

A STUDY TO ASSESS THE EFFECT OF SELF-TENNIS BALL MASSAGE THERAPY ON LOW BACK PAIN AMONG PATIENTS ADMITTED IN HOSPITALS

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ABSTRACT

Pain is a complex, multidimensional experience. For many people, it is a major problem that causes suffering and reduces quality of life. According to the health descriptors, low back pain is a symptom related to acute or chronic pain in the lumbar or sacral regions, and may be associated with sprains and strains of muscles and ligaments, displacement of the intervertebral disc and other conditions. Acute back pain lasts between 4 and 12 weeks and chronic back pain is lasting 12 or more weeks. The treatment possibilities for low back pain are of global interest. There are pharmacological and non-pharmacological treatments proposed for this condition and, within these, massage is seen as a possible treatment, bringing benefits such as decreased pain and increased well-being. It is also indicated in the joint clinical practice guideline from the American college of physicians and American pain society, massage is one of the oldest healing arts. The benefits of the massage therapy are varied and far reaching. As an accepted part of many physical rehabilitation programmes, massage therapy has also proven beneficial for many chronic condition, including low back pain, arthritis, bursitis, fatigue. **The present study title:** A study to assess the effect of self-tennis ball massage therapy on low back pain among patients admitted in hospitals. The objective of the study was to identify the level of low back pain, to assess the effect of self-tennis ball massage therapy, to find the association of pain with selected demographic variable. **Material and Methods:** In present study, researcher adopted Quasi experimental pretest-posttest control group design. Non-probability Purposive Sampling Technique was used. Study done on 60 samples. 30 samples are experimental group and 30 samples are control group. Ethical clearance was taken. Data was analysed by using Descriptive and Inferential statistics. Association was done by Fisher's test. Paired t-test was used for the effect of self-tennis ball massage therapy on low back pain among patients. **Result:** After the massage therapy it was found that, 30% of them had mild pain and 70% of them had moderate pain. On day 4, second observation after intervention 93.3% of them had mild pain and 6.7% of them had moderate pain, and in control group 36.7% were having moderate pain and 63.3% having severe pain. On day 4, second observation, 10% of them were having moderate pain and 90% having severe pain. **Conclusion:** Average pain score in experimental group consistently decreased over time points indicating the improvement in low back pain. Also, p-values are smaller (less than 0.05) at all-time points. Self-tennis ball massage therapy is significantly effective in improving the low back pain in patients. In control group, average pain score increased indicate worsening of low back pain. Also, p-values are smaller (less than 0.05) on day 2 onwards. Without self-tennis ball massage therapy low back pain in patients worsened significantly in control group.

Keywords: (Effect, Tennis-ball, Massage therapy, Low back pain, Patient)

INTRODUCTION

Pain is a complex, multidimensional experience. For many people, it is a major problem that causes suffering and reduces quality of life. According to international health association for the study of pain (IASP) pain is defined as, "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Low back pain is a common disorder. Nearly everyone is affected by it at some time. Pain is of two types. It may be acute or chronic. According to the health descriptors, low back pain is a symptom related to acute or chronic pain in the lumbar or sacral regions, and may be

associated with sprains and strains of muscles and ligaments, displacement of the intervertebral disc and other conditions. Acute back pain lasts between 4 and 12 weeks and chronic back pain is lasting 12 or more weeks.⁴The treatment possibilities for low back pain are of global interest. There are pharmacological and non-pharmacological treatments proposed for this condition and, within these, massage is seen as a possible treatment, bringing benefits such as decreased pain and increased well-being. It is also indicated in the joint clinical practice guideline from the American college of physicians and American pain society, massage is one of the oldest healing arts. The benefits of the massage therapy are varied and far reaching. As an accepted part of many physical rehabilitation programmes, massage therapy has also proven beneficial for many chronic condition, including low back pain, arthritis, bursitis, fatigue. Low back pain is a common ailment that will affect 8 out of 10 adults at some point in their lives. Though back pain is common, there are multiple ways to reduce muscle tension and provide relief for back pain. One of the easiest, most cost-effective, and at home methods is self-tennis ball massage therapy. Back pain prevalence and risks are identified from U.S. having the greatest incidence rates of low back pain (35%), arthritis (25%), and obesity (40%), which are often significant contributing factors to chronic pain. About 1% to 37% of chronic low back pain patients may have a neuropathic component related to it. Low back pain (LBP) is an emerging health problem globally, where the middle aged people (35-58) years are more prone for back pain. In fact, 31 million Americans experience low-back pain at any time of their life.

NEED FOR THE STUDY

Massage therapy is a treatment approach which is growing in demand and popularity. Estimating the incidence of low back pain is difficult as the incidence of first-ever episodes of low back pain is already high by early adulthood and symptoms tend to recur over time. The lifetime prevalence of non-specific (common) low back pain is estimated at 60–70% in industrialized countries (one-year prevalence 15–45%, adult incidence 5% per year). In nations like the United States, its prevalence is between 8% and 57%. According to the estimate provided by the experts, nearly 29% of individuals encounter a low back pain that could disable the individual at a certain stage of his or her life. Low back pain is a very common ailment among all age, approximately 60-90% of the adult population suffers from low back pain at least once during their life time. The yearly incident rate of low back pain is about 1-2%. A high rate of low back pain is found among people involved with heavy physical labour and also among chair workers. Risk factors for low back pain are intense heavy labour, lifting heavy objects, protected static positions, repetitive movements and awkward body postures accompanied by vibration. The reliable predictor of future low back pain is the evidence of previous back pain as disclosed during the pre-employment health examination.

The observational cross-sectional study was conducted in 2008 in Belgaum, Karnataka, on a sample of 100 women workers who volunteered. The musculo-skeletal problems were found to be abundantly present with pain in 91% of the subjects. Region wise mapping of pain revealed that postural pain in low back was present in 47% while in neck was 19%. Though the overall job was light as per peak HR, there was pain due to fatigue and grip strength weakened by around 10%, at the end of the day's work. In conclusion, pain and fatigue were found to be the main problems for women in the spinning section of the small-scale industry under this study. It was considered that ergonomic factors such as provision of a backrest and frequent rest periods could remediate the musculo-skeletal symptoms.

OBJECTIVES OF THIS STUDY

To identify the level of low back pain.

To assess the effect of self-tennis ball massage therapy.

To find the association of pain with selected demographic variable.

REVIEW OF LITERATURE

Many studies have been carried out on A study to assess the effect of self-tennis ball massage therapy on low back pain among patients admitted in hospitals. Review of the relevant studies was carried out from the textbooks, journals, articles, review of literature under following heading

Literature related to prevalence of low back pain

Sachin Gyanchandani(2011),conducted a cross sectional study on 100 male underground miners to determine the prevalence and predisposing factors of low back pain among male underground miners. A simple random sampling was done for every person with current full time employment in the mine for minimum one year duration with minimum two hours' work for minimum five days a week at their current occupation for the present study. The screening was done with the help of the Orebro musculoskeletal pain questionnaire (OMPQ), which is valid and reliable in predicting long-term disability. The result showed that the prevalence of low back pain among 100 male underground miners was 67%, most of the subjects showed that the work was heavy and painful. It was worsened by physical activities such as bending and lifting.

Rahman Shiri et.al. (2010) done a meta- analysis, on the association between smoking and low back pain, in which 81 studies were reviewed and 40(27 cross-sectional and 13 cohort) studies were included. In cross sectional studies, current smoking was associated with increased prevalence of low back pain in the past month, seeking care for low back pain. Former smokers had a higher prevalence of low back pain compared with never smokers, but a lower prevalence of low back pain than current smokers. In cohort studies, both former and current smokers had an increased incidence of low back pain compared with never smokers. The association between current smoking and the incidence of low back pain was stronger in adolescents than in adults. Findings indicate that both current and former smokers have a higher prevalence and incidence of low back pain than never smokers, but the association is fairly modest.

Literature related to treatment modalities of low back pain

Bialosky J E et.al. (2009), conducted a randomized controlled trail, to assess the effects of spinal manipulative therapy (SMT) on thermal pain perception in people with low back pain. The secondary purpose was to determine whether the resulting hypoalgesia was a local effect and whether psychological influences were associated with changes in pain perception. Out of 36 people 10 men, 26 women experiencing low back pain participated in the study. Psychological factors did not significantly correlate with changes in temporal summation in participants who received SMT. The result showed that inhibition of a delta fibre-mediated pain perception was similar for all groups. However, inhibition of temporal summation was observed only in participants receiving SMT, suggesting a modulation of dorsal horn excitability that was observed primarily in the lumbar innervated area.

Machado, Luciana Andrade carnerio, et.al. (2006), conducted meta-analysis of randomized controlled trails to evaluate the effectiveness of the McKenzie method for low back pain. Eleven trails of mostly high quality were included. McKenzie reduced pain weighted mean difference (WMD) On a 0 to 100 point scale, -4.16 points; 95% confidence interval, -7.12 to -1.20 and disability (WMD) on a 0- to 100- point scale, -5.22 points;95% confidence interval, -8.28 to -2.16 at 1 week follow-up when compared with passive therapy for acute low back pain. When McKenzie was compared with advice to stay active, a reduction in disability favoured advice WMD on a 0-100 point scale, 3.85 points; 95% confidence interval, 0.30 to 7.39 a 12 weeks of follow-up. The study concluded that the McKenzie method is more effective than passive therapy for acute low back pain; however, the magnitude of the difference suggests the absence of clinically worthwhile effects. There is limited evidence for the use of McKenzie method in chronic low back pain.

Literature related to effect of massage therapy on low back pain

Crane JD et.al. (2012), conducted a study on massage therapy attenuates inflammatory signalling after exercise-induced muscle damage. Massage therapy is commonly used during physical rehabilitation of skeletal muscle to ameliorate pain and promote recovery from injury. To assess the effect of massage, separate quadriceps of 11 young male participants after exercise-induced muscle damage was administered either massage therapy or no treatment. Muscle biopsies were acquired from the quadriceps at baseline, immediately after 10 min of massage treatment and after a 2.5 hour period of recovery. The result found that massage activated the mechanotransduction signalling pathways focal adhesion kinase (FAK) and extracellular signal-regulated kinase 1/2 (ERK1/2), Potentiated mitochondrial biogenesis signalling (nuclear peroxisome proliferator-activated receptor γ coactivator 1 α (PGC-1 α)), and mitigated the rise in nuclear factor κ B (NF κ B) (p65) nuclear accumulation caused by exercise-induced muscle trauma. The study concluded that when administered to skeletal muscle that has been acutely damaged through exercise, massage therapy appears to be clinically beneficial by reducing inflammation and promoting mitochondrial biogenesis.

Literature related to effect of self-tennis ball massage therapy

Scott W. Cheatham et.al.(2015), conducted a systemic review on the effect of self-myofascial release using a foam roller or tennis ball or roller massager on joint range of motion, muscle recovery, and performance. The tennis ball has also been considered a form of roller massage and has been used in prior research. Five studies were qualified for this analysis from these two studies reported using a mechanical device connected to a roller bar, two studies reported using a self-administered commercial roller bar and one study reported using self-tennis ball massage with no standard pressure and cadence. A total of 14 articles met the inclusion criteria. SMR with a foam roll or roller massager or tennis ball appears to have short-term effects on increasing joint ROM without negatively affecting muscle performance and may help attenuate decrements in muscle performance and DOMS after intense exercise. The study concluded that the foam rolling, roller massage (tennis ball) may be effective interventions for enhancing joint ROM and pre and post exercise muscle performance.

Jakob Skarabot, Andrew D Vigotsky et.al. (2017), conducted a study on acute effects of different self-massage volumes on the functional movement screen (FMSTM) overhead deep squat performance. Twenty recreationally active females were recruited to be tested on four occasions. Self-massage (SM) was performed using the grid foam roller and a tennis ball. SM on the plantar surface of the foot was performed with a tennis ball in a standing position. Acutely, improvements in mobility can be achieved by self-massage; i.e. using a foam roller, a roller massager, or tennis ball. In all SM conditions, at least 90 seconds was required for a change in deep squat score from baseline. Therefore the study concluded that SM the lateral torso, plantar fascia, and lateral thigh for 90 seconds or more are effective interventions for acutely improving overhead deep squat scores.

Material and method:

In present study, researcher adopted Quasi experimental pretest-posttest control group design. Non-probability Purposive Sampling Technique was used. Study done on 60 samples. 30 samples are experimental group and 30 samples are control group. Ethical clearance was taken. Data was analysed by using Descriptive and Inferential statistics. Association was done by Fisher's test. Paired t-test was used for the effect of self- tennis ball massage therapy on low back pain among patients

Description of Tool:

The tool includes three sections:

Section I: Demographic data, like age, gender, education, types of work, height, weight, body mass index(BMI), duration of low back pain, type of low back pain, family history of low back pain, associated medical illness, if yes, which medical illness.

Section II: Wong Baker Numerical Pain Scale.

Section III: Procedure profile

Plan for Data Analysis:

Analysis of data was done using inferential and descriptive statistics based on objectives of study.

Descriptive statistics was used for assessing level of pain

Association was done by Fisher's Exact test

Paired t-test was used for the effect of self- tennis ball massage therapy on low back pain among patients

RESULT AND DISCUSSION

Analysis and interpretation of the data are based on data collected from 60 sample.

Section I**Description of samples (patients) based on their personal characteristics**

Table 1: Description of samples (patients) based on their personal characteristics in terms of frequency and percentages n=30,30

Sr. no.	Demographic variable	Experimental group		Control group	
		Freq	%	Freq	%
1	Age				
	20-30 years	4	13.3%	0	0.0%
	31-40 years	5	16.7%	6	20.0%
	41-50 years	10	33.3%	17	56.7%
	51-60 years	11	36.7%	7	23.3%
2	Gender				
	Male	10	33.3%	10	33.3%
	Female	20	66.7%	20	66.7%
3	Education				
	Illiterate		0.0%	1	3.3%

	Primary	6	20.0%	7	23.3%
	Secondary	14	46.7%	14	46.7%
	Higher secondary	8	26.7%	6	20.0%
	Graduate & above	2	6.6%	2	6.7%
4	Type of work				
	House wife	12	40.0%	12	40.0%
	Labourer	4	13.3%	2	6.7%
	Business	3	10.0%	5	16.7%
	Software engineer	2	6.7%	2	6.6%
	Government employee	8	26.7%	6	20.0%
	Other	1	3.3%	3	10.0%
5	BMI of the patient				
	<18.50	2	6.7%		0.0%
	18.50 -24.99	14	46.7%	18	60.0%
	25.00 - 29.99	14	46.6%	12	40.0%

In experimental group and control groups, 33.3% of them were males and 66.7% of them were females. In experimental group 46.7% in secondary education, In control group 46.7% in secondary education. Majority 40% of them were housewives of In experimental group as well as control group. BMI less than 18.5 was found in 6.7% of patients in experimental group, BMI between 18.50 and 24.99 was found in 46.7% and BMI ranging from 25 to 29.99 in 46.6%. In control group, 60% of them having BMI 18.50 to 24.99 and 40% having BMI 25 to 29.99.

Section II

Analysis of data related to the level of low back pain

Table 2: Level of low back pain

n=30, 30

Group	No pain (Score 0)		Mild (Score 1-3)		Moderate (Score 4-6)		Severe (Score 7-9)		Worst (Score 10)	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Experimental	0	0.0%	1	3.3%	11	36.7%	17	56.7%	1	3.3%
Control	0	0.0%	3	10.0%	24	80.0%	3	10.0%	0	0.0%

In experimental group, 3.3% of the patients complained for mild pain (score 1-3), 36.7% for moderate pain (Score 4-6), 56.7% for severe pain (Score 7-9) and 3.3% for worst pain (score 10). In control group, 10% of the patients complained for mild pain (score 1-3), 80% for moderate pain (Score 4-6), 10% for severe pain (Score 7-9).

Table:3

Paired t-test for effect of self- tennis ball massage therapy on lower back pain

n=30, 30

Group	Time point	Mean	SD	T	df	p-value
Experimental group	Day 1 O1 Before	7.1	1.6			
	Day 1 O1	6.2	1.3	6.5	29	0.000
	Day 1 O2	6.0	1.2	6.7	29	0.000
	Day2 O1	5.1	1.3	13.5	29	0.000
	Day2 O2	4.6	1.1	16.3	29	0.000
	Day3 O1	4.0	1.0	19.3	29	0.000
	Day3 O2	3.5	0.8	17.0	29	0.000
	Day4 O1	3.1	0.8	18.4	29	0.000
	Day4 O2	2.4	0.7	21.4	29	0.000
Control group	Day 1 O1 Before	4.8	1.1			
	Day 1 O1	5.3	1.1	-5.0	29	0.000
	Day 1 O2	5.8	1.3	-16.6	29	0.000
	Day2 O1	6.0	1.2	-8.6	29	0.000
	Day2 O2	6.5	1.2	-11.1	29	0.000
	Day3 O1	6.9	1.2	-21.0	29	0.000
	Day3 O2	7.4	0.9	-17.8	29	0.000
	Day4 O1	7.7	0.7	-18.0	29	0.000
	Day4 O2	8.3	0.8	-30.2	29	0.000

Average pain score in experimental group consistently decreased over time points indicate reducing the low back pain. Also, p-values are smaller (less than 0.05) at all-time points. Self-tennis ball massage therapy is significantly effective in improving the low back pain in patients. In control group, average pain score increased indicating the worsening of low back pain. Also, p-values are smaller (less than 0.05) at all-time points. In this test for both the group p-values are same but in experimental group T-values are increased positively where as in control group T-values are increased negatively. Without self- tennis ball massage therapy low back pain in patients worsened significantly in control group.

Table 4

Two sample t-test for comparison of effect in experimental and control group

n=30, 30

Time point	Experimental group		Control group		T	p-value
	Mean	SD	Mean	SD		
Day 1 O1	0.9	0.7	-0.5	0.5	8.21	0.000
Day 1 O2	1.0	0.9	-1.0	0.3	12.06	0.000
Day2 O1	1.9	0.8	-1.2	0.8	15.70	0.000
Day2 O2	2.4	0.8	-1.7	0.8	19.36	0.000
Day3 O1	3.1	0.9	-2.1	0.5	27.56	0.000
Day3 O2	3.5	1.1	-2.6	0.8	24.21	0.000
Day4 O1	3.9	1.2	-2.9	0.9	25.48	0.000
Day4 O2	4.6	1.2	-3.5	0.6	32.99	0.000

Average effect in experimental group is positive and increased over time points indicating that the pain score of experimental samples reduced consistently over time points. Average effect in control group is negative and reduced over time points indicating that the pain score of control group samples worsened consistently over time points. P-values for this comparison were small (less than 0.05), the null hypothesis is rejected. This is evident that the self- tennis ball massage therapy is significantly effective on lower back pain.

Section IV

Analysis of data related to association of lower back pain with demographic variables

Table 6: Fisher's exact test for association of lower back pain with demographic variables n=60

Demographic variable		Mild	Moderate	Severe	Worst	p-value
Age	20-30 years	0	4	0	0	0.429
	31-40 years	1	7	3	0	
	41-50 years	2	17	8	0	
	51-60 years	1	7	9	1	
Gender	Male	2	12	6	0	0.609
	Female	2	23	14	1	
Education	Illiterate	0	0	1	0	0.912

	Primary	0	8	5	0	
	Secondary	3	16	8	1	
	Higher secondary	1	9	4	0	
	Graduate & above	0	2	2	0	
Type of work	House wife	1	12	10	1	0.283
	Labourer	0	5	1	0	
	Business	3	3	2	0	
	Software engineer	0	3	1	0	
	Government employee	0	8	6	0	
	Other	0	4	0	0	
BMI of the patient	<18.50	0	1	1	0	0.583
	18.50 -24.99	2	21	8	1	
	25.00 - 29.99	2	13	11	0	
Duration of the low back pain	< 1 month	0	2	0	0	0.000
	1-6 months	1	21	0	0	
	7month -12months	3	12	11	0	
	> 12months	0	0	9	1	
Type of low back pain	Acute	2	24	0	0	0.000
	Chronic	2	11	20	1	
Family history of low back pain	Yes	0	9	4	1	0.279
	No	4	26	16	0	
Associated medical illness	Yes	4	34	20	1	0.000
	No	0	1	0	0	

Since p-value corresponding to demographic variables like duration of low back pain, type of low back pain and associated medical illness are small (less than 0.05). So, the demographic variables like duration of low back pain, type of low back pain and associated medical illness were found to have significant association with lower back pain.

Discussion:

The present study was undertaken to assess the effect of self-tennis ball massage therapy on low back pain among patients admitted in hospitals Pune.

A similar study, Fiona jamin (2011) done a case report on decrease of pain and neurological symptoms due to a disc herniation and partial discectomy at the L5-S1 intervertebral disc using therapeutic massage: myofascial release, therapeutic exercise (tennis ball massage), muscle energy technique, general Swedish massage, myofascial trigger point release. Ten times sixty-minute therapeutic massage treatments were administered over the course of ten weeks. The focus of treatment was to decrease fascial adhesions of the lower back and posterior leg, decrease pain and muscle tension across the whole back. The result

showed that the patient's reported a notable decrease in sciatic symptoms immediately following treatment. This relief lasted for varying amount of time. Both active and passive pain free ranges of motion were achieved. The study concluded that the use of therapeutic massage resulted in temporary relief of pain and neurological symptoms caused by persistent sciatica due to disc herniation at L5-S1.

Conclusion

The present study was undertaken to assess the effect of self-tennis ball massage therapy on low back pain among patients admitted in hospitals Pune. Fisher's test. Paired t-test was used for the effect of self- tennis ball massage therapy on low back pain among patients.

Findings related to 3.3% of the patients in experimental group complained of mild pain (score 1-3), 36.7% for moderate pain (Score 4-6), 56.7% for severe pain (Score 7-9) and 3.3% for worst pain (score 10). In control group, 10% of the patients complained for mild pain (score 1-3), 80% for moderate pain (Score 4-6), 10% for severe pain (Score 7-9). After the massage therapy it was found that, 30% of them had mild pain and 70% of them had moderate pain. On day 4, second observation after intervention 93.3% of them had mild pain and 6.7% of them had moderate pain. first observation it was found that 36.7% were having moderate pain and 63.3% having severe pain. On day4, second observation, 10% of them were having moderate pain and 90% having severe pain. . Effect of self-tennis ball massage therapy on lower back pain was significantly effective on experimental group.

IMPLICATIONS

The present study findings have implication for nursing research, administration, practice and education.

NURSING PRACTICE

Nurses should always take part in different educational programs to improve and update their knowledge. Nurses should always do evidence based practice and this will lead to patient satisfaction. This study can be implemented in Medical surgical Nursing, and Obstetrical and Gynaecological Nursing areas. It is a process of action, interaction whereby the nurses assist individual of any age group to meet their basic needs in coping with their health problems at some particular point in their life cycle. The nurse should have knowledge about the self-tennis ball massage therapy to reduce the lower back pain. Hence, she gives a health education to patients about self-tennis ball massage therapy to reduce low back pain.

NURSING EDUCATION

Nursing education is developing rapidly in India and nurses from our country can be found all over the world providing care and assistance. The education curriculum must include imparting knowledge about the use of various teaching strategies for health education.⁴⁹

Prevention is better than cure. In India now importance given to awareness and promotion of health than curative aspects. Now a day there is a trend of using alternative therapy to prevent and promote the health of a person. Hence nursing education must emphasize on the preventive and promotive aspects of health. The researcher can use the result of the study as an informative illustration for the students. The students can change the trends in society by providing health education to patients on self-tennis ball massage therapy to reduce lower back pain. Based on the findings health education can be provided to the patients related to massage therapy.

NURSING ADMINISTRATION

Nursing administration as a profession is unique because it addresses the response of individual and families to actual or potential problems in humanistic manner. Nurses have many roles, such as care giver, decision maker, advocate and teacher. Nursing administration department can conduct the continue nursing education programs on self-tennis ball massage therapy for reduction of low back pain.

NURSING RESEARCH

The nurse researcher should be able to conduct the research on various aspects of effect of self-tennis ball massage therapy on lower back pain. It is quite helpful in the academic field especially for the professionals like doctors, Nurses, physiotherapist etc. It allows the nursing students to actively participate in undergraduate and postgraduate research as it is a significant confidence booster. Nursing research invariably leads to a better understanding of and a deeper appreciation for the discipline under investigation. The Nursing research brings a holistic perspective to studying individual families and the communities. The Nursing research

Reflect Nursing commitment to the promotion of health and the healthy lifestyle, the advancement of quality and the excellence in health care.

RECOMMENDATION

The study can be undertaken in different settings and different target population such as neck pain, foot, and sciatica.

A comparative study can be done to assess the effectiveness of tennis ball massage therapy on lower back pain with deep tissue massage therapy, trigger point massage therapy and chair massage therapy.

A study can be done to assess the effect of structure teaching program on self-tennis ball massage therapy on low back pain.

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