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A LITERATURE REVIEW ON THE EFFECT OF TENNIS BALL EXERCISE ON RHOMBOIDS TRIGGER POINTS

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ABSTRACT

Many ailments, including conditions like myofascial pain, trigger points, sports injuries and in some neurological diseases, benefit from using tennis ball exercises. This Literature review aimed to determine the effectiveness of tennis ball exercise on rhomboids trigger points.

OBJECTIVE: *The research was to evaluate the effect of tennis ball exercises on rhomboid trigger points.*

METHOD: *The authors conducted a PubMed, and Google Scholar search and collected the reviews consisting of total systemic reviews, randomized controlled trials, and experimental studies regarding the current evidence of effect of tennis ball exercise on rhomboids trigger points.*

RESULT: *Tennis ball exercise have a significant effect on rhomboids trigger points. The articles were compiled in full text. Total of 30 articles were identified, out of which 20 articles were selected for review.*

KEYWORDS: *Tennis ball, trigger points, myofascial pain, rhomboids muscle*

INTRODUCTION

Pain is described as "an unpleasant sensory and emotional experience linked with actual or potential tissue damage,". A well-known and widespread reason of pain is myofascial pain syndrome. MPS, a typical form of non-articular muscular discomfort, and characterised by presence of hypersensitive nodules, and referred as myofascial trigger points (MTPs), which are related with localised pain. A firm, constrained, and pressure-sensitive point that is present in the muscles or connective tissues is known as a myofascial trigger point. The myofascial trigger points are more often present in postural muscles. Trigger point is painful because of acute stress or overload of muscle caused by isotonic or isometric activity and poor posture. Myofascial pain syndrome is diagnosed using the following criteria first is identification of a tender nodule, and second palpation of taut band and reproduction of patient symptoms under sustain pressure. [1-2]

Chronic pain conditions can develop from untreated myofascial pain syndromes. chronic pain condition that not only causing disability due to pain, but it also triggers other conditions like depression, sleep disorders, behavioural and psychological issues. [3]

When muscle tissues are exposed to single or recurring periods of biomechanical overloading muscular injury can occur, and with this muscular injury trigger points is formed. The rhomboid muscles are continuously involved in stabilizing and moving the scapula. Both moving and stabilising the scapular are continuous functions of the rhomboid muscles. Due to this, the rhomboid muscles are vulnerable to development of the myofascial trigger points due to their biomechanical function. [4]

Trigger points were classified in active and latent trigger points. There're three main trigger points in rhomboid muscle. Rhomboid minor has one single trigger point which is situated at medial to the root of spine of scapula and rhomboid major muscle has two trigger points, which is present along the medial border of the scapula at rhomboid insertion site. Additional trigger points are also located at muscle belly of both the fibres of rhomboids.[5-6]

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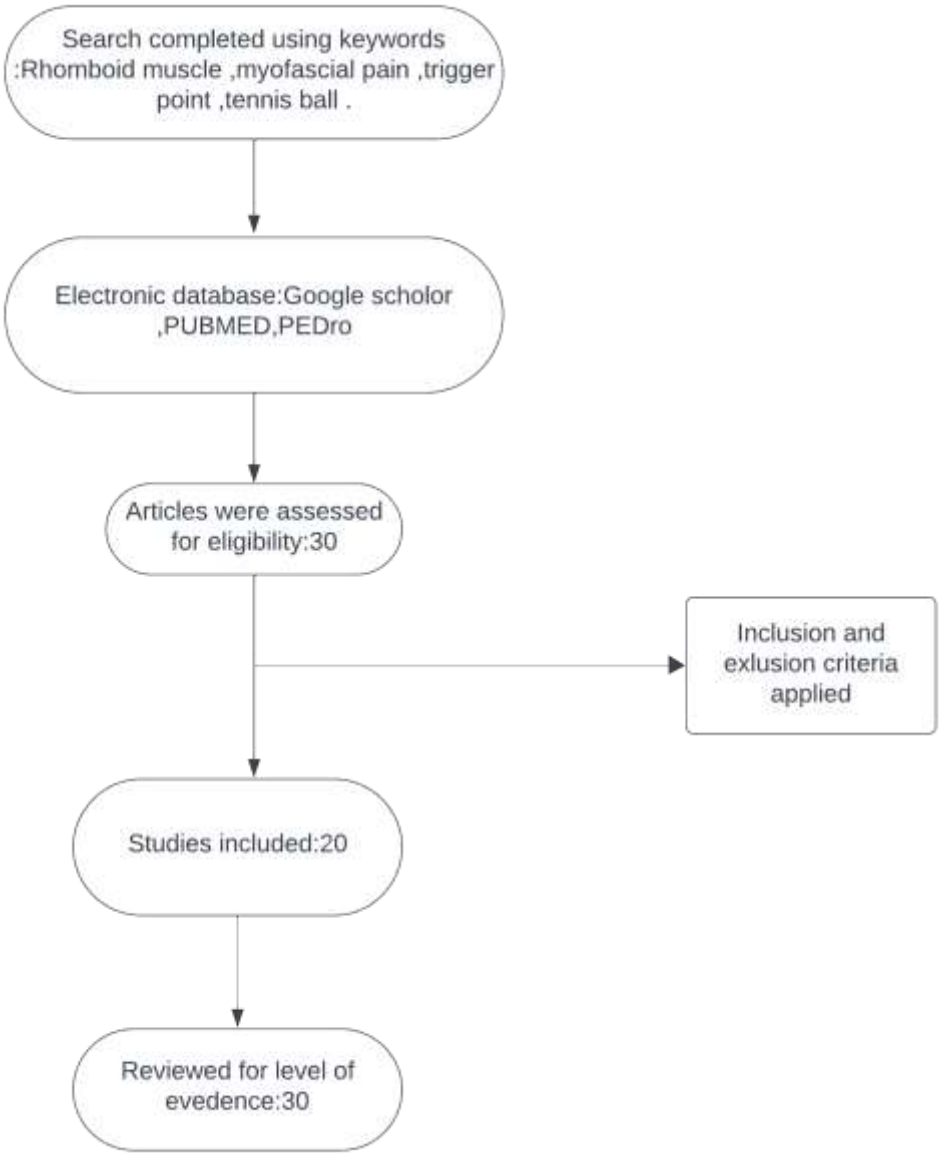
Sr.no	AUTHOR	TITLE	Duration of treatment	Study design	Outcome measures	Conclusion
1.	□ Aura Ligia Zapata, Ana Julia Pantoja Moraes, 2006	"Pain and musculoskeletal pain syndromes related to computers and video games use in adolescents"	-	A cross-sectional study	questionnaire and physical examination of the musculoskeletal system	Despite adolescents' extensive usage of computer and visual games, that were not related to occurrence of discomfort or musculoskeletal pain disorders.
2.	**Karen R. Lucas** 2009	"How common are latent myofascial trigger points in scapular positioning muscles"				Along with clinician opinion, the current investigation demonstrated a high occurrence of latent trigger point in scapular and positional muscles.
3.	Therese N. Hanvold 2010	"A Prospective Study of Neck, Shoulder, and Upper Back Pain Among the technical school Students Entering in Working Life"	One year and three years follow up			A significant the frequency of soreness around the neck, shoulder, and upper back across technological school students has been discovered.
4.	Reyhan Çeliker 2010	"Health-related Quality of Life in Patients with the Myofascial Pain Syndrome"			The Nottingham Health Profile, the Short Form-36 Health Survey Questionnaire, and Health Assessment Questionnaire	In patient with Myofascial Pain Syndrome, Quality of Life is affected in many aspect
5.	Chee Kean Chen, MD, and Abd Jalil Nizar, MD(2011)	'Myofascial Pain Syndrome in Chronic Back Pain Patients"	One year			The prevalence of MPS amongst chronic low back pain patients were notably high, with females representing an important risk factor.
6.	Lalhmunlien Robert Varte 2012	'Duration of use of computer as a risk factor for development of back pain among Indian office going women"	One year		The survey collected data of individual, work-related physical characteristics. and musculoskeletal Symptoms at both the upper and lower back throughout the last six months.	The current study found that back discomfort affects up to 25.3% of study population. Those who used computer for more than six hours each day had a statistically significant increased risk of acquiring low back pain.
7.	Alissa Deeter 2013	Tennis ball massage to alleviate trigger point pain				Self-massage with use of a tennis ball is a simple way to relieve painful trigger points and maintain a healthy muscle..

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8.	Young-In Hwang 2016	"Balance performance benefit of the myofascial release, with a tennis ball, in a chronic stroke patient'	Eight weeks	Pilot study	Berg Balance Scale (BBS) and the Timed 'Up & Go' (TUG) test	Myofascial Release Technique appears to enhance balance in patients with spastic chronic stroke.
9.	*Leon Chaitow 2017*	Trigger point release: Thoracic mobilization using tennis ball				there was a marked difference in thoracic mobility between those who performed the exercises, compared with those who did'nt.
10.	Younghun Jeong, Jihwan Park 2019	Immediate effect of release ball massage and self-stretching exercises on hamstring temperature, ROM and strength in 20s women	One year	Crossover study		These findings show that release ball massage and self-stretching are effective for increasing hamstring warmth, range of motion, and muscular strength.
11.	Mrs. Prayukta Jena,Dr. Mrs. Sandhya Adhyapak 2019	'A study to assess the effect of self-tennis ball massage therapy on low back pain among patients admitted in hospitals"	-	Quasi experimental	Wong Baker Numerical Pain Scale.	Self- tennis ball massage therapy is significantly effective in improving the low back pain in patients. Without the self- tennis ball massage therapy in low back pain patients worsened significantly among control group.
12.	yuen-Mei Hung, Shu-Wen Chen 2023	Tennis Ball Massage Therapy in Clinical Nurses: Effect on Relieving Musculoskeletal Disorders and Enhancing Self-Efficacy	Four weeks	Quasi experimental study	Visual pain Scale and the Pain Relief Self-Efficacy Scale	According to this study, tennis ball massage can reduce neck, shoulder, and back pain in nurses while also improving pain relief self-efficacy. Tennis ball massage is simple to use. This equipment may be used to successfully alleviate muscular pain, enhance the comfort of doing routine tasks, and increase work efficiency, so reducing the negative impact of muscle discomfort at work.
13.	D. Treaster, W.S. Marras	"Myofascial trigger point development from a visual and postural stressors during computer work"	-	-	A professional judgement, subject self-report and also electromyographic activity	This study found a link among visual and postural demands and trigger points. .
14.	Sholini Sookraj	"A pragmatic clinical	Two weeks	Randomised, controlled,	Pain pressure threshold algometry and the	The study's findings demonstrated that tennis ball-based ischemic

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		investigation of the comparative effectiveness of ischaemic compression and cryo ischaemic compression in treatment of rhomboid myofascial pain syndrome"		comparative clinical trial.	Myofascial Diagnostic Scale. Numerical Pain Rating Scale (NRS)	compression and cryo-ischaemic compression are equally efficacious in treating rhomboid myofascial pain syndrome. A straightforward, efficient, non-invasive substitute for traditional methods of cryo-ischaemic compression is the Tennis-ball with cold Technique.



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Literature Search Methodology

Online search engines which were used to collect journals which were Google Scholar and Pedro. Author identified articles based upon the keywords. All the articles were gathered in full text. A total 30 articles were identified, out of which 18 articles were selected for the review

Study Selection

Inclusion criteria:

1. Articles discussing the effect of tennis ball were included.
2. Articles published only in the English language were included.
3. Articles with full text from 2007-2023 have been included.

Exclusion criteria:

1. Articles were published in other languages excluded.
2. Articles were published below the year 2007 were excluded.

DISCUSSION

Myofascial pain syndrome affects up to 95% of people. It's a common source of discomfort and disability. The aim of the research was to identify the, effectiveness of tennis ball exercises in rhomboids trigger point.

According to the researcher Dr. Anagha Kadam et al., self-myofascial release with the help of tennis ball and helps in pain reduction and also raise the threshold for pain, offering a straightforward but efficient treatment option for pain from piriformis trigger points. Muscle relaxes when extended pressure is applied to the belly of the muscle. By enhancing blood flow to the muscles, it minimises ischemia and parasympathetic activity. It does this by releasing endorphins and relaxation hormones, which lower muscle neuromuscular excitability and lessen pain and muscular spasm. Another study also demonstrated that treatment of both side Self Myofascial Release to plantar aspect of both foot, immediately increased hamstring muscle and lumbar vertebra flexibility as indicated by increase in SRT scores. There are hypotheses which imply that when pressure is applied to trigger points, Golgi tendon organ (GTO) complex releases an inhibitory effect on muscle, make it less stiff and more flexible, which helps to increases joint range of motion.

CONCLUSION

However, after performing this study Tennis ball exercise was found effective in reducing rhomboids trigger points pain in students and also in computer professionals. Thus, Study concluded that Tennis ball exercises are effective in rhomboid trigger point pain.

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