in a more efficient and satisfying way. On the other side there are the *Resources* of the clients - meaningful occupations done with joy and thus energising them. The model is based on the underlying elements *Volition* (sense of competence, values and interests) and the *environment* (physical, cultural, social and institutional) which are overlapping contents within the interdisciplinary team. The theoretical background of the elements of the model will be presented as well as purposeful suggestions how to implement the model into practice.

P 4

Cervical impairments in patients with unilateral peripheral vestibular hypofunction associated with chronic dizziness – a cross-sectional pilot study

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Background: Patients with vestibular disorders frequently report neck discomfort associated with dizziness. Cervical pain may develop as they stiffen up their neck muscles to avoid head movements.

Objective: This study aims to objectively describe cervical spine findings in patients with unilateral vestibular hypofunction and dizziness using a standardised examination protocol.

Design and methods: The study was conducted with a cross-sectional design. Twenty-three participants were recruited from patients referred to our Center for Vertigo & Balance Disorders. Cervical impairment testing included history-taking, 'static tests' (isometric contraction of neck muscles) and palpation over the facet joints.

Results: Twenty participants complained of current neck discomfort, 15 of these reported a neck complaint history preceding the peripheral vestibular event. Eleven showed positive 'static tests' and 17 cervical pain on palpation. Most frequently, the upper cervical spine as well as all cervical muscle groups were affected. Fisher's exact test revealed a significant correlation between the severity of dizziness and neck complaints ($P = 0.03$).

Conclusions: Neck problems are frequently seen in patients with unilateral vestibular hypofunction and dizziness. Surprisingly, the history of neck problems often dates back to period before the beginning of vestibular symptoms. Despite non-coincidental onsets, there was a strong correlation between severities of neck complaints and dizziness.

P 5

Gait parameters and fall risk in elderly people with osteoporosis: a comparison of two different assessments

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Objective: The goal of this study is to investigate whether measurements of gait parameters can be used to accurately estimate the fall risk of elderly people with osteoporosis, i.e., if a significant correlation between the measurements of gait parameters and the fall risk obtained with the PPA (Physiological Profile Assessment) exists.

Design and methods: This cross-sectional study comprised 19 elderly persons with osteoporosis. A tri-axial accelerometer system recorded the measurements of gait parameters under five different gait

conditions. Fall risk was assessed using the PPA. The correlation between measurements of gait parameters and the fall risk obtained with the PPA was computed with the Pearson correlation coefficient. **Results:** A significant correlation between fall risk and walking speed ($r = 0.5$) was only found in one gait condition (preferred speed on soft rubber walkway and dual tasking). Stride variation, stride duration and step symmetry did not show any significant correlation with fall risk. **Conclusions:** The measurements of gait parameters obtained with a tri-axial accelerometer system and the fall risk of elderly persons with osteoporosis obtained with the PPA don't correlate conclusively. The accelerometer can provide information about dynamic characteristics (cognitive and integrative capabilities) of a patient. Additional assessments are however required for a more accurate estimation of the fall risk.

P 7

Pre-operative, sensory-motor training for patients undergoing total hip replacement: a randomised controlled trial

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Background: Studies to pre-operative force and endurance training programmes show unclear effect.

Objective: The aim of this study was to investigate whether pre-operative, sensory-motor movement training results in improved Physical Function, Quality of Life and Sensory-Motor Function as well as reduced Disability in patients undergoing Total Hip Replacement.

Methods: 80 subjects awaiting Total Hip Replacement (mean age 66.8 ± 10.3 ; 31 women) were recruited 2004–2007. The intervention group undertook a pre-operative 2–6 week home exercise training programme, the control group received no therapy. The Primary Outcome Measure was Physical Function, secondary Outcome Measures were Quality of Life, Disability and Sensory-Motor Function. Outcomes were measured using patient administered generic (SF-36) and disease-specific (WOMAC) questionnaires as well as objectively assessed balance ability (Biodex Balance System). Measurements were taken one day before operation and 10 days, 4 and 12 months following.

Results: The intervention improved Quality of Life (subscale pain; $p < 0.05$) and Sensory-Motor Function (balance ability; $p < 0.05$) compared to no intervention before operation. These effects were lost following surgery. The intervention group estimated Disability ($p = 0.055$) at 4 months more negatively than the control group.

Conclusions: No useful effect was identified for a short-term pre-operative sensory-motor training programme for this study subjects. The intervention appears to have initiated a psychosomatic process. Further studies are needed to assess whether a personalized, ability specific home programme would be more effective. The psychological aspects following Total Hip Replacement need to be considered in such a training programme in order to facilitate coping strategies, reduce unrealistic expectations and increase satisfaction.

P 8

Physical findings in patients after whiplash-associated disorders compared to healthy subjects: a cross-sectional study

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Objectives: The aim of this study was to evaluate typical physical findings (postural dysfunction (PD), pain, range of motion (ROM)) in patients after a whiplash-associated disorder (WAD).

Methods: Patients after a WAD and healthy individuals were manually examined (1 hour) as part of a larger study. 1st. all individuals completed the BDI, a VAS for general pain and a body chart to mark painful body parts and rated pain intensity for each part on a VAS. 2nd. ROM was measured using an ultrasound measurement device (zebris). 3rd. a manual examination was conducted by a physio-therapist: inspection of the spinal column in erect or forward bending position, protraction of the upper cervical part, comparison of scapulae positions, symmetrical movement of the SIPS and mobility while bending the spinal column forward.

Results: For the WAD group 47 patients (mean age 38.6, SD 10.18; 35 females) 1.47 (SD 1.8) years after injury and 24 healthy subjects (mean age 37.4, SD 11.34; 11 females) were recruited. Mean BDI and VAS were scored in both groups: 16.0 (SD 9.36) and 5.4 (SD 2.1) vs. 2.7 (SD 2.7) and 0.5 (SD 1.17). Painful body parts with at least 2.5 point difference on the VAS between both groups were: dorsal area between both scapulae, frontal and dorsal of the skull, both sides of the neck and the shoulder girdle. In ROM measurements, the WAD group reached only 29.4% in bending and 43.4% in extending, 28.3% in rotating and 34.2% in lateral bending of the cervical spinal column compared to healthy subjects. 20 vs. 5 subjects had a protraction of

P 6

the upper spinal column; 33 vs. 17 subjects had position differences of the scapulae; 13 vs. 4 subjects had no symmetrical movement of the SIPS and 30 vs. 11 subjects showed a reduced mobility of the thoracic spinal column while bending forward.

Conclusion: The presented work highlights physical findings in patients after a WAD compared to healthy subjects regarding pain intensity, ROM and PD.

The German version of the whiplash disability questionnaire (WDQ-G): preliminary results of the cross-cultural translation, validation and test-retest reliability

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Background: To use the whiplash disability questionnaire (WDQ) in a German speaking population, the original WDQ was cross-cultural translated and adapted. Afterwards, the WDQ-G was checked for validity and test-retest reliability.

Methods: Based on international guidelines the WDQ was independently forward-translated by three native German speakers. During a first consensus conference one German version was formulated. This German version was independently back-translated by three native English and bilingual grown-up speakers. The original authors were contacted for clarification and approval of the developed versions. For the validation and test-retest reliability study German-speaking inpatients after a whiplash injury completed the WDQ-G, NASS and SF-36 twice within four days after entry in the rehabilitation center.

Results: A random sample (mean age 46.8, SD 10.5; mean WDQ 69.4, SD 24.0; response rate of 34%); rated comprehensiveness and clarity for the title 9.6, for the instruction part 9.3 and for the questions 9.6. Until now 26 patients (mean WDQ-G at entry 77.4, SD 18.9; mean age 43.5, SD 12.9 years; 17 females; mean time after injury 109 weeks; mean pain intensity VAS 5.6, SD 1.9) could be included in the reliability and validity study. Cronbach's alpha indicates a high internal consistency of the WDQ-G (0.85) as well as the Pearson's correlation coefficient a high test-retest correlation of 0.82 ($p < 0.001$). Validity checks with the NASS at entry for subscale pain and function produced a correlation of 0.682 ($p = 0.01$) and for the subscale neurological symptoms 0.423 ($p = 0.05$). Correlations with the eight subscales of the SF-36 at entry show negative correlations ranging from -0.28 to -0.77 ($0.05 > p > 0.01$).

Conclusion: Preliminary results indicate that the WDQ-G is a reliable and valid measurement for patients after whiplash injury.

P 9

Resource activation improves adherence to joint protection in people with rheumatoid arthritis: a randomized controlled trial

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Background: The modern joint protection (JP) concept is an active coping strategy for daily tasks and role performance through the use of alternative methods and assistive devices. Effective JP education must include psycho-educational and individualized approaches. The Pictorial Representation of Illness and Self Measure PRISM assesses a) the individual's burden of illness and b) relevant individual resources, both determining behaviour. This study evaluated the effects of one-to-one JP education, PRISM-based vs. typical practice in RA patients.

Method: An assessor-blinded, multicenter RCT, with assessments at baseline and 3 months. Results: 53 RA patients participated. Compared to the controls ($n = 27$), the PRISM group participants ($n = 26$) improved JP behaviour ($p = 0.02$), arthritis self-efficacy ($p = 0.03$) and JP self-efficacy ($p = 0.05$) and successfully activated their resources ($p = 0.03$), whereas their burden of illness did not change.

Conclusion: An individualized, resource activating intervention may increase intrinsic motivation towards behavioural change, facilitate learning and explain the short-term improvements in JP adherence and self-efficacy among the experimental group.

P 10

EMG based conclusions for an abdominal gentle medical training therapy

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Background: The purpose of this study was to investigate the potential suitability of exercises for an abdominal gentle medical training therapy (MTT). After visceral surgery, for example, abdominal muscle activity has to be decreased during appropriate MTT exercises compared to activities of daily living (ADL).

Methods: During 11 MTT exercises, surface electromyography (EMG) data were collected from the abdominal wall muscles (rectus, obliquus externus, obliquus internus and transversus abdominis) in 20 healthy adults. Three ADL measurements of the abdominal wall muscles served as references (to raise 5 kg off the ground, to get up from a chair, to climb stairs). The measurements of the MTT exercises were carried out at load intensities of 50%, 65% and 80% of maximal strength.

Results: The average differences to the references were: barbell biceps -33% , leg press -21% , barbell lateral 10% , chest press 84% , cable machine cross up 107% , rowing machine 283% , cable cross 882% , cable machine unilateral 1213% , cable machine cross down 5091% , cable machine straight 7604% , pull down 9514% .

Conclusions: The findings of this study indicate that leg press and barbell lateral were most suitable for MTT and could be safely used in patients where the abdominal wall muscles have to be protected. The exercises pull down, cable machine straight, cross down and unilateral, as well as cable cross can not be recommended for a abdominal gentle training. The exercises rowing machine, cable machine cross up, barbell biceps and chest press, on the other hand, could potentially be used for a gentle abdominal wall MTT depending on the tolerance. Further investigations are needed to compare data from healthy volunteers to patients after visceral surgery.

P 11

The use of the ICF Core Sets for medical expertises of patients suffering low back pain and chronic widespread pain

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Background: Medical expertises are essential for the national insurance regulatory authority to decide on granting services regarding entitlement to insurance benefits due to inability to work. There are Swiss guidelines regarding the content of medical reports. It is also generally accepted that the evaluation of functioning is an essential component of appraisals. However, it is still an open question to what extent the standardization and the objectiveness of medical expertises can be improved. The ICF (International Classification of Functioning, Disability and Health) is a framework as well as a common language for describing functioning and disability. ICF Core Sets are lists of disease-specific relevant ICF categories, which can be a useful practicable tool and could support the standardization of the medical expertises.

Objective: The aim of this project is to examine whether the ICF Core Sets for low back pain and chronic widespread pain could serve as a useful basis for medical expertises regarding the patients suffering low back pain or chronic widespread pain.

Method: 150 medical expertises from patients with low back pain or chronic widespread pain, respectively, will be translated into the language of the ICF using a retrospective qualitative study design. For this translation ('Linking') process two specialized physicians from the Academy of Swiss Insurance Medicine (asim) and of the Swiss Paraplegic Research (SPF) will be trained to use established linking rules and will be peer-reviewed by asim and SPF. Afterwards, experts in the field of insurance medicine will decide at a Consensus Conference how far the linking results can be compared with the ICF Core Sets for low back pain and chronic widespread pain.

State of the project: Currently, a total of 300 Swiss medical expertises with low back pain or chronic widespread pain were randomized selected and anonymized according to the appropriate requirements from asim. An Access database was developed for data extraction. The two trained physicians have just begun the linking process.

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P 13

Validation of the ICF Core Set for stroke from the perspective of physical and occupational therapists

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Background: The „ICF Core Set for stroke“ is an application of the International Classification of Functioning, Disability and Health (ICF). It includes 166 ICF categories covering the typical spectrum of problems in functioning of patients after stroke.

Objective: The aim of this study was to validate the ICF Core Set for stroke from the perspective of physical and occupational therapists.

Methods: Physical and occupational therapists experienced in stroke treatment were asked about the patients' problems commonly treated by their profession in two separate three-round electronic-mail surveys using the Delphi technique. The participants were requested to list all the patients' problems, patients' resources and aspects of environment treated by their profession. Responses were linked to the ICF according to defined rules established in earlier studies. The linking was performed separately by two health professionals. The degree of agreement was calculated by Kappa statistics.

Results: 125 physical therapists from 24 countries gave a total of 2438 concepts that were linked to 376 different ICF categories. 69 occupational therapists in 22 countries named 1747 concepts that were linked to 370 ICF categories. The physical therapists identified eight and the occupational therapists identified 13 ICF categories not included in the ICF Core Set for stroke and reached an agreement among them above 75%.

Conclusions: The content validity of the ICF Core Set for stroke was largely supported from physical and occupational therapists. However, several ICF categories of the component "Body Functions" are not covered and need to be investigated further.

P 15

Developing ICF Core Sets for Vocational Rehabilitation

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Background: Vocational Rehabilitation (VR), as defined by the International Labour Organization (ILO) intends to "enable a disabled person to secure, retain and advance in a suitable employment and thereby to further such person's integration or reintegration into society." Therefore, functioning and disability are core concepts in VR. The International Classification of Functioning, Disability, and Health (ICF) of the World Health Organization (WHO) provides a universally accepted framework to classify and describe human functioning. To apply the ICF in practice, tools such as ICF Core Sets are needed. ICF Core Sets are parsimonious sets of ICF categories that are relevant to a particular disease, setting or professional group. The ICF Core Sets for VR are being developed to link the relevant aspects of functioning for individuals undergoing VR to salient ICF categories.

Objective: The objective of the project is the development of ICF Core Sets for VR.

Methods: The content will be defined at a Consensus. Selected experts in the field of VR will decide relevant ICF categories in a multi-stage decision making process based on information from 4 preliminary studies: a systematic review, representing the evidence from the literature, a qualitative study, using focus groups to present the patients perspective, a expert survey to present the opinion of experts based on their clinical experience and a cross-sectional study to reflect the clinical perspective.

Conclusions: A first version of ICF Core Sets for VR, developed by a systematic process, contains the relevant ICF categories for the Vocational Rehabilitation situation.

P 14

Subjective parameters and isometric trunk muscle strength in patients with chronic low back pain

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Background: During rehabilitation, multifaceted psychosocial parameters play an increasingly important role in patients with chronic low back pain (cLBP). To reach a higher level of physical activity, the correlation between maximal trunk muscle strength, intensity of pain and fear-avoidance behaviours seems to be important.

Methods: 20 patients with chronic unspecific low back pain participated in a 3-week multidisciplinary treatment program which included therapeutic exercises, educational and psychological components as well as training of daily physical activities. Maximal isometric trunk muscle strength in all directions of movement was tested pre- and post-treatment. Data for the development of subjective pain intensity (VAS), fear-avoidance behaviour (FABQ) and individual sense of disability (ODI) were collected.

Results: The measurements of isometric trunk muscles strength showed significant higher results after the treatment (+19.88%). In detail: flexion +12.5% (p = 0.017*), back extension +28.28% (p = 0.01**), rotation r. +16.99% (p = 0.018*), rotation l. +18.71% (p = 0.044*), lateral flex. r. +24.11% (p = 0.026*), lateral flex. l. +18.64% (p = 0.029*). The subjective pain intensity (VAS; 0-10) was reduced by 0.97 points (p = 0.007**). The ODI-score (0-100) was reduced by 5.5 points (p = 0.001***), FABQ (0-96) was reduced by 5.65 points (p = 0.002**).

Conclusions: In patients with cLBP, functional and psychosocial parameters increased significantly after a 3-week interdisciplinary treatment program. Trunk muscle strength values pre- and also post-treatment were lower in this study compared to reference values results in back pain patients. The maximal voluntary strength seems to be strongly influenced by fear-avoidance beliefs. The psychosocial parameters (VAS, ODI, and FABQ) show significant up to high significant correlations between each other. Different follow-ups have to show, if the benefit could be preserved.

P 16

Identification of patients with non-acute non-specific low back pain who will respond to a functional restoration program

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Background: Non-specific Low back pain (NSLBP) is a frequent problem in the working population. Only 5% will develop chronic NSLBP but account for 80% of the cost. The transition from acute to chronic NSLBP is a bio psychosocial process. Most effective in preventing this is e.g. a functional restoration program (FRP). Still it is not sufficient possible to identify patients who will respond to a FRP in terms of work readiness (WR). The Acute Low Back Pain Screening Questionnaire (ALBPSQ) covers a large part of the psychosocial risk factors.

Objective: To assess additional predictive value to the ALBPSQ.

Methods: This trial is a retrospective, cohort pilot study with a prospective data collection. The ALBPSQ was administered, and previously published clinical factors, by Kool et al., and Endthoven et al. (Finger Floor Distance (FFD), Biering Soerensen Test and trunk rotation) were tested. WR was determined at the end of the FRP. Predictive value of the ALBPSQ was analysed with logistic regression, post estimation ROC-Curves and comparison of the areas under the curves of predictive models with and without clinical factors (STATA, roccomp, 95% Bias Corrected Confidence Intervals) were performed.

Results: 73 patients, average age 41, SD 9.6, min 21, max 64, 48 men, and 25 women were included. Only the FFD showed significant additional predictive value to the ALBPSQ (AUC difference: 0.065 (95% CI 0.007 to 0.151)).

Conclusions: The findings show some additional information through clinical tests regarding triaging patients with NSLBP to a FRP to restore WR. In conclusion the usefulness of an interdisciplinary test in triaging patients may be enhanced through more bio psychosocial information through questionnaires, clinical tests and standardized interviews.

P 17

Rehabilitation of patients with back pain: Self-perceived health state predicted exercise load better than the activity subscale of the Fear Avoidance Beliefs Questionnaire – pain did not

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Background: In addition to the direct effect of resistance exercise on muscle, strengthening can improve function by influencing psychic factors such as fear-avoidance beliefs and self-efficacy. Not all patients with back pain dare to choose sufficient exercise load, especially in exercises for back muscles.

Objective: Evaluate the influence of psychic and biomedical variables on exercise load.

Methods: Preliminary explorative analyses: We evaluated the associations between pain, EQ-5D-VAS, a self-developed exercise specific self-efficacy questionnaire (SST), the fear-avoidance-beliefs-questionnaire (FABQ) and the load in a back-extension exercise (i.e. weight and blood lactate increase) at the beginning and the end of the rehabilitation. The baseline values of 28 patients with back pain (50% women, mean age 56, range 31 to 80) were compared with twenty healthy controls (50% women, mean age 35, range 22 to 67). The FABQ-A could discriminate between patients and healthy participants. The SST questions did not discriminate. In patients, the FABQ-A was a strong predictor of exercise load in an univariate regression model (coefficient (coeff): $-.11$, 95% CI: $-.19$ to $-.03$), but when the self-perceived health state was introduced into the model (coeff.: $.04$, 95% CI: 0.01 to 0.08), the predictive value of the FABQ-A decreased (coeff.: -0.06 , 95% CI: -0.15 to 0.24) and did not remain significant. Pain had no influence. There was a moderate correlation (pearson's $r = 0.35$) between the change in self-perceived health state and change in the FABQ-A during the three week rehabilitation.

Conclusions: Fear-avoidance-beliefs were strongly influenced by self-perceived health state, but not by pain. Exercise load was influenced by health state.

P 18

Comparison of the Activity-Index as an internet based self-reporting tool with the SF12 in monitoring pain treatment

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Background: There is growing interest in the use of quality assurance of pain treatment in patients with musculoskeletal disorders, as well as in monitoring the impact on daily function and quality of life. The MOS Short Form-12 (SF12) health status questionnaire has been shown to be an unpractical self-reporting tool in routine clinical care. Therefore we have developed the "Activity-Index" as a novel internet based simple tool for patient self-reporting.

Objective: The primary aim of this study was to validate the internet based diary with the Activity-Index and to compare it with the well known MOS Short Form-12 (SF12) health status questionnaire.

Methods: We recruited patients with acute low back pain with the agreement for the participation in this study. All patients received physiotherapy, physical therapy and adapted analgesic medical treatment. The majority of the patients received an infiltration (epidural, sacral, facet joint). After the instruction and completing the baseline Activity-Index, the patients were motivated to fill out weekly the online questionnaire over a period of one month. Additionally we completed the SF12 at baseline and at the end of the observation period. The Activity-Index includes in total 7 questions about daily pain (maximum, mean), daily limitations (at work, during daily activity like house-keeping and spare time activity), quality of sleep, satisfaction in therapy and the general health.

Results: 31 patients were included. The online questionnaires of 25 patients (mean age 53 ± 14) were completely documented.

Conclusion: A high correlation could be documented comparing the pain and function dimension between the SF 12 and the activity index. This internet questionnaire will be a practical tool to monitor pain and musculoskeletal rehabilitations patients in the future.

P 19

Interdisciplinary ambulatory group intervention for chronic pain patients

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Background: Chronic pain patients need help and support but are a challenge for physicians and therapists.

Objective: To treat chronic pain patients with an interdisciplinary ambulatory group approach.

Methods: The intervention in a group of seven or eight patients over three months consisted of two times two sessions weekly. The physiotherapeutic part (two lessons a week) focused on education about pain neurophysiology including pacing and graded exposure, the psychological approach in psychoeducation, pain coping and improvement in quality of life with cognitive-behavioural methods, the occupational therapy intervention in strengthening of self efficacy, adaptation and motivation of personal daily activities, and the physician explained drug treatment and insurance medicine.

Results: Of the thirty patients in four groups, there was an equal number of males and females with an average age of 44 years (two thirds married, one third divorced, average of 2.1 children). The distribution of the nationalities and religions showed a preponderance of people from Ex-Yugoslavia and Muslims. Most had a physically heavy work with low income. The mean duration of actual pain was 20 months, and the mean duration of work was 10 months. The outcome parameters such as pain (VAS), function (6-Minute-Walk, Loaded-Reach, Timed-up-and-go, PACT), and health dimensions (Coop-Wonca) didn't show improvement neither over the study period of three months nor in the follow-up after six and twelve months. 10% of patients followed individual psychotherapy at the beginning and 48% twelve months afterwards. Pain disability (PDI) tended to decrease slightly after twelve months. Most of the participants said they had some benefit of the program.

Conclusions: Our long term pain patients were not equally distributed in the population. The interdisciplinary approach with low energy (two times two hours a week for three months) didn't show improvement in pain or functional outcome. We suppose that cultural and work related factors (including insurances and personal finances) may play a major role, and may be included in a future program. However, patients were satisfied with our interdisciplinary ambulatory pain program.

P 20

Buruli ulcer treatment in Akonolinga, implementation of a rehabilitation program

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Background: Buruli ulcer is a neglect tropical disease due to Mycobacterium ulcerans and resulting in wide cutaneous ulceration sometime with articular and bone extension. It is often followed by massive retraction leading to disability after healing has occurred. Treatment is mainly through antibiotics, surgery and wound dressings. But due to the extensiveness of disability, rehabilitation must be introduced as soon as possible. We will relate the first steps of such an implementation in a district hospital of Cameroun. When working in resource poor settings, attention must be paid to delivering clear learning and simple rehabilitation schemes. All treatments must begin with an extensive but simple status (eg. joints, muscular,...) which will have to be repeated regularly. Various protocols must be implemented: post surgery, post skin graft, active and passive mobilisation, muscle strengthening, splinting and positioning, lymphoedema control. Multidisciplinary is important as part of the rehabilitation should be done during the dressings. Patients and families education to self-care should also be considered.

Conclusion: in order to bring maximum autonomy to the patients, rehabilitation has an important role to play and must be implemented in all Buruli ulcer programs.

P 21

A suggestive assessment in rehabilitation of total knee arthroplasty? Reproducibility, Validity, and Responsiveness of the ILOAS

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Background: The Iowa Level of assistance Scale (ILOAS) is an assessment for measuring functional status after total knee replacement. Because of the reason, that the ILOAS is a multi-activity test and easy manageable it would be an applicable parameter for functional status in rehabilitation after total knee replacement. The ILOAS haven't been used in the german speaking region so far.

Objective: To investigate the reproducibility, the concurrent validity and the responsiveness of the ILOAS.

Methods: The ILOAS was measured at day 1, 2 and 14 during the inpatient rehabilitation. The Western Ontario and Mc Master Universities Arthroindex (WOMAC) have been used as reference Test.

Results: 32 Patients were participating. The intertester-reliability was $r_s = 0.757$ ($p = 0.01$); $ICC = 0.789$ ($95\%CI = 0.518 - 0.902$). The smallest detectable difference (SDD) was 4.7 points ($95\% LA = -3.7, 6.1$). The correlation between WOMAC and ILOAS was $r_s = .439$ ($p = 0.014$). The effect size (ES) of the ILOAS was 1.98, the WOMAC showed an ES of 1.2. The total score of the ILOAS changed on average 5 Points (full weight bearing 7, partial weight bearing 2 Points).

Conclusion: The intertester-reliability as the intertester agreement was moderate to good. WOMAC and ILOAS were correlating moderate. The change between day 1 and day 14 is, in relation to the smallest detectable difference, only for patients, who were permitted for full weight bearing clinically significant.

P 22

Coping, illness behavior and ability to work in patients after whiplash injury: Preliminary results of a longitudinal study

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Objectives: Chronification processes after whiplash are a huge medical and economical problem, causing immense suffering and costs. Literature shows clearly that psychological variables such as depression and coping strategies might play an important role.

Methods: Patients were recruited from the inpatient and outpatient department of Reha Rheinfelden. They were tested within 2 to 6 months after acute whiplash trauma and at a follow-up one year after injury. For measuring illness behaviour the Freiburg Questionnaire of Coping with Illness (FQCI), and for the assessment of possible psychopathology, e. g. depression or anxiety, the symptom checklist (SCL-90), were used. Patient's medical support was evaluated with the Freiburg Complaint Questionnaire (FBL-R). The objective health status was assessed by the ability to work and the actual health care utilisation. Medical severity of the trauma was classified by the Quebec Task Force criteria (QTF). Additionally, appearance and frequency of triggerpoints were examined in the affected muscles.

Results: Until now, 17 patients (mean age 34, mean duration of symptoms 139 days, 13 female and all classified as QTF 2), have been included into the study. Statistical analyses show that patients, as hypothesised, use different coping styles. Active coping is more common than depressive coping (FQCI). Average pain intensity is 4.8 (sd 2.1). As hypothesized, intensity of pain, frequency of triggerpoints, depressive coping and depressive mood (SCL-90) appear to be strongly associated with each other. Patients with high scores in these variables, especially pain and triggerpoints, are also seeking more medical support (FBL-R) and have less ability to work.

Conclusion: At present, our data seem to support the hypothesis, that depressive mood and depressive coping style might have an effect in terms of patients seeking more medical support and have less ability to work.

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