

frenchey 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 benefited 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.

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### Pressure ulcer prevention in spinal cord injury subjects using the TexiSense pressure sensing textile

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**Keywords:** Pressure ulcers; Pressure sensor; Prevention; Biomechanical modeling

**Goals.**– 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. Pressure ulcer prevention is essential to avoid the functional, psychological and social consequences, as well as important economical effects (major and costly medical treatments).

**Materials and methods.**– The TIMC-IMAG and AGIM laboratories, associated with the IDS and TexiSense companies 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;

– 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 overpressure patterns (in magnitude and/or duration) are identified. This algorithm relies on a biomechanical model of the subject's buttocks to estimate the internal stresses within the soft tissues and at the vicinity of bony prominences from the external pressures 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

each considered person's morphology.

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### Functional independence measure (FIM) in 2011

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**Keywords:** FIM; Functional independence measure; Burden of care; Database; IFRH

**Aim.**– Current use of FIM in France.

**Material.**– Questionnaire on the SOFMER website for French PMR practitioner. Questions are about: (1) daily use of the FIM in facilities, (2) its use in patient files, (3) training users, (4) interpretation of results, (5) medico-economic consequences, (6) assessment of the care burden, (7) patients' follow-up, (8) clinical research, (9) language tool between professionals, (10) potential interest in the constitution of a French national database. A last question would consist in the criticisms of the FIM tool in order to cancel it and replace it by creating a brand new one.

The results will be explained on the Sofmer Meeting in Nantes. Since the FIM was inserted in France 20 years ago [1], it has been given the status of Gold Standard. Most of MPR teams use it as a tool of interdisciplinary communication to refer to the independence of disabled people and the burden of cares. Yet, an international copyright owned by UDSMR in Buffalo (US) curtails scientific publications.

**Discussion.**– The Federative Institute of Research on Disability suggests to develop a national data base based on information collected by PMR teams/facilities using the FIM. Its aim is to create the first part of a platform of tools for clinical assessment, to be used by PMR and social professionals (comparative data based on groups of patients and pathologies. . . [2]) and to enable international collaborations.

**Conclusion.**– A consensual tool of the functional independence and of cares burden is essential to interdisciplinary communication, in the field and for clinical research. Will the FIM succeed in it?

**References**

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### Participation assessment according to ICF: Preliminary results of the assessment grid of activity and participation (G-MAP)

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**Keywords:** ICF; Participation; Assessment; Traumatic brain injury; Schizophrenia

Community participation is a major challenge for most disabled patients. However, current assessments of participation lack a theoretical base, making assessment problematic. The ICF taxonomy (WHO, 2000) of activity limitation and participation restriction provides an interesting framework.

**Aims.**– The present study aims at developing a new, ICF-derived assessment tool of participation restriction in two populations suffering from psychic or cognitive disability: schizophrenia and traumatic brain injury. **Methods.**– Items have been selected from international literature, clinicians and proxy opinions. A