The quality of current Myofascial release research. Where we are? Critical appraisal findings of randomized controlled trials and a systematic review

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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. MFR is being used to treat patients with a wide variety of conditions, but there is a scarcity of evidence to support its efficacy. Studies are emerging in this field with varying results and conclusions. Analysis of the recent research trials and reviews will be a better way to appraise the quality and reliability of such works.

Objective: This work attempts to critically appraise and summarize the quality of current myofascial release research by analyzing three randomized controlled trials (RCTs) and one systematic review of the effectiveness of MFR on various neuromuscular conditions with an aim of facilitating the creation of a more homogenous and reputable base for future trials in the field. A critical appraisal of the conducted studies and reviews to pin point this strengths and weaknesses can help to fine tune future studies. This type of approach and its findings can be highly useful for a manual therapy technique having lots of practice variations and applicability to set more controlled and methodologically superior studies in the future.

Methodology: Effectiveness of MFR on tension type headache, lateral epicondylitis and chronic low back pain were the RCTs identified for the analysis. The systematic review selected analysed the published RCTs on MFR till 2014. The methodological qualities of the studies were assessed
using the PEDro, Centre for Evidence-Based Medicine's (CEBM) Level of Evidence Scale, Risk of Bias (RoB) Analysis Tool and AMSTAR 2.

**Discussion and Conclusion:** The RCTs analysed in this study were of moderate to high methodological quality (PEDro Scale), with higher level of evidence (CEBM Scale) and fewer bias (RoB). The effectiveness of MFR on tension type headache was the first among the studies with a moderate methodological quality (6/10 in PEDro) and with 2b level of evidence in CEBM Scale. The study proved that direct technique or indirect technique MFR was more effective than the control intervention for tension headache. The second RCT studied MFR as a treatment for lateral epicondylitis. The study was of a moderately high quality on the PEDro Scale (7/10) with 1b-level in CBEM. This study verified that MFR was more effective than a control intervention for LE in computer professionals. The RCT on chronic low back pain also scored 7/10 in the PEDro Scale and 1b in the CEBM Scale. This study confirmed that MFR can be a useful adjunct to specific back exercises than a control intervention for CLBP.

Even though the RCTs analysed were methodologically superior with higher quality compared to many studies in this field, all the three RCTs stated the usage of self-report measures and underpowered sample size as the major limitations along with a performance bias reported in the TTH trial. Limitations including improper blinding of the therapists and the patients, recall and reporting bias, long term follow up issues and lack of effect size calculation were a few among them. The missing of outcome data was mentioned in all the RCTs. The three trials included have reported that the outcome objective and patient improvement were assessed in a manner to limit bias even though the details were not present. All of the RCTs have given some details about the expertise/experience of the practitioners and with a well-structured protocol. As the need and significance of this analysis mentioned, the main idea of the conducted researches were to create respectable base for future trial in this field. Since MFR practices vary from clinician to clinician or studies to studies, the authors were recommending more uniformity in the practice.

The analysed systematic review on MFR was published in 2015 and was designed to assess the quality, results and limitations of 19 RCTs found in a multi-database literature search of peer-reviewed articles in the English language based on clear inclusion criteria. AMSTAR 2 was used
to measure the quality of the systematic review and demonstrated moderate methodological quality as a whole. Omission of a risk of bias analysis was the major limitation found. Considering the varying quality and standard of the RCTs reviewed, an analysis of the possible biases or flaws might have been an advantage. Lack of heterogeneity testing, missing components in ‘comprehensive research strategy’ and study setting details were the other limitations found but they were justified under limitations of the study. The selected RCTs assessed a total of 1228 patients with the sample sizes varying from 10 to 200 with a mean (SD) of 65 (44) patients. The methodological qualities of the included RCTs were moderate to high. Rating with CEBM Scale revealed that 14 RCTs were in the category of 2b while the remaining were in category 1b. In many of these trials, the MFR treatment was adjunctive to other treatments and the potential specific MFR effect could not be determined. The authors quoted, “MFR may be useful as either a unique therapy or as an adjunct therapy to other established therapies for a variety of conditions”.

In assessing the validity of this systematic review, it had clear inclusion and exclusion criteria and a sensitive search strategy. Included trials were assessed for quality using recognized critical appraisal tools. Overall, this systematic review can be recommended as a starting point for assessing the quality and variety of available evidence on the efficacy of MFR. Even though the systematic review clearly focuses on Myofascial release, the included studies were very heterogeneous. The reviewer tried to mention such issues like the heterogeneity of the population, treatments applied, outcome measure usage and assessment and the quality of studies included. Though the result of the review was pointing towards advocating its usefulness, there were a number of threats that challenge the statistical inferences underpinning these findings. The main issue was with the generalization of the result. They were even advocating caution on the result interpretation due to the possible type I error resulted from the underpowered samples. This review can only suggest a clinician that there is evidence that MFR alone or added to other conventional therapies, relieves pain and improves function not lesser than conventional therapies studied. Recommendations for future randomised, effectiveness trials on MFRs include: a-priori calculated sample sizes, adequate power, reliable and validated outcome measures, limiting the sources of bias, follow-up time points beyond 24 hours and appropriate levels of significance, assessing threats to statistical validity and appropriate registration. Most importantly, RCTs should present between group differences and desist from reporting within group differences as evidence of effectiveness.
These recommendations would support inferences of clinically meaningful results and facilitate future meta-analyses. This review also supports for the call for transparency within all clinical trials and endorsing of journal adoption of reporting guidelines. The subjective component of MFR must be addressed in future study designs as it is having a major relevance in these types.

This systematic review concludes by stating various measures to be incorporated in the future trials. The authors were optimistic that by adhering to such guidelines in the future will surely result in much higher quality studies there by more accurate results. This analysis supports many of the norms put forward by the systematic review authors and believes that such attempts will make the research in physical therapy field more valid and reliable.

Critical appraisal is an important element of evidence-based medicine to carefully and systematically examine research to judge its trustworthiness, value and relevance in a particular context. An in-depth analysis of the selected RCTs and systematic review was attempted here to find out the strength and weakness with suggestions for future works in this field. This analysis concludes that the three RCTs and the systematic review analysed in this review had the potential to move the Myofascial release research into the next level, though methodological flaws and interpretation biases are evident. These types of attempts should be appreciated and facilitated as this will create reputable backgrounds on which high quality future trials can be built on.

PEDro Scale for MFR RCTs (Max value=10)
CEBM level of evidence score for MFR RCTs

![Bar chart showing levels of evidence scores for various conditions and studies, such as Tension Headache, Lateral Epicondylitis, Low back pain, Heel pain, Hamstrings tightness, Pelvic Rotation, etc., with evidence scores ranging from 1b to 4.]