

## **Motor Rehabilitation assisted by Collaborative Robots and Computer Games**

The rehabilitation process of subjects with motor disabilities caused by stroke, spinal cord injuries or plexus-brachial lesions may be significantly improved when two technologies are combined: (a) Robots able to interact physically and safely with the users and (b ) Computer games specially designed to motivate patients during therapy sessions. Robots in direct contact with the patients assume different roles in the rehabilitation process, they can assist the patient when he or she is not able to perform the required movements. The robot may also offer resistance in some situations when muscle strengthen is the therapeutic goal. The recovery of motor skills is associated with neural plasticity and therefore requires that the movements of the affected limbs occur in synchrony with the patient's intention to perform the exercise - this motivating task is given by the computer game. The robot works as game control console. This technologies integration is also responsible for generating a large volume of data from the rehabilitation process. Data organized in repositories may be used to evaluate the different therapy protocols and the corresponding impact on patient rehabilitation.