



## VTAS

Vertical Traction Assessment System

### Project Summary

The scope of this project was to quantitatively validate the clinical effects of an "Ambulatory Lumbar Traction Device" (the Vertetrac from Meditrac <http://www.meditrac.co.il/>) which is often used by physiotherapists in their daily practice. Although randomized controlled trials have been performed to assess the device, very few findings and measures have been taken to assess the mechanical forces exerted by the system on the body, the residual activity of the muscular system interested in the therapy, along with the effects on deambulation of the body when wearing the device. To achieve these very interesting results, an instrumentation system has been developed being able to acquire multiple measures, both mechanical and bioelectrical, to be correlated with each other and with clinical results. The system acquires the electromyogram of the muscles of the trunk and the lumbar region, the deep muscles movement by means of an UWB radar, and the mechanical signals from strain gauges, accelerometers and inclinometers. The key points of this project lie in the possibility of putting into evidence biomechanical and electrical measures before, during and after the application of the device and analysing their evolution.

### Follow-up

The proportion of people affected by back-pain has augmented continuously during the last twenty years. Today this "disease of the century" is not more typical of hard workers. Other people like professionals and even the do-it-yourselfers, stressed by modern lifestyle are affected as well. To help them medicine can provide many conservative approach treatments, typically medicines. With this new instrument, that can also be useful to assess orthoses and prostheses in orthopedics and traumatology, the physiotherapists will eventually have the possibility to personalize the therapy to their patients, with the possibility to quantify the therapy and the results as well. This realization of this system is enabling HES-SO to play a key role in the development of rehabilitation systems. The projects with preliminary results has been presented for oral discussion in May 2010 to the 17<sup>th</sup> European Congress on Physical Medicine and Rehabilitation held in Venice (Italy).

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