Clinical Placement- Myofascial Release

Table of Contents

Introduction....3

Discussion/ Main theme....3

What is myofascia?....3

What is Myofascial release?....4

Linking with theory....4

Basic science of myofascial release....5

Effectiveness of Myofascial release....6

Acute changes in joint range of motion using Myofascial release....7

Conclusion....8

Reference List....9

Introduction

I spent my clinical hours at following places: Middlesex University, LSI sports injury clinic and FSI. These two places offered me some fantastic opportunities and insight into how this two-establishment deal with their population sports injuries. The one area I most interested was seeing how the therapist from both place used 'Myofascial Release' to increased joint range of motion or flexibility to the affected or injured area. I went home and studied this treatment modality to see what evidence there currently is and whether I would use this in my own clinical practice.

Discussion/ Main theme

Sports participation now days are becoming more popular in youth (Allison Schroeder, 2015). The more individuals become active the more exercises related injuries occurred (Allison Schroeder, 2015). Strenuous exercise can result in severe muscle damage or muscle injuries which results in to decrease in to range of motion of joint or flexibility (Allison Schroeder, 2015). There are many techniques are available to resolve this problem or injuries. One of those techniques is myofascial release, which is becoming more popular among the therapists (Allison Schroedrr, 2015). Myofascial release is a type of a massage which helps in relief of pain, reduced muscle spasm and muscle tension and it improves range of motion (Allison Schroeder, 2015).

What is myofascia?

It is tough connective tissue (fascia) which spreads throughout the body in three-dimensional web. Fascia surrounds every muscle, bone nerve, blood vessel and organ, where muscle is the powerhouse of locomotion and posture for the body (Joellen Sefton, 2004). It surrounds every organ of our body and assist in the attachment of muscle to bone which gives structure flexibility (JoEllen Sefon, 2004). A fascia exhibits the theory of thixotropy which is the more it's moved or disturbed it becomes softer and it's become more solid when it sits uninterrupted. According to osteopathic theory, this soft tissue can become restricted as a result of psychogenic diseases, trauma, overdue, infectious agents or inactivity; which ultimately leads to muscle tension, pain, by diminishing blood flow. Fascia release with the movement, stretching, massage and body heat whereas lack of movement from injury or inactivity makes fascia harder (Joellen sefon, 2004).

What is Myofascial release?

Myofascial release is a manual technique on soft tissue applying a gentle stretch to the restricted fascia (Rigs, 2007). It helps to reduce restrictive barriers or fibrous adhesions lies between layers of the fascial tissue (Lenoid Kalichman, 2016). Myofascial release is a method designed not only to address muscle involvement, but it also helps in the thixotropic nature of the fascia and helps facia to be a softer in more pliable state (Joellen Sefon, 2004). It is especially adaptable to the sports medicine environment. Myofascial release often successful where other therapies fail, it is easily adapted to the field or athletic training room (Joellen Sefon, 2004). It can be use before game to loosen, warm to relieve painful spasm. I used myofascial release on the football player who got the calf muscle cramp during the game, which was beneficial to the player. After giving three session of technique player returned to play a game.

Linking with theory

According to the theoretical perspectives regarding the muscle stretching and relaxation, changes in tightening of fascia, covering muscles could significantly hinder muscle flexibility, causing acute or chronic pain as well as decrease in movement or activity level of the organ consisting the muscle. The particular connective tissue exhibits the phenomenon of thixotrophy, which could be more solid or more fluid based on its movement or flexibility. For instance, stretching, movement, massage and generation of body heat causes softening of fascia, in contrast to injury, inactivity or pain causes it to solidify and nonadaptable, which leads to muscle stiffness and pain (Barnes, 1997). According to this theory, MFR causes pressure and stretching and generates friction, which causes temperature elevation in the surrounding muscle, promoting the fluid state of fascia, allowing proper movement and flexibilities of muscle. According to the therapeutic guidelines, in athletic training room or medical office, the MFR is recommended to be done prior involving in the sports activities, as a part of warm up, with others exercises. The sessions are usually pre-planned in a systematic series on regular basis (Sefton, 2004). Analyzing the therapeutic approach, I revealed that I have done the manual therapy properly during my clinical placement, which was evaluated with the observation of pain relief and performance improvement of the athletes.

Basic science of myofascial release

Connective tissue response in trauma: The body movement depends on the distribution and flexibility of connective tissues by biomechanical coordination and collaborative movement. Tightening of connective tissue is caused due to the protective nature of muscular mechanism that can arise due to micro-trauma or sudden acute injury or long time sustaining injury (Barnes, 1997). In any case of injury these connective tissues lose their space for flexible biomechanical motian. In this restricted condition myofacial tissues experience unexpected stress that causes long-time or short-time locomotive disruption and abnormal strain patterns that pull the osseous structure from its normal alignment (MacDonald *et al.,* 2013). These changes also affect the neural and vascular structure that causes neurologic symptoms like pain and muscle stiffness. Shrinking of the muscular tissues of the myofascial fascicle can limit its own functional length by reducing its strength, contractile potential and deceleration capacity.

Myofacial release: The basic nature of connective tissues is colloidal with elasticity and visco-elasticity. These tissues are also Piezoelectric that regulates its morphologic state involving the incoming energy and temperature. The pre mentioned deformation can also be described by spring and dashpot model along with resultant stress and strain curves. This model monitors and analyzes the viscoelastic properties and potentiality of connective tissues of deformation within 90 to 120 seconds of time (Barnes, 1997). The curve also determines the failure junctions of tissue and the level of tolerance depending the amount of load. It also monitors the changes of significant increase in collagen within alveolar septa during that 30 minutes that also effective for shock lung syndrome.

Problem solving: The purpose of myofacial release is to softer the connective tissues by reducing the operating energy and strength that also improvise the flexibility of disabled junction. For cellular view the objective of this process is to change the sol components to gel components. This process is conducted by phase re alignment of crystals by exposing them in electromagnetic field. It can be aroused from piezoelectric even that changes the electrical charge and polarity of collagen and proteoglycans. The entire organism is interconnected with chains of piezoelectric dipolar molecules which are capable of oscillation due to their spiral nature. In locomotive movement these polarisation of electric field act as the leader within the muscular sell molecule (Castro-Sánchez *et al.,* 2011). The molecular structure of proteoglycans allows them to store water within it by initiating the viscoelastic, shock-absorbing and energy-absorbing behaviour of the extracellular matrix. The information

collection and integrated cellular communication is optimal at 37.5 degree centigrade temperature that is the normal body temperature (Barnes, 1997). The improper information storing can be eliminated by external changes in temperature and energy that can takes the extracellular matrix back to optimal position and functionality. Inappropriate information of eclectic pulse stored in the liquid crystals could be cancelled by increase the temperature higher than normal state and by piezoelectric events, transferring the extracellular matrix back to a homogeneous fluid (Ajimsha, 2011). Through this entire process the mechanical force field effect of myofascial release eventually can affect the muscular tissues to get back the normal condition.

Effectiveness of Myofascial release

Le Gal *et al.* (2017) investigated the effects of self-myofascial release on a range of motion in internal rotation; shoulder instability perception as well as tennis serve performance among the adolescent advanced tennis players. The accumulation of tennis load generates osseous and soft tissue adaptation at shoulder. In this context, it has been revealed that three times self-myofascial release after warm-up through five weeks could significantly increase the internal rotation range of motion along with a reduced perception of shoulder instability, which ultimately maintains the tennis serve performance. The dominant glenohumeral internal rotation of the dominant side was observed to be reduced by 10 °, compared to nondominant side. The myofascial release causes shortening of pectoralis minor muscle, which in turn causes tilt in the scapula anteriorly, leading to the reduction of glenohumeral internal rotation. Authors are also found that the alternative therapy could be performed for enhancing wellbeing, while maintaining performance.

A systematic review done by Schroeder and Best (2015), in order to evaluate the evidences related to the MFR's effectiveness, revealed significant heterogeneity among six foam roller studies. In this context, one study revealed that in terms of design, a multilevel rigid roller (MRR) is more effective foam roller, compared to the bio-foam roller (BFR). On the other hand, another study revealed foam rolling increases muscle performance of thigh and gluteal muscles increased vertical jump, compared to two studies, revealing no change in muscle performance, with the use of foam roller. The author also found that that three studies investigated the roller massager usage with varying protocols and measured outcomes. One study revealed that the "maximal force output" is increased immediately as well as after 10 minutes of roller massager usage on calf. In contrast, no such change was observed by other

study on different muscle, instead of increased pain threshold after using roller massager. Therefore, research revealed significant variation in the evidences related to efficacy of MFR.

According to the American Cancer Society, “There is little scientific evidence available to support proponents' claims that myofascial release relieves pain or restores flexibility”. Another review revealed that the use of foam rollers or a roller massager priori or after exercise for self-myofascial release is helpful regarding the range of motion and soreness. However, there is significant lack of evidence regarding its effectiveness. It has been revealed that reviews published in 2013 and 2015 regarding the efficacy of MFR, which have identified that the clinical trials on this issue had been conducted in varied quality, technique, outcome measurement, leading to mixed outcomes (Sefton, 2004).

Acute changes in joint range of motion using Myofascial release

Improvement in performance of athletes could be the result of increased joint range of motion along with pain relief. The use of foam rolled for self myofascial release has been popularized recently which serves as an inhibitory technique, by decreasing overactive myofascial tissue. The mechanism of action reveals changes in joint range of motion. For instance, applying pressure with the roller messenger, on trigger points facilitates the Golgi tendon complex to extract a hindrance on the associated muscle, which causes it to be more pliable and less tense, thereby increasing the joint range of motion. This method has similar outcomes and benefits like the routinely performed fitness exercises including postural alignment exercise or static stretching. The study by Roylance *et al.* (2013) provided the first document regarding the effects of foam rolling upon joint range of motion in details. In addition to the previous study findings, the author found that this alternative treatment could elicit significant benefit, if used in a combination with postural alignment exercises and static stretching. However, the study only documented the short term improvements of the therapy, leaving an area of further research on the efficacy of this therapy. In recent context, the National Academy of Sports Medicine (NASM) suggests the rolling massager along with some stretching as a part of warm up exercise priori performing other activities. The findings of this study are actually supporting my experience of clinical placements with the sport injuries and alternative therapies.

Conclusion

In this essay, I have focused on evaluating and discussing the theoretical as well as clinical approach performed in my clinical placement. I have focused on the alternative therapy, myofascial release. I have evaluated my own performance at my clinical placement, while evaluating the effectiveness of the alternative therapy with the pre-existing clinical and scientific evidences as well as the theoretical background. I have revealed that although the therapy has significant potential as a sports therapy, there is a significant lack of systematic trials regarding the process. In addition, it needs proper utilization of combination with other alternatives to get the most effective result.

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