motor scale. Other validated scales were used like the motor activity log or the frencheay arm test. In addition, we used a system of 3D movement analysis in order to study the effects of the rehabilitation program on the reorganisation of the motor control.

Results. – The score on the Fugl-Meyer motor scale was improved so as in the other tests. We noted an improvement of the Fugl-Meyer score of 14% in the group which benefitted of the rehabilitation program carrying out automatic motivity whereas the improvement of the Fugl-Meyer score was 5% in the control group.

Discussion. – It seems that the stimulation of the automatic motivity leads to an improvement of the gripping ability of the patient with hemiplegia. An explanation may lie in the decrease of attentional abilities attract. We can make the hypothesis that stimulating automatic motivity could increase the activation of sensory-motor loops during action or stimulate the recovery of automatic components of action regulation.

This is a preliminary result. This trial has to be continued for 2 years in order to include 32 hemiplegic patients so as to improve the statistical power of the results.


CO36-004–EN
Pressure ulcer prevention in spinal cord injury subjects using the TexiSense pressure sensing textile

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– A pressure ulcer is an ischemic skin lesion stemming from a persistent compression of the soft tissues between a hard surface and bony prominences. This complication is particularly harmful for the spinal cord injury subjects due to sensorial and motor deficiencies but also to the associated vegetative paralysis. Unlike an able-bodied subject, the spinal cord injured person seated in his or her wheelchair does not automatically change position when overpressures occur.

This complication is particularly harmful for the spinal cord injury subjects due to the associated vegetative paralysis.

– The pressure ulcer prevention prototype based on a 100% textile pressure sensing fabric able to measure the pressures at the interface between the wheelchair cushion and the buttocks. The flexibility of the fabric makes it possible to integrate the pressure sensor between the cushion and its cover. The prototype comprises:
  – a textile pressure sensor covering the cushion and placed on the wheelchair seat;
  – a control unit connected to the sensor and wirelessly linked to tactile and visual actuators;
  – tactile and visual actuators such as a vibrating watch (and eventually a smartphone) used to raise an alert in case of overpressure.

Results. – The pressures are measured in real time and a signal processing algorithm implemented in the control unit warns the subject when atypical overpressures are measured at the skin surface. It has been acknowledged that the most serious deep ulcerations are triggered by these internal stresses.

Discussion. – The prevention technique presented here makes it possible to continuously monitor the evolution of skin pressures in a way compatible with the daytime activities of the subject. The computation of internal stresses within the soft tissues is carried out through biomechanical modeling in accordance with each considered person’s morphology.


CO36-005–EN
Functional independence measure (FIM) in 2011

V. Gautheron, S. Grand, F. Bethoux, P. Calmels

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This complication is particularly harmful for the spinal cord injury subjects due to the associated vegetative paralysis.

– The TIMC-IMAG and AGIM laboratories, associated with the IDS laboratory, propose an ulcer prevention prototype based on a 100% textile pressure sensing fabric able to measure the pressures at the interface between the wheelchair cushion and the buttocks. The flexibility of the fabric makes it possible to integrate the pressure sensor between the cushion and its cover. The prototype comprises:
  – a textile pressure sensor covering the cushion and placed on the wheelchair seat;
  – a control unit connected to the sensor and wirelessly linked to tactile and visual actuators;
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Results. – The pressures are measured in real time and a signal processing algorithm implemented in the control unit warns the subject when atypical overpressures are measured at the skin surface. It has been acknowledged that the most serious deep ulcerations are triggered by these internal stresses.

Discussion. – The prevention technique presented here makes it possible to continuously monitor the evolution of skin pressures in a way compatible with the daytime activities of the subject. The computation of internal stresses within the soft tissues is carried out through biomechanical modeling in accordance with each considered person’s morphology.

special attention was paid to contextual and environmental factors. The final grid (G-MAP) was administered to 15 subjects with traumatic brain injury (TBI group) and 15 subjects with schizophrenia (TS group). Assessments of cognition, neurobehaviour, psychological and psychosocial functioning were also performed.

**Results.**– The G-MAP is a 26 items tool related to 6 ICF sections, providing ordinal rating of activity limitations, participation restriction and contextual factors (social support, attitudes, systems and politics) for each item. The internal consistency of activity limitations (alpha = 0.89) and of participation restriction (alpha = 0.89) is satisfying. We observed no difference on psychological variables between the two groups, except for a lower social support in TSB group. Results of G-MAP underline that the two groups are confronted with the same activity limitations in personal care, leisure and community life (non significant U of Mann-Whitney). However TSB group seems to be more limited than TS group in interpersonal relationships, economic and social productivity and domestic life. TS group is also more concerned by participation restriction than TS group, except for community life. **Conclusion.**– The G-MAP is a useful, feasible and relevant tool for assessment of psychic or cognitive disability. It allows assessing in a detailed and individualized way participation restriction of a patient in his environment.


**CO36-007–EN**

**Patient reported outcome in neuromuscular diseases: The QoL-NMD. Qualitative and quantitative generation of items**


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**Key words:** Questionnaire; Reproducibility; Internal consistency; Depression; Muscular diseases; Dystrophy myotonia

**Introduction.**– Screening for anxiety and depression is likely to be overestimated in patients with physical disabilities such as Steinert dystrophy patients. This overestimation results from the high weight of scores for items assessing motor adynamia and in the other hand, the characteristic anomic face these patients present. Hospital Anxiety Depression Scale (HADS) has the advantage of not inquiring items on motor skills. This work seeks to verify the reliability of the anxiety and depression HADS subscales and their reproducibilities in patients with Steinert myotonia.

**Materials and methods.**– Thirty-five patients suffering from Steinert myotonia (11 men, 24 women) responded twice to the HADS questionnaire. The delay between the two HADS evaluation was on average 18 ± 12 days. It was verified by examination that no health problem had occurred between test and retest of the questionnaire HADS. The HADS is a self-administered questionnaire comprising 14 items, 7 items measuring the depression likelihood, 7 other items assessing the anxiety risk. The reliability of two subscales was checked by calculating Cronbach alpha coefficients and test-retest reproducibility of the scores by intra-class correlation coefficients (ICC). **Results.**– For the subscale ‘anxiety’ test and retest scores were respectively 7.94 ± 4 (1–19 min–max) and 6.42 ± 3.68 (1–14 min–max). The coefficient Cronbach’s alpha of the 7 items of the subscale ‘anxiety’ was satisfactory at 0.74. The ICC was good at 0.77. Six patients had a score ≥ 11/21 relating a pathological anxiety (17%). For the subscale ‘depression’, test and retest scores were respectively 5.85 ± 3.75 (1–16 min–max) and 5.94 ± 4.25 (0–18 min–max). The Cronbach’s alpha was 0.82 and ICC 0.92. Four patients were therefore screened as ‘depressed’ (12%). **Conclusion.**– The HADS is a self-administered questionnaire which measures reliability and reproducibility features of anxiety and depression in Steinert myotonia peoples.