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Effectiveness of Fascial Manipulation Method (FM®)

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Conflict of interest
The authors declare that they have no conflict of interest.

Abstract

Background

Fascial Manipulation® (FM®) is a manual method of treatment created by Luigi Stecco that centres on the muscular fascia. Fascia is a fibrous collagenous tissue which, with its wide strands, connects all the connective tissues in the body into a whole. Fascia can also cause restriction of motion of the organs as a result of an injury, inflammation or infection. FM® technique bases on identification and therapy of specific points, which are located at the point of convergence of the vectorial forces of the muscles involved in every movement. The aim of this literature review was to analyze publications on the use of FM® in treatment of pain and functional dysfunctions.

Materials and methods

Material for this literature review was found by two independent authors using PubMed, Cochrane library, ScienceDirect and PEDro databases. In order to identify appropriate studies, a combination of keywords „fascial manipulation", „pain", „dysfunction" was used. Finally, 10 publications were qualified for a literature review.

Results

In the analyzed ten publications, improvement after treatment, reduction of pain and better functional outcome in patients conditions were figured. Six authors had some similar conclusions which state that the positive results of treatment last over time. One study presented opposite findings and state that the treatment has not brought long-lasting effects.

Conclusions

Considering all the reports on this subject, it is suggested that FM® therapy is worth considering in treatment of pain disorders, orthopaedic dysfunctions and postural disabilities. Further research of the subject on whether the treatment results are sustainable is necessary.

Key words: fascial manipulation; pain; dysfunction; manual therapy

Background

Fascial Manipulation® (FM®) is a manual method of treatment created by Luigi Stecco that centres on deep muscular fascia. Fascia is a fibrous collagenous tissue which, with its wide strands, connects all the connective tissues in the body into a whole (1,2). It contains also elastic fibres and within each layer the fibres run in different directions. It has arrangements and thickness that are different depending on the part of the body, the body surface and gender (3) In normal conditions, visceral fasciae are unstrained, elastic and allow mobility to the tissues of the body but also provide stability. They are able to transmit forces and also to cause pain - due to free nerves endings and receptors within the fascia. Fascia can also cause restriction of motion of the organs as a result of an injury, inflammation or infection (4–6).

FM® technique bases on identification and therapy of specific points around the fascia termed Centre of Coordination (CC). Every CC is located at the point of convergence of the vectorial forces of the muscles involved in every movement.

There are also points called Centres of Fusion (CFs), localized in the intermuscular septum, retinacula controlling movements along intermediate directions, between different planes. By sliding the subcutaneous tissue, biomechanical disturbances within the surrounding muscles are prevented(1,2). If fascia is not gliding it can influence on movement, causing disordered movement patterns.

The FM® method focuses on movement analysis system and assesses fascial mobility through and between the three cardinal planes of movement- it treats fascia like three-dimensional continuum. It allows for also regional influences from musculoskeletal and fascial connections(1,7).

According to Fascial Manipulation® model, body is separated into myofascial units (MFUs), which are formed by monoarticular and biarticular muscle fibres and enclosed by deep fascia. Each MFU contains motor units starting the cascade leading to body part movement, the joint where movement arises, nerves and vessels and fascia that puts these elements together (1,7) In FM® there are also areas where the pain is noticed, called the centre of perception (CP) and for each MFU one CP is described(8). The aim of this literature review was to analyze publications on the use of FM® in treatment of pain and functional dysfunctions.

Materials and methods

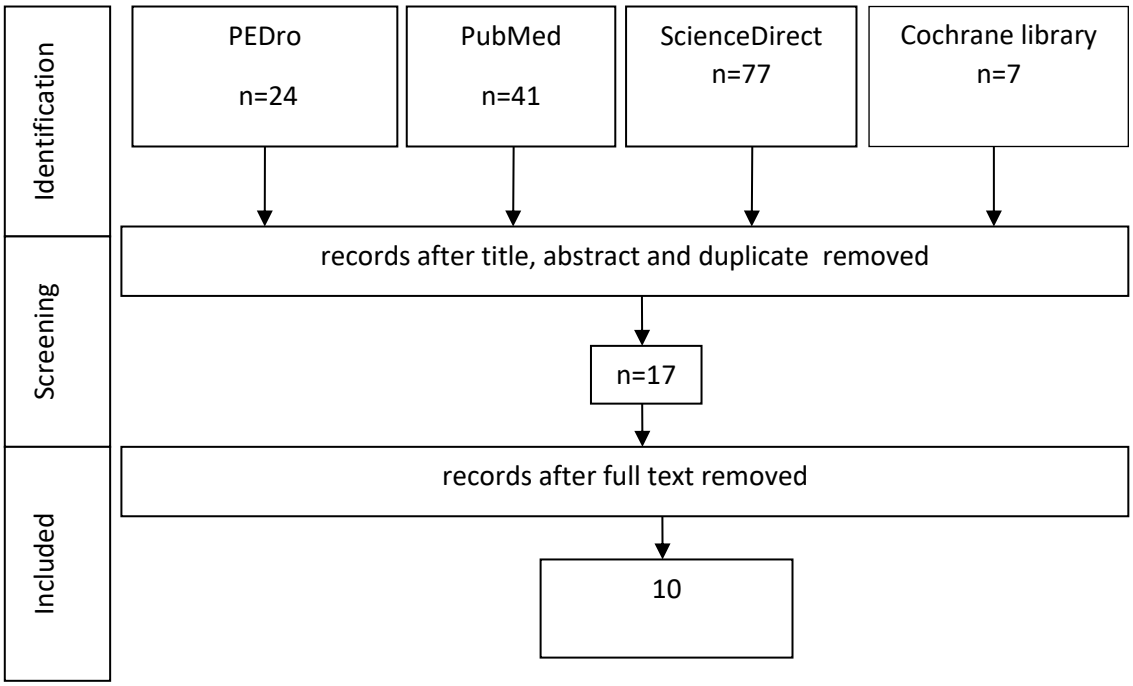
Material for this literature review was found by two independent authors using PubMed, Cochrane library, ScienceDirect and PEDro databases. In order to identify appropriate studies, a combination of keywords „fascial manipulation", „pain", „dysfunction" was used.

The formula used for the search has been adapted to each of the databases. For PubMed and Cochrane library databases it was "fascial manipulation pain dysfunction", for PEDro "fascial manipulation" and for Science direct ("fascial manipulation" AND "pain" AND "dysfunction").

The following exclusion criteria were applied: no Polish or English language version of the article, post-conference summaries, articles using the term "fascia manipulation" for other manual therapy methods (non-related with FM®).

The literature review consisted of 3 stages. In the first stage, the publication was searched using keywords. The second stage involved analyzing the titles and abstracts of the works in terms of their purpose and exclusion criteria. In the third stage, full versions of the articles were evaluated. Finally, 10 publications were qualified for a literature review- fig.1, tab.1.

Figure 1. Flow diagram of data extraction from the literature search.



Results

Table 1. Publications qualified for review

Title, authors, year	Shortened results
Application of Fascial Manipulation© technique in chronic shoulder pain—Anatomical basis and clinical implications, Day et al., 2009(9)	Results show that Fascial Manipulation © technique can help patients with shoulder dysfunctions in reducing pain.
Treating patellar tendinopathy with Fascial Manipulation, Pedrelli et al., 2009(8)	In the questioned group of patients, it was observed that the treatment causes pain reduction in a short time ($p<0.0001$). These results of treatment remained unchanged or improved quickly. Results suggest that the patellar tendon may be only apparent zone of perceived pain and that the muscular fascia of the quadriceps muscle can cause these symptoms. Modification in this area can affect steadiness disturbances and following disorders.
Evaluation of fascial manipulation in carpal tunnel syndrome: a pilot randomized clinical trial, Pintucci et al., 2017(10)	After 5 weeks of therapy, outcome shows that Fascial Manipulation is applicable to patients with carpal tunnel syndrome. Results are better than expected (1.11 vs 0.91), but they didn't last over time.

Fascial manipulation vs. standard physical therapy practice for low back pain diagnoses: A pragmatic study, Harper et al., 2019(11)	FM® appears to improve NPRS, GROC, and ODI more than SPT. FM® may provide an effective treatment technique for LBP. Results show that FM® technique can increase Numeric Pain Rating Scale (NPRS), Global Rating of Change (GROC), and Oswestry Disability Index (ODI), so it can be successful for patients with low back pain.
Fascial Manipulation(®) method applied to pubescent postural hyperkyphosis: A pilot study, Ćosić et al., 2014(12)	A statistically significant difference ($p < 0.05$) was presented in all the parameters analysed before and after treatment and at a 7-month follow-up. Fascial Manipulation(®) can participate and be successful in treatment of postural hyperkyphosis in pubescent subjects.
Fascial Manipulation® for chronic aspecific low back pain: a single blinded randomized controlled trial, Branchini et al., 2015(13)	Patients who were treated with Fascial Manipulation® method appeared to show significant improvements in their conditions at the end of the individual therapy. The measurable effects in patients recovery were noticed in both short- and medium-term comparing to manual therapy.
Myofascial pain of the jaw muscles: comparison of short-term effectiveness of botulinum toxin injections and fascial manipulation technique, Guarda-Nardini et al., 2012(14)	Fascial Manipulation® technique and botulinum toxin injections proved to be effective over time for pain relief. The two methods showed comparable improvement in patients conditions, but it would seem that Fascial Manipulation® brings slightly more beneficial outcome in reducing subjective pain perception and botulinum toxin injections brings slightly more beneficial outcome regarding jaw range of motion increase. After three months check, it turned out that the difference between the treatment protocols and the results in patients conditions were not clinically significant.
Sport injury prevention in individuals with chronic ankle instability: Fascial Manipulation® versus control group: A randomized controlled trial,	The results demonstrate that patients outcomes have improved during 6-months treatment. The 1-year follow-up reported the absence of any reported symptoms. The

Brandolini et al., 2019(15)	FM® technique improved range of motion, symptomatology and was helpful in injury prevention in the study group.
Fascial Manipulation Associated With Standard Care Compared to Only Standard Postsurgical Care for Total Hip Arthroplasty: A Randomized Controlled Trial, Busato et al., 2016(16)	FM® method was more effective than standard therapy in treating patients after Total Hip Arthroplasty. 2 FM® sessions significantly improved functional outcomes in the study group.
Conservative treatment of carpal tunnel syndrome: comparison between laser therapy and Fascial Manipulation(®), Pratelli et al., 2015(17)	The results showed that patients who received FM® treatment observed subjective pain reduction and better functional outcomes assessed by BCTQ at the end of treatment and follow- up. In opposite, the group that received LLLT showed improvement only at the end of treatment- the results didn't last over time. It is worth considering FM® therapy in CTS treatment.

In the analyzed ten publications, improvement after treatment, reduction of pain and better functional outcome in patients conditions were figured. Pedrelli et al. (8), Ćosić et al. (12), Branchini et al. (13), Guarda- Nardini et al. (14), Brandolini et al. (15) and Pratelli et al. (17) have some similar conclusions which state that the positive results of treatment last over time. A study Pintucci et al. (10) presented opposite findings and state that the treatment has not brought long-lasting effects.

Discussion

The aim of this review was to assess the effectiveness of the Fascial Manipulation® method in different disorders. In the analyzed ten publications, improvement after treatment and better outcome in patients conditions were found. Disorders treated with the use of the FM® method were: chronic shoulder pain (9), low back pain (11,13), postural hyperkyphosis (12), chronic ankle instability (15), total hip arthroplasty (16), carpal tunnel syndrome (10,17). It is worth emphasizing fact that, according to publications included in this literature review, FM® method turned out to be effective particularly in low back pain (11,13) and carpal tunnel syndrome (10,17). According to Pedrelli et al. (8)and Guarda-Nardini et al. (14) reduction of pain is observed after FM® treatment. Pintucci et al. (10) state that treatment reduced pain but the results didn't last over time. However, a publication by Branchini et al. (13)produced the findings that effects in patients recovery were noticed in both short- and medium-term comparing to manual therapy.

It is worth noting that according to the Stecco theory, the symptomatic part of the body does not have to be the source of the disorder. FM® therapy is not applied in painful area, but in the part of the body that showed the greatest dysfunction during the examination (1).

The results obtained by all authors can be explained by this non- standard approach to the patient in FM® technique that is based on looking for causes of symptoms. An ability to find an altered deep fascial region and mechanisms of pain can make therapies more effective than treating only symptomatic part of the body(5). The deep fascia consists of layers of dense connective tissue which transmit the load and loose connective tissue that allows gliding of the collagen layers (13). If the muscular fascia does not glide properly during movement, it will cause unremitting tension in a given myofascial unit (18), which causes various disabilities, even in distant parts of the body.

There are some explanations for the mechanism of FM® therapy. FM® technique bases on putting manual friction on the densified CCs and CFs in order to increase temperature and reorganise the consistency of loose connective tissue which inhlods hyaluronic acid(1,4). Hyaluronan by increasing concentration and/or size determines sliding function between fascia and the muscle and begins to entangle into complex arrays, leading to a decrease in the gliding properties of the fascia(19). Therapy on CCs and CFs normalize fascial gliding around these areas, which is a potential reason for successful treatment. Another explanation could be in theory that after FM® session, the free nerves endings in fascia would no longer be activated at a lower threshold and the patient commonly finds pain relief with the normal perception of pressure. (1,20).

In recent years there has been a growing interest in manual therapy and its effectiveness in treating patients with pain and limited ROM (21). Manual physical therapy is becoming an increasingly common method of treating pain and orthopaedic dysfunctions. It improves weakened range of motion in a joint and subsequently musculoskeletal function and decreases pain(22). This method bases on moving joints in different directions to bring movement again- joint manipulation and mobilization, stretching and counteracting therapist resistance(23). Manual therapy techniques have been the subject of many studies that were designed to measure the effectiveness of these techniques on treating different dysfunctions like knee osteoarthritis (22–24), nonspecific chronic neck pain (25), idiopathic scoliosis(26), shoulder range of motion deficits(27) and reducing pain.

Conclusions

Considering all the reports on this subject, it is suggested that FM® therapy is worth considering in treatment of pain disorders, orthopaedic dysfunctions and postural disabilities. Further research of the subject on whether the treatment results are sustainable is necessary.

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