CLINICAL: AMPUTATION PAIN - PART 2

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PHANTOM MOTOR EXECUTION AS A STRATEGY TO TREAT PHANTOM LIMB PAIN: A CASE STUDY ON A LOWER LIMB SUFFERER.

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Background and Aims:

Phantom Motor Execution (PME) facilitated by Myoelectric Pattern Recognition (MPR) and Virtual Reality (VR) poses itself as an effective treatment for Phantom Limb Pain (PLP). Notably, a recent clinical control trial using the methodology on a population of 14 upper limb amputees with intractable PLP showed significant improvements (Ortiz-Catalan, 2016). The present study aims at assessing whether PME facilitated by MPR and VR can reduce PLP in lower limb.

Methods:

A 70-years-old male with trans-femoral amputation was treated for a total of 24 PME treatment sessions. Pain was assessed in terms of Weighted Pain Distribution (WDP) (Ortiz-Catalan, 2014) and Short Form of McGill Pain Questionnaire (SF-MPQ). The treatment consisted in using myoelectric signals produced by stump muscles during phantom motions in order to control a VR limb.

Results:

SF-MPQ showed a significant reduction (>%50) in the number of word chosen and in the Pain Rating Index (Figure 1). WDP (Figure 2) shows reduction of time spent in pain. Improvement of sleep (from 2h to 7h/night) was also reported.
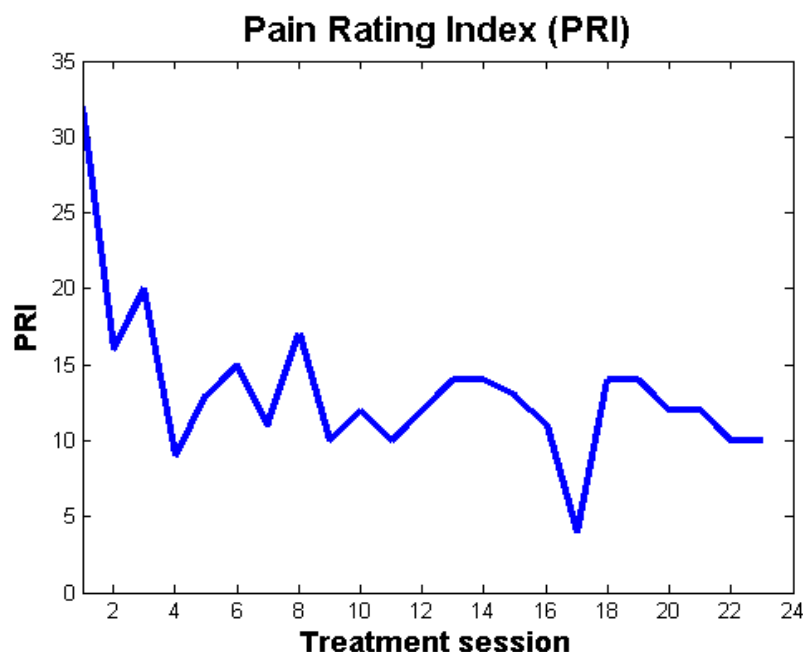

Pain Rating Index (PRI)

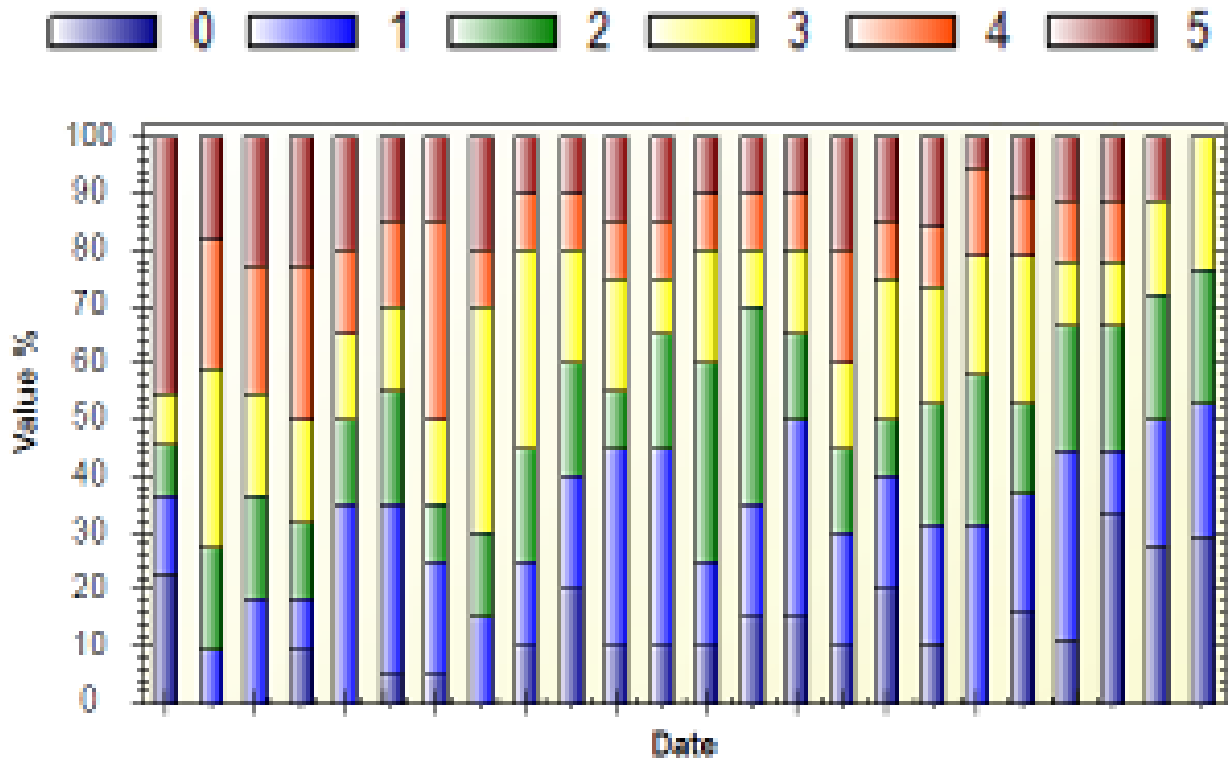Figure 1. Pain Rating Index at each session.

Figure 2. Weighted Pain Distribution at each session. Pain is rated from 0 (none) to 5 (excruciating).

Conclusions:

Although the results are limited to one subject, this study indicates that PME could potentially reduce PLP also in the lower limb.