Summary: Wearable robotics can play a role in rehabilitation and functional compensation in a number of neurological conditions, e.g. hemiplegia post stroke, paraplegia or quadriplegia post SCI, which lead to sever motor impairments. However, in general, the musculoskeletal system after the insult is preserved and Motor Neuroprostheses (MNPs) can also be considered as valid technologies for rehabilitation and functional compensation. In view of the features of both technologies, our current approach at the Neural Rehabilitation Group is to study the combination of neurorobots (NRs) and motor neuroprostheses for rehabilitation and functional compensation of motor disorders of neurological origin.

In this concept, three players are to be combined for an optimal intervention, i.e. the patients with their latent motor capabilities, and the two technologies NRs and MNPs. The evaluation of latent capabilities of the patients becomes a crucial aspect for the orchestration of all three actors in promoting functional recovery or substitution. The association of our technology-based interventions to the motor status becomes a key component of the new therapies.

Recent publications:-

- Ibáñez, Jaime; Serrano, J. Ignacio; del Castillo, M. Dolores; Monge, Esther; Molina, Francisco; Alguacil, Isabel; J.L. Pons, Detection of the onset of upper-limb movements based on the combined analysis of changes in the sensorimotor rhythms and slow cortical potentials, J. Neural Eng. 11, 5, 056009, DOI: 10.1088/1741-2560/11/5/05600.