

APPLICATION OF A NOVEL NEUROMODULATION FOR SKELETAL MUSCLE REGENERATION FOLLOWING CHRONIC FIBROSIS PROCESS.

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Introduction

Fibrosis is a condition where fibrous connective tissue invades a muscle area, usually as a consequence of injury and/or inflammation.

An injured muscle often does not fully recover its strength because complete muscle regeneration is hindered by the development of fibrosis.

Physicians and Therapists typically use different physical therapy to treat skeletal muscle contusion injuries, nevertheless the structural outcomes underlying these treatment are not well understood. Current and experimental therapies to improve muscle regeneration and limit muscle fibrosis include conservative and surgical principles with the adjuvant use of non-steroidal anti-inflammatory drugs and growth factor. We have been recently experiencing a new therapeutic approach defined as FREMS (Frequency Modulated Neural Stimulation) - Lorenz Therapy™, in which codified electrical pulses dedicated sequences elicit a robust and deep vasoactive induction in the stimulated muscle area and the consequent release of grow factors as VEGF and b-FGF in local area and in blood systemic circulation (Bevilacqua et Al). This new system has been deeply investigated for micro-angiopathy and neuropathy relief as well as for wound healing and it has been reported in recent double blind controlled studies an effective and remarkable release of Growth Factors (Bosi et Al) and reversing diabetic neuropathy as well as reducing pain in painful Shoulder (Masini et Al).

The aim of this study was to use this therapeutic methods in an attempt to develop a new physical approach to promote efficient healing and recovery of strength after muscle injuries.

Our working hypothesis was to use this therapy directly on the fibrosis area in order to recover as much as possible the complete functionality of interested muscle.

Methods

To investigate this, we applied the therapy on 12 muscle injuries which had developed fibrosis tissue for at least 10 session consecutively (one per day).

This improvement was determined through responses to physiological testing.

Conclusions

Our preliminary results suggest that use of Lorenz Therapy™ is able to reorganize the microcirculation environment and functionality and to stimulate its blood flow increase by means of an important adjusting neurovegetative system effect and by the release of grow factor in local areas as into fibrotic cells district. Through these actions it is able to promote the enhance muscle regeneration and reduce the formation of fibrosis.
