MYOFASCIAL THERAPY AS A PART OF THE TREATMENT OF NONSPECIFIC LOW BACK PAIN

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ABSTRACT

The lumbodorsal fascia (LF) has been proposed to represent a possible source of idiopathic low back pain. One of the treatment options that can be applied in the case of chronic pain syndrome is myofascial therapy.

The aim of the study is to present techniques for myofascial treatment and to determine their effectiveness in patients with nonspecific low back pain.

Methodology: Myofascial treatment techniques are presented, and its effectiveness is estimated in 25 patients with nonspecific low back pain. Outcome measures include assessment of pain intensity by Visual Analogue Scale (VAS), Slump test, discriminatory sensibility and mobility test. All patients were assessed prior to start the therapy and at follow-up at 1st month.

Results: Myofascial release therapy produced statistically significant improvement in both pain and function in our patients suffering nonspecific low back pain.

Conclusions: The outcomes confirm the effectiveness of the techniques for myofascial release and they could be successfully implemented as a part existing physiotherapeutic programs for patients with nonspecific low back pain. Due to the short follow up, we suggest considering the data as preliminary findings and further research are needed.

Key words: myofascial treatment, low back pain

INTRODUCTION

About 80 percent of adults experience low back pain at some point in their lifetimes. It is the most common cause of job-related disability and a leading contributor to missed workdays. In a large survey, more than a quarter of adults reported experiencing low back pain during the past 3 months (William Morrison). Many factors may underlie a reason of back pain, from disc injury to psychological issues to *tissue* changes that occur over time. In recent decades, the idea that your fascia — thick connective tissue that covers, organizes, and supports all the muscles, bones, tendons, ligaments and organs of the body — may be the source of back pain has been investigated with piqued interest by scientists and lay practitioners alike. New knowledge of anatomy of fascia can recognize a multilayered myofascial and aponeurotic structure whose characteristics change according to its location (Schleip, Vleeming, Lehmann-Horn, Klingler). The fascial system interpenetrates and surrounds all organs, muscles, bones and nerve fibers, endowing the body with a functional structure, and providing an environment that enables all body systems to operate in an integrated manner. This is the broadest definition of the fascia. The concept of a continuum of the collagen and connective structure, the

cellular diversity that makes up the fascia, is emphasized. It is this continuum itself that assures the health of the body. These scientific definitions allow healthcare practitioners to make some deductions about the fascia.

The most famous and known fascial structure of the back is the thoracolumbar fascia (TLF). The TLF has an essential role in the transfer of loads between the trunk and extremities and help to maintain the stability of the lumbosacral area. New research of anatomy recognizes one superficial fascia (related with the hypodermis), three layers of deep fasciae (related with the locomotor system) and various internal fasciae (related with the internal organs) (Stecco, 2015). *The superficial fascia* envelopes the superficial vessels and nerves and is richly innervated. The superficial fascia is connected to the skin (retinaculum cutis superficialis) and to the deep fascia (retinaculum cutis profundus) by fibrous septa, forming a three-dimensional network between the fat lobules of the hypodermis. This network provides a dynamic anchor of the skin to underlying tissues and permits a flexible and yet resistant mechanism of transmission of mechanical loads from multi-directional forces. *The Deep Fascia:* in the trunk the deep (or muscular) fascia is organized in three different layers. *The superfi-*

cial layer invests the trapezius, the latissimus dorsi, the gluteus maximus, the pectoralis major, the oblique external muscle and includes the posterior layer of the thoracolumbar fascia. This myofascial layer plays a key role in the coordination between trunk and extremities and in the spiral movements. The *intermediate layer* is formed by the rhomboid and the serratus posterior muscles with their fascia. Distally this complex fuse with the inner aspect of the posterior layer of the thoracolumbar fascia. Anteriorly it continues with the serratus anterior fascia and then with the clavi pectoral fascia. This myofascial layer allows a perfect plane of gliding between the superficial muscles and to the deeper muscles and it connects all the muscles involved in the scapular stability.

The *deep layer* includes the anterior or middle layer, in the three layers model, (Willard et al, 2012) layer of the thoracolumbar fascia, the erector spinae

muscles, the transversus abdominis and oblique internal muscles. This deep myofascial layer has an important role in posture and weight bearing.

The fascial anatomy permits a change of perspective, suggesting that when a patient complains low back or pelvic pain, It Is Important to investigate if there are also other symptoms or problems associated. The severity and the timing of appearance of the various pains can help to understand what the main problem of that patients is and what are the compensations. Surely, only a global treatment of all the problems of that patients, analyzed according with the fascial continuity, can permit a complete and durable result of fascia recognize.

The main goals of Myofascial Release (MFR) treatment are to reduce pain, to improve soft tissue flexibility due to spasm and tension, to increase mobility and posture, thereby, leading to improved functional capacity, better ability to perform activities of daily life, and prevention of work loss.

Figure 1. The current literature supports a potential nociceptive function of LF in the aetiology of low back pain.

This is graph represents two of several possible scenarios in respective cases of fascia generated low back pain. (1) Micro injuries and/or inflammation and resulting irritation of nociceptive nerve endings in lumbar fascia may directly induce back pain, accompanied with a sensitization of fascial nociceptors. In a second pathway (2) tissue deformation due to injury and/or immobility may impair proprioceptive signaling. This induces a sensitization of fascial nociceptors wide, which then alters the functioning of related polymodal neurons in the spinal cord to respond more strongly to potential nociceptive signaling, even to gentle stimulation. Combinations of both pathways are of course also possible. Figure partially based on Langevin & Sherman.

METHODOLOGY

The study included 25 individuals (15 male and 10 female), aged between 40-53 years, all suffered from low back pain. Their complaints persists more than three months. Patients with neurological symptoms were excluded from the study. All individuals were followed up for 1 month, and tests were provided before the start of the therapy, and at the follow-up at 1-st month.

For assessment of the functional status were used: Assessment of pain intensity by Visual Analogue Scale (VAS), Slump test, discriminatory sensibility and mobility test (Ott, Schober).

The myofascial release technique was applied once a week. Therapy sessions follow a pattern to locating the areas of the fascia that appear to be restrict-

ed and measuring the level of loss of motion or loss of symmetry in the body. Subsequent treatment sessions be conducted every week. The specific releases generally include gentle application of pressure or sustained low load stretch to the affected area. Progress is gauged by the level of increased motion or function experienced, and/or decrease in pain felt by the patient. Manual technique: Area of treatment: Centre of coordination; Instrument: elbow (70%), knuckle (28%), fingertips (2%). Target tissue: Deep fascia, epimysium; Movement: 80% compression, 20% sliding; Type of pain: Intense, needle-like, can refer elsewhere.

A home-based exercise program was instructed by the physiotherapist to each patient. In addition, a written exercise program was given to the patients. The exercise program lasted for one month and was performed at least five days per week. During the program patient had to apply the next rules:

- Do not force the body into difficult or painful positions - stretching should be pain free. Hold stretches long enough (15 to 30 seconds) to adequately lengthen muscles and improve range of motion.
- Repeat a stretch between 2 and 5 times.

RESULTS

The VAS scores after the therapy were significantly lower compared to pre-therapy scores and the differences between pre-therapy and at one-month post-therapy were found to be significant (prior-VAS 5-30%; VAS 4-43%; VAS 3-27%; after VAS 3-35%; VAS 2-30%; VAS 0-35%). Subjects demonstrated a significant improvement in mobility tests: Ott-prior 1,84cm after - 2,34cm; Schober-prior - 1,48cm; after - 1,58cm; discriminatory sensibility - prior 98%; after - 77%). Slump test was negative preceding and the end of study.

Table 1. Results of mobility tests

Test	Start	after 1 month
Ott	1.84 cm $\pm$ 3,00 cm	2.304 cm $\pm$ 2,56 cm
Schober	1.48 cm $\pm$ 1,36 cm	1.58 cm $\pm$ 2,19 cm

Figure 2. Results of VAS – pretreatment

Figure 3. Results of VAS – 1 month

CONCLUSIONS

Myofascial release therapy, applied in our study, produced significant improvement in both pain and function in our patient suffering of nonspecific low back pain. The right choice of densification and the regular exercises are an important condition for the effectiveness of the treatment. Despite available data point towards a significant role of the TLF in low back pain, further studies are needed to better understand neurophysiological dynamics. Due to the small size and short follow up, we suggest considering this data as preliminary findings/and further research are needed.

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