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Effectiveness of myofascial release: Systematic review of randomized controlled trials

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Summary *Introduction:* Myofascial release (MFR) is a form of manual therapy that involves the application of a low load, long duration stretch to the myofascial complex, intended to restore optimal length, decrease pain, and improve function. Anecdotal evidence shows great promise for MFR as a treatment for various conditions. However, research to support the anecdotal evidence is lacking..
Objective: To critically analyze published randomized controlled trials (RCTs) to determine the effectiveness of MFR as a treatment option for different conditions.
Data sources: Electronic databases: MEDLINE, CINAHL, Academic Search Premier, Cochrane library, and Physiotherapy Evidence Database (PEDro), with key words *myofascial release* and *myofascial release therapy*. No date limitations were applied to the searches.
Study selection: Articles were selected based upon the use of the term *myofascial release* in the abstract or key words. The final selection was made by applying the inclusion and exclusion criteria to the full text. Studies were included if they were English-language, peer-reviewed RCTs on MFR for various conditions and pain.
Data extraction: Data collected were number of participants, condition being treated, treatment used, control group, outcome measures and results. Studies were analyzed using the PEDro scale and the Center for Evidence-Based Medicine's Levels of Evidence scale.
Conclusions: The literature regarding the effectiveness of MFR was mixed in both quality and results. Although the quality of the RCT studies varied greatly, the result of the studies was encouraging, particularly with the recently published studies. MFR is emerging as a strategy with a solid evidence base and tremendous potential. The studies in this review may help as a respectable base for the future trials.

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Introduction

Myofascial release (MFR) is a widely employed manual therapy treatment that involves specifically guided low load, long duration mechanical forces to manipulate the myofascial complex, intended to restore optimal length, decrease pain, and improve function (Barnes., 1990). MFR when used in conjunction with conventional treatment is said to be effective to provide immediate relief of pain and tissue tenderness (Hou et al., 2002; McKenney et al., 2013). It has been hypothesized that fascial restrictions in one region of the body cause undue stress in other regions of the body due to fascial continuity. This may result in stress on any structures that are enveloped, divided, or supported by fascia (Schleip., 2003). Myofascial practitioners claim that by restoring the length and health of restricted connective tissue, pressure can be relieved on pain sensitive structures such as nerves and blood vessels.

MFR generally involves slow, sustained pressure (120—300 s) applied to restricted fascial layers either directly (direct MFR technique) or indirectly (indirect MFR technique). Direct MFR technique is thought to work directly over the restricted fascia: practitioners use knuckles or elbow or other tools to slowly sink into the fascia, and the pressure applied is a few kilograms of force to contact the restricted fascia, apply tension, or stretch the fascia. Indirect MFR involves a gentle stretch guided along the path of least resistance until free movement is achieved (GOT, 2009). The pressure applied is a few grams of force, and the hands tend to follow the direction of fascial restrictions, hold the stretch, and allow the fascia to loosen itself (Ajimsha et al., 2014a) The rationale for these techniques can be traced to various studies that investigated plastic, viscoelastic, and piezoelectric properties of connective tissue (Schleip., 2003, 2012; Pischinger., 1991; Greenman., 2003).

Recent Fascia Research Congresses (FRC) define fascia as a 'soft tissue component of the connective tissue system that permeates the human body' (Huijing and Langevin, 2009). One could also describe them as fibrous collagenous tissues that are part of a body-wide tensional force transmission system (Schleip et al., 2012). The complete fascial net includes dense planar tissue sheets, ligaments, tendons, superficial fascia and even the innermost intramuscular layer of the endomysium. The term fascia now includes the dura mater, the periosteum, perineurium, the fibrous capsular layer of vertebral discs, organ capsules as well as bronchial connective tissue and the mesentery of the abdomen (Schleip et al., 2012). Fascial tissues are seen as one interconnected tensional network that adapts its fiber arrangement and density, according to local tensional demands (Schleip et al., 2012).

Authors such as Day et al. (2009); Stecco et al. (2013) and Langevin et al. (2011) and colleagues, have suggested that connective tissue could become tighter/denser in overuse syndromes, or after traumatic injuries, but it is unclear if this is due to an alteration of collagen fiber composition, of fibroblasts, or of ground substance. The same authors suggest that the alteration of fascial pliability could be a source of body misalignment, potentially leading to poor muscular biomechanics, altered structural alignment, and decreased strength and motor coordination. MFR practitioners claim to be clinically efficacious in providing immediate pain relief and to improve physiologic functions that have been altered by somatic dysfunctions (Hou et al., 2002; McKenney et al., 2013). MFR directs force to fascial fibroblasts, as well as indirect strains applied to nerves, blood vessels, the lymphatic system, and muscles. Laboratory experiments suggest that fibroblasts, the primary cell type of the fascia, adapt specifically to mechanical loading in manners dependent upon the strain magnitude, duration and frequency. Meltzer et al. (2010), in their in-vitro modeling study demonstrated that treatment with MFR, after repetitive strain injury, resulted in normalization of apoptotic rate, and reduction in production of inflammatory cytokines.

MFR is being used to treat patients with a wide variety of conditions, but there is little research to support its efficacy. According to Kidd (2009) the application of MFR is inherently not evidence-based medicine since it relies on clinician—patient interaction, it cannot be a neutral treatment; therefore, the subjectivity of the interaction cannot be removed when we try to determine its outcome. Kidd indicated that much of the effect of MFR relies on the skill of the clinician and his or her ability to sense the changes in the tissue. In addition, biological effects of touch can change the effectiveness of the treatment, depending on the state of either the clinician or the patient. This variability means that interrater reliability is low, and therefore, according to Kidd, prevents MFR from being considered evidence-based. Yet the same arguments have been applied to other manual therapies in the past that now are considered part of evidence-based practice. Although MFR is a popular therapy and anecdotal reports describe positive outcomes from MFR treatments, research is necessary to demonstrate its effectiveness to refute Kidd's argument. Therefore, the purpose of this systematic review was to critically analyze previously published literatures of RCTs to gather the documented effectiveness of MFR.

Methods

We searched the following electronic databases with no date limitations: MEDLINE, CINAHL, Academic Search Premier, Cochrane library, and Physiotherapy Evidence Database (PEDro) by adhering to the systemic review process followed by McKenney et al. (2013) in their study. Two reviewers performed independent searches in September 2013 which was later updated in May 2014. Key words used for the search were *myofascial release* and *myofascial release therapy*. Each reviewer identified articles as relevant based on the use of the term myofascial release in the abstract or key words. The lists were compared, and articles identified by both reviewers were collected in full text. A total of 133 articles were identified as relevant by both reviewers.

The 2 experienced reviewers with sound knowledge in the PEDro and CEBM's scales, screened the full-text articles for inclusion based on a set of inclusion and exclusion criteria. The inclusion criteria were as follows: (1) RCTs published in a scientific peer-reviewed journal, (2) studies with 10 or more participants, (3) contained sufficient