

# **Treatment of Phantom-limb Pain According to the Fascial Manipulation Technique: A Pilot Study**

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## **BACKGROUND**

Phantom-limb pain is a common sequela of amputation. While the causes are unknown, some authors suggest sensory and motor reorganization is involved, and others consider peripheral proprioception and psychological factors. Current treatment of phantom limb pain includes drug therapy, psychological therapy, and physiotherapy, but its results are variable and few mechanism-based treatments have been proposed. According to the Fascial Manipulation technique, proprioception relies on the correct tensioning of the fascial system. Indeed, fascia is well innervated and it is stretched during movement by muscular expansions into the fascia, activating different patterns of nerves. Following lower limb amputation, the tensional homeostasis of the fascial system is altered, and this could contribute to a modified perception in these patients. By considering each dysfunction as a direct consequence of an anomalous traction within the fascial tissue, treatment aims at restoring physiological balance to the whole system. It focuses on those centers of coordination deemed responsible for the painful symptoms, seeking a proximodistal de-tensioning of the whole segment implicated in the disorder by acting on distant segments rather than directly on the site of symptoms.

## **METHODS**

Five patients ranging from 30 to 67 years (4M, 1F, 48 median age) with unilateral trans-tibial amputation were treated with Fascial Manipulation. All subjects reported typical symptoms of phantom limb pain. Treatment was carried out in the period from 6 to 8 months post surgery. All subjects received a total of 8 treatments, consisting in one treatment session a week. The outcome was evaluated using the Short Form McGill Pain Questionnaire (SF-MPQ). Joint movement (ROM), muscle strength of the quadriceps (MRC scale), the tolerance for weight bearing with the prosthesis and, where present, the incidence of painful myoclonus of the amputation stump were also assessed. **RESULTS:** The VAS of the SF-MPQ evidenced an improvement in the mean value from 78/100 (SD  $\pm$  8.4) to 24/100 (SD  $\pm$  11.4). Concerning the muscular strength of the quadriceps femoris, a mean variation from 3.4 (SD  $\pm$  1.1) to 4.6 (SD  $\pm$  0.5) was reported. Joint range limitation in knee extension modified from a mean value of 19° fixed flexion (SD  $\pm$  11.9) to 6° fixed flexion (SD  $\pm$  6.5). Only 2 out of 5 subjects presented painful myoclonus of the amputation stump. In the first case, a total resolution of the problem was reported whereas, in the second case, a reduction in the incidence of the phenomena was observed (from 5 times a week to 2 times a week). Weight bearing tolerance with the prosthesis increased from an initial mean time of one hour daily to a mean time superior to 4 hours daily.

## **CONCLUSIONS**

According to the results obtained, we can assume that an anomalous fascial tension might be partly responsible for the etiopathogenesis of phantom-limb syndrome. Thus, a rehabilitation treatment focused on restoring fascial elasticity might prove effective, as it did in this pilot study.