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EFFECTIVENESS OF THE DIACUTANEOUS FIBROLYSIS ON MUSCLE STIFFNESS AND ROM

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Background: Diacutaneous fibrolysis (DF), developed by Kurt Ekman, is one of the many techniques to treat dysfunction of muscles and fascia, especially for adhesion. But few studies however have reported on its effectiveness. Lopez et al. (2013) showed that a combination of DF and physical therapy was effective in decreasing pain, increasing range of motion (ROM), and improving functional status for subacromial pain syndrome. However, there are no reports on the effectiveness of DF on muscle stiffness.

Purpose: The present study aimed to assess the effectiveness of DF on muscle stiffness and ROM.

Methods: The subjects were 18 healthy men (mean age, 21.0 years) with no history of traumatic injury. The medial head of the left gastrocnemius muscle (GM) of the left leg was studied in each subject. The subjects were randomly divided into either the DF group or the control group, 9 in each group. The DF group underwent GM DF in the prone position for 5 minutes. The control group was asked to lie only in the prone position for 5 minutes.

The muscle stiffness of the GM and active ROM of the ankle joint were measured before and after the intervention. The muscle stiffness was measured using real-time tissue elastography (RTE) and an ultrasound (Hitachi Medical Corporation, EUB-7500, Tokyo, Japan), and active ROM was measured using a goniometer (Sakaimed TTM-KO, Japan). RTE was performed by free-hand manipulation of a 10-MHz linear probe and an attached reference bag. The strain ratio was used to calculate the muscle stiffness by dividing the distortion of GM at a depth of 1 cm divided by the amount of distortion of the reference bag. A high strain ratio indicates the soft tissue.

Statistical analyses were performed between the DF and control groups using a two-way repeated measures analysis of variance; post hoc Bonferroni analysis was performed where appropriate. A p-value of < 0.05 was considered significant. The results are presented as mean (standard deviation [SD]).

Results: The mean before/after muscle stiffness measurements were as follows: DF, 80.18 (17.45)/102.31 (27.81) and control, 77.86 (11.19)/77.89 (7.82). There were significant differences between the interventions (p=0.02), the methods (p=0.002), and their interactions (p=0.02). The muscle stiffness in the DF group was significantly lower (p=0.00002).

The mean before/after ROM measurements were as follows: DF, 13.33 (4.04)/16.11 (4.72) and control, 12.93 (1.54)/14.37 (1.57). There was a significant increase in ROM in the DF group (p=0.03).

Conclusion(s): DF is used for the treatment of adhesions and interaponeurotic and myoaponeurotic irritative nodule destruction. While using DF for GM, the adhesions between the GM and soleus muscle fell away, reducing the muscle stiffness and increasing the active ROM.

Implications: The addition of DF for adhesion to existing physical therapy techniques may prove useful.

Key-Words: 1. Diacutaneous fibrolysis 2. muscle stiffness 3. active ROM

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