**Introduction.**– Pain and beliefs have an influence on the patient’s course in rehabilitation and their relationships are complex. The aim of this study was to understand the relationships between pain at admission and the evolution of beliefs during rehabilitation as well as the relationships between pain and beliefs one year after rehabilitation.

**Patients and methods.**– Six hundred and thirty-one consecutive patients admitted in rehabilitation after musculoskeletal trauma were included and assessed at admission, at discharge and one year after discharge. Pain was measured by VAS (Visual Analogical Scale) and beliefs by judgement on Lickert scales. Four kinds of beliefs were evaluated: fear of a severe origin of pain, fear of movement, fear of pain and feeling of distress (loss of control). The association between pain and beliefs was assessed by logistic regressions, adjusted for gender, age, native language, education and bio-psycho-social complexity.

**Results.**– At discharge, 44% of patients felt less distressed by pain, 34% are reinsured with regard to their fear of a severe origin of pain, 38% have less fear of pain and 33% have less fear of movement. The higher the pain at admission, the higher the probability that the distress diminished, this being true up to a threshold (70 mm/100) beyond which there was a plateau. At one year, the higher the pain, the more dysfunctional the fears.

**Discussion.**– The relationships between pain and beliefs are complex and may change all along rehabilitation. During hospitalization, one could hope that the patient would be reinsured and would gain self-control again, if pain does not exceed a certain threshold. After one year, high pain increases the risk of dys-functional beliefs. For clinical practice, these data suggest to think in terms of the more accessible “entrance door”, act against pain and/or against beliefs, adapted to each patient.

**Keywords:** Pain; Beliefs; Rehabilitation; Bio-psycho-social complexity

**CO09-006–EN**

**Paravertebral and radicular pain: Drug and/or physical analgesia**

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**Keywords:** Physical modalities; Steroids; Neuropathic pain; Analgesia

**Introduction.**– We present some contemporaneous theories of pain and therapeutic concepts of analgesia, including drug and physical analgesia.

**Goal.**– Comparative evaluation of drug, physical and combined analgesia on the paravertebral and peripheral radicular pain.

**Patients and methods.**– During the last years, a total of 93 patients with a vertebrogenic radiculopathy were observed and investigated in patients and out-patients. Patients were randomized to three treatment groups of 31 each one. The investigation was conducted with consideration for the protection of patients, as outlined in the Declaration of Helsinki, and was approved by the appropriate institutional review boards and ethics commissions. All patients gave written informed consent before undergoing any examination or study procedure. Group 1 received only drug therapy–paravertebral infiltrations with cortico-steroids, B vitamins and local anesthetic. Patients of group 3 received only physical modalities (complex rehabilitation programme including transcutaneous electro-nuero-stimulation [TENS], exercises, massages, sea lye compresses distally).

In group 2, we applied drug and physical analgesia techniques. For statistical evaluation we used t-test (Anova) and Wilcoxon rank test (non parammetrical correlation analysis), performed using SPSS package. The treatment difference was considered to be statistically significant if the P value was < 0.05.

**Results.**– The comparative analysis of results shows a significant improvement of the symptoms of the patients, concerning pain relief (visualized by the analysis of results of visual analogue scale), radiculopathy (Lassegue’s sign), depression (scale of Zung). The drug analgesia in group 1 is fast, but short. The efficacy in group 3 is slow, but stable, and durable. We observed best results in group 2. We expose our own conception of pathogenetical mechanisms of physical analgesia.

**Discussion.**– The drug therapy is efficient but with short duration. The physical analgesia initiates its effect slowly, but results are stable. Best efficacy was observed in case of combination of medication with physical modalities – in the beginning due to non-steroidal anti-inflammatory drug, toward the moment of effective «input» of physical modalities.

**Conclusion.**– We could recommend the complex program for treatment of the paravertebral pain.

**CO09-007–EN**

**Short-time and long-time effects of rehabilitation exercise training on functional balance tests and gait markers in patients with fibromyalgia**

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**Keywords:** Fibromyalgia; Gait; Posture; Rehabilitation

**Introduction.**– The purpose of this study was to assess the short-term and long-term impact of a rehabilitation exercise training (RET) program on functional capacities and gait markers. Exercise, mainly aerobic training, is a common recommendation in the management of fibromyalgia (FM) with evidence of efficacy. Functional locomotion tests and gait analysis are considered as a new

**Goal.**– The purpose of this study was to assess the short-term and long-term impact of a rehabilitation exercise training (RET) program on functional capacities and gait markers. Exercise, mainly aerobic training, is a common recommendation in the management of fibromyalgia (FM) with evidence of efficacy. Functional locomotion tests and gait analysis are considered as a new
way of measurement in neurological diseases including fibromyalgia, whereas the impact of RET on locomotion remains unknown.

Participant.– Sixteen patients meeting ACR criteria for FM were included.

Methods.– Patients performed 12 weeks of ergocycle exercise training, according to the American College of Sports Medicine recommendations, associated with halbneotherapy and relaxation. Gait analysis was performed by a validated ambulatory accelerometric method (Locometrix). Gait markers were: walking velocity (m/s), stride length (m), stride frequency (Hz), stride regularity (dimensionless), and cranio-caudal power (W/kg), which are considered as a measurement of kinesia. In addition, Timed Up and Go test (TUG) and One Leg Balance Test with eyes open (EO) and with eyes closed (EC) were performed.

Analysis.– Using non-parametric statistics, an intention to treat model was used to analyze the results.

Results.– Timed Up and Go test scores were respectively (before; just after and at the end of the program): 9.5 ± 2.4; 8.1 ± 1.7 (P < 0.05) and 8.6 ± 2.1 (NS); OLB scores were with EO: 38.4 ± 30; 47.3 ± 43.1 (NS) and 39.0 ± 38.6 (NS) and with EC: 7.4 ± 5.4; 10.7 ± 9.8 (P < 0.05) and 7.4 ± 3.7 (NS). The mean walking velocities were respectively 1.1 ± 0.1; 1.2 ± 0.1 (P < 0.05) and 1.2 ± 0.1 (P < 0.05). Stride frequencies were 0.95 ± 0.09; 0.98 ± 0.07 (P < 0.05) and 0.96 ± 0.07 (NS) and stride lengths were 1.12 ± 0.05; 1.17 ± 0.08 (P < 0.05) and 1.21 ± 0.1 (P < 0.01). Stride regularities were 293 ± 28; 312 ± 35 and 287 ± 41. The cranio-caudal powers were 3.1 ± 1.5; 4.4 ± 1.5 (P < 0.05) and 3.5 ± 1.2 W/Kg (NS).

Discussion.– Benefits regarding balance, acquired during a 12-week rehabilitation protocol, were not maintained after 3 months. Concerning the gait, only 2 parameters remained improved. This study shows the necessity of finding methods to assure continuity of acquired benefits.


CO09-009–EN
Functional restoration program: Impacts on the hypothalamic-pituitary axis
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Keywords: Hypothalamic-pituitary axis; Functional restoration program; Chronic pain

Introduction.– Different abnormalities of the hypothalamic-pituitary axis have been found in chronic pain patients. The principal aim of this study was to evaluate consequences of a functional restoration program on the secretion of ACTH and peripheral plasmatic levels of cortisol.

Patients and methods.– One hundred and eighteen patients (67 women; 51 men) were included in this prospective study between January 2008 and December 2008. Sixty-one patients had a chronic low back pain and 57 patients with a thoracic outlet syndrome unamenable to an ambulatory treatment, constantly associated with a severe disability (mean age 42.4 ± 9.8 years). All the patients were treated with a progressive aerobic restoration program, during 4 weeks.

Plasma levels of ACTH, cortisol, TSH, cholesterol and triglycerides have been measured at the entry and at the end of the program.

Results.– At the entry, a significant correlation was found between the plasma levels of ACTH and weight gain during the pain period (r = 0.33; P = 0.0002). The functional restoration program was associated with a significant decrease of the levels of ACTH, cortisol, cholesterol and triglycerides. Between the beginning and the end of the program, the decrease in ACTH levels was significantly correlated with the decrease in cortisol levels (r = 0.25; P < 0.008); moreover, at the end of the program, the ACTH and cortisol levels were significantly correlated (r = 0.41; P < 0.0001). The decreases in ACTH levels were significantly correlated with the degree of deconditioning, as expressed by the muscular intolerance.

Discussion.– The data of this study are in agreement with the fact that hypothalamic-pituitary abnormalities occur during chronic pain syndromes. The weight gain is not only associated with inactivity but also with central neuro-endocrine disorders. These central abnormalities seem to be corrected by a functional restoration program. This central nervous correction must be considered in the indications for such a program.


CO09-008–EN
VO2max in chronic pain patients: Comparative analysis with objective and subjective parameters
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Keywords: VO2max; Aerobic fitness; Deconditioning; Chronic pain

Introduction.– Aerobic deconditioning is one of the physical factors associated with chronic pain particularly in chronic low back pain. Conflicting results have been found in this population and no previous study has been done to compare chronic pain patients from different etiologies.

Objective.– To evaluate different levels of the VO2max in different musculoskeletal chronic pain syndromes with objective and subjective parameters of disability.

Population and methods.– One hundred and sixty-one patients (mean age 42.1 ± 4.9 years; 81 men, 80 women) with chronic work-related upper limb musculoskeletal disorders (48 patients), chronic low back pain (74 patients), diffuse musculoskeletal chronic pain (39 patients) performed a graded maximal exercise test. All of them were evaluated with subjective disability scales (EIFEL, DASH, Borg’s scale for fatigue). Objective tests were the Sorensen’s test and the PILE. Patients have been classified by the values of the VO2max: group I (VO2max < 17 ml/kg/min), group II (VO2max between 17 and 25 ml/kg/min), group III (VO2max > 25 ml/kg/min).

Results.– No significant difference was observed for the mean values of the VO2max between the 3 etiological chronic pain syndromes. Compared to the 2 other groups, the patients of the group I were older (0.007), had a longer duration of work disability (0.02), were more frequently obese (0.003) associated with an higher weight increase during the work arrest (0.02), had lower values for the Sorensen’s test (0.01) and the PILE. Though, no significant differences have been observed for the mean values of the EIFEL and DASH scores. They had more frequently a perception of severe fatigue (0.05).