Latent (Pain Free) Trigger Points Alter Neurological Control of Shoulder Movement Causing Damage, Impingement and Injury

Introduction

This article summarises the very important clinical implications of the research done by Dr Karen Lucas in Melbourne for her PhD Thesis. She investigated the prevalence of latent (pain free) myofascial trigger points (MTPs) in the shoulder muscles of asymptomatic adults, and their affect on the control of muscles. She found that nearly 90% of the asymptomatic adults tested had at least one, and often many latent MTPs in these muscles. When investigating their affect on the neurological control of muscles, it was found that they alter the timing and activation of muscles producing dysfunctional movement. This creates abnormal stress on the joints and tissues, increases degeneration, and increases and the risk of injury and impingement syndromes. It was further found that the treatment of latent MTPs normalises the neurological control. This has profound implications.

What is a muscle activation pattern (MAP)

Abduction of one's shoulder through a full range of movement requires an incredible coordinated effort from a large number of muscles. There are the prime movers, the stabilisers, and the rotator cuff muscles whose job it is to maintain the smooth even contact of the glenohumeral joint surfaces. During the approximately 180 degrees of abduction each of these muscles must contract and relax at the appropriate time. This timing and activation is known as a muscular activation pattern (MAP)

What was done

Subjects

137 adult subjects were used for the trial. All had been pain free the previous week, had full shoulder movement and no obvious shoulder dysfunction or pathology. The subjects were examined for trigger points in seven of the muscles of their shoulder girdle.

MTP examination

14 were found to have no latent MTPs, while 123 (about 90%) had one or more. Nearly 80% of subjects had latent MTPs in their upper trapezius. Five out of the six remaining muscles scored at least 60% in the same respect.

The effect on MAPs

The subjects had the activity of the seven muscles measured by surface EMG during abduction. The latent MTP free subjects were used as a control. These controls all showed a consistent similar MAP for the seven muscles. On the other hand the MAP for those with latent MTPs showed differing orders and timing of activations.

The consequences

In the background research presented in this thesis it was discussed that this alteration of the MAP produces dysfunctional movement, therefore the joint loses it's smooth movement placing extra stress on the joint and surrounding tissues, and creates the potential for impingement. This predisposes and leads to a host of conditions such as impingement syndromes, rotator cuff syndromes, joint degeneration, bursitis and tendinopathies.

The effect of treatment of MTPs

For the next part of the trial those with latent MTPs were divided randomly into treatment and sham treatment groups. The sham treatment group received "ultrasound" with a non-functional machine. The treatment group had their trigger points treated using dry needling and stretching. Immediately following stretching subjects were re-tested using the surface EMG. In summary, the MAPs for the treatment group became normal while those for the sham treatment group remained abnormal. Dr Lucas did stress though that the effect was only measured short term, and that the long term effects were uncertain.

Clinical implications

Some of the many clinical implications are discussed briefly below. Each will be dealt with more completely in future research summaries.

Trigger point assessment and treatment should be considered for shoulder pain

It has been shown the latent trigger points can cause shoulder pain directly by becoming active, or indirectly by changing the shoulder function resulting in impingements, uneven joint pressure and so forth. They should be considered in cases of shoulder pain.

The prescription of exercises alone to correct pain syndromes should be seriously re-considered

Patients are often given exercises alone to remedy shoulder and other pain syndromes. Research has shown that MTPs are highly likely to be involved. This study showed they caused the nervous system to produce movements that were abnormal and detrimental. The MAPs are not under conscious control so patients cannot be instructed to perform exercises correctly. During exercise movements will likely continue to be abnormal and detrimental. This research indicates that trigger point therapy should be done concurrently to normalise neurological control.

Regular screening and treatment of trigger points Trigger point therapy should be considered.

Regular soft tissue therapy or a regular massage would arguably find and deminish latent trigger points, thus preventing them from becoming active (painful) and causing abnormal function.

Everone using a gym or exercising should be regularly screened for trigger points

Joint pains, injuries and impingement syndromes are too common among those who use a gym or exercise. This research suggests that latent MTPs causing abnormal joint function would make joints and tissues far more vulnerable to these. The risks would be magnified by the increased loads placed on these joints. As shown in the research the treatment of trigger points normalises muscular control.

Implications for sports performance

Whether one swings a golf club, a tennis racquet, or shoot basketballs you want the coordination of your muscles to be normal to produce the best results.

Keeping it practical

As shown in our previous research summary the treatment of trigger points can sometimes deactivate active MTPs making them pain free (latent). However, complete removal requires a course of therapy over a considerable length of time. The care these clinical implications suggest would involve a course of care to remove trigger points then regular maintenance screenings. If done by therapists alone this would be very expensive and time consuming, therefore be something only available to people such as elite sports persons. This is the reason the DrGraeme serious hand held massagers able to be used at home were developed. Under the guidance of a professional supplementary massage can be done at home, making this type of care affordable and practical.

Reference

THE EFFECTS OF LATENT MYOFASCIAL TRIGGER POINTS ON MUSCLE ACTIVATION PATTERNS DURING SCAPULAR PLANE ELEVATION, by K.R. Lucas PhD.

https://researchbank.rmit.edu.au/eserv/rmit:6364/Lucus.pdf

Further information

For further information we have a large number of usage guides and research summaries on our website www.drgraeme.com If you are a practitioner interested in trying vibration massage please contact us directly for further information, practitioner rate massagers and possibly a sample massager.

DrGraeme Massagers
331 Main St Bairnsdale (P.O. Box 914)
Bairnsdale Victoria 3875 AUSTRALIA
Phone: (Australia) (03) 51161298 (Overseas) +61351161298
Website: www.drgraeme.com
Email: graeme@drgraeme.com