

# Assessment of needle penetration depth and relationship with its analgesic effect

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## Abstract

**Background and Aims** The field of invasive physical therapy offers a wide spectrum of effective methods for the treatment of myofascial pain. All these methods share the fact that they begin with the insertion of a solid needle. Thereafter, they diverge either because of the variable use of repeated insertions or because of the application of an electric current with different intensity and duration parameters. The so-called “needle effect” is described as an anesthetic effect which is achieved by probing with the needle the point where pain pressure sensitivity is found, using an appropriate orientation and depth in order to elicit this effect. At present, there continues to be controversy regarding whether the needle effect is a true clinical effect or placebo.

**Material and Methods** This study is a controlled clinical trial with double blinding formed by three randomized groups: sham needling, needling at the level of the subcutaneous tissue (superficial) and needling at the level of the muscle tissue (deep). The intervention consisted in the insertion of the needle at the specified depth according to each group and maintained during 60 seconds. Each group comprised of 17 volunteer inline hockey players of both sexes from the Club Reus Deportiu sports club in the junior and senior categories (between 18 and 36 years of age). Algometry and joint range of motion were determined for the dominant lower limb before and after the intervention. A Student's t-test was performed for paired comparisons and an ANOVA for multiple comparisons.

**Results** The same degree of algometry and joint range variation was obtained before and after the intervention in the three groups under study. No significant differences regarding algometry or joint range were obtained between the group of superficial needle insertion compared to the deep dry needling group, nor for any of these groups compared to the sham group.

**Conclusion** No improvement was found in the pain pressure sensitivity in a latent Myofascial Trigger Point (MTrP) of the gastrocnemius muscle nor were there improvements in dorsal and plantar ankle flexion immediately after treatment for any of the needle depths studied. The mere insertion of an acupuncture needle in a MTrP in young athletes does not provide any therapeutic benefit within the study parameters. Therefore, it seems reasonable that repeated insertions or specific techniques should be used to achieve a beneficial effect.

## Keywords

- Myofascial trigger point
- myofascial pain syndrome
- superficial dry needling
- deep dry needling
- sham dry needling
- needle effect