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REVIEW ARTICLE

Review on Active Release Technique's Effect on Frozen Shoulder Patients

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ABSTRACT:

Shoulder joint is intricate in terms of morphology and functionality. Because the glenoid cavity and humerus articulate at the shoulder, one of the largest joints with unlimited mobility in the human body. It contains a shoulder girdle that, via the sternoclavicular joint, connects the upper extremity to the axial skeleton. The shoulder joint's wide range of motion results from its limited stability and high risk of injury and dislocation over the long term. **Methods:** Clinical study was done. The sample size was 74. The outcome measures for evaluating the range of motion, pain, and functional limitation in a frozen shoulder patient with trigger points were the NPRS and SPADI. Data were taken at the baseline and once more at week 4. The follow-up period lasted for nine months and began at week six. The age range for both males and females was 40 to 60. **Results:** Statistically significant ($p < 0.05$) enhancement was observed in the NPRS, SPADI, and all ROMs. **Conclusion:** Active Release Techniques have been found to be helpful in reducing ROM, functional disability as well as pain. **Key Words: Trigger Points, Active release technique, frozen shoulder.**

INTRODUCTION:

Shoulder joint is intricate in terms of morphology and functionality. Because the glenoid cavity and humerus articulate at the shoulder, one of the largest joints with unlimited mobility in the human body. It contains a shoulder girdle that, via the sternoclavicular joint, connects the upper extremity to the axial skeleton. The shoulder joint's wide range of motion results from its limited stability and high risk of injury and dislocation over the long term[1]. The shoulder's muscular tissue has various characteristics associated with abduction, flexion, extension, adduction, and external and internal rotation[2].The rotator cuff is the primary muscular group that supports the shoulder joint. The rotator cuff is made up of the supraspinatus, infraspinatus, teres minor, and subscapularis muscles. The proximal humerus contains the rotator cuff muscle anteriorly[3]. The subscapularis attaches to the lesser tuberosity, the subscapular fossa of the scapula, and a part of the anterior shoulder joint. The tendon from the scapula's neck is separated mainly by the bursa. The humerus must be internally rotated and abducted for the subscapularis muscle to perform its function[4]. Trapezius is one of a large triangular muscle located posteriorly in the shoulders. Depending on either lower or upper muscle fibers are triggered, the trapezoid plays a major role in a shoulder raise.[5] The shoulder joint's purpose is to balance mobility and stability. Its remarkable mobility is primarily the result of the glenohumeral joint's anatomy and the coordinated motion of each component of the shoulder complex[6]. The shoulder joint is a significantly complicated joint essential to performing various daily activities like sports. A significant scientific discovery is limited shoulder motion. Adhesive capsulitis, which refers to swelling, results in a considerable loss of shoulder ROM. The levels of pain, adhesion, and healing are the three characterized levels of this condition. It might be challenging to assess symptoms of shoulder pain or physical disabilities[7]. Diabetes, hypothyroidism, a low body mass index (BMI), and a cheerful personal family are possible causes for idiopathic frozen shoulder[8]. The hyperlipidaemia that goes along with DM places individuals at risk for AC. Old-age females are at higher risk[9]. Using MRI, the coracohumeral ligament thickening accurately diagnoses a frozen shoulder[10]. Without physiotherapy, a frozen shoulder typically advances from an advanced stage to a healing time ranging from 1 to 2 years[11, 12]. Using goniometric data, the shoulder ROM is assessed using Kinect[13]. Medically, the shoulder joint capsule adhesions limit the passive and active range of motion, diagnosing a frozen shoulder[14]. The incidence of frozen shoulder in the general population is approximately 3%. It reaches its highest incidence between the age of forty and seventy. Ladies are impacted more frequently than men, although no genetic or ethnic tendency is identified. Individuals having a history of adhesive capsulitis are more likely to experience a worsening of the condition on the opposite side. 24.9% of diabetics were diagnosed with shoulder pain[15]. Generally, the suggested diagnosis age is fifty years. Perhaps significantly higher dominant are females (1.4:1). Generally, the injured arm is the non-dominant one. Surprisingly, various concomitant autoimmune disorders, including thyroid issues and diabetes, have been proven to predispose patients to this condition. People with diabetes frequently experience poor management outcomes[16]. Usually, individuals with painful shoulders are diagnosed with adhesive capsulitis. This time, introduced by Codman, doesn't quite denote a particular disease. Instead, it corresponds to what he termed a variety of diseases that generate acute rotator spasms or contractures in the bursa or joint region[17]. The pathophysiology of adhesive capsulitis is unidentified. Based on the maximum regular theory, the joint capsule and synovial fluid are the sites of infection. Infection is recognized using sensitive fibrosis and synovial adhesions[18]. The disease's pathophysiology and classification describe infection and the development of extensive scar tissue[19]. Deltoids are usually reported as the site of pain. Patients frequently report being unable to sleep on the side, which hurts at night. It is not typical for this disease to cause pain following repeated overhead exercise, which indicates pathology. In particular, when their distances suddenly expand, the tight, adhering capsule pinches and restricts mobility mechanically[20].

Primary and secondary AC have been distinguished. Entire capsular infection and fibrosis developing without a known progressive etiology are signs of primary AC. The term "secondary AC" really refers to a wide range of conditions that can lead to a frozen shoulder as well as prior shoulder pain or surgical procedures.[21]. The symptoms of adhesive capsulitis include soreness in the shoulders and a significantly reduced range of motion. A dull, ill-localized pain that could extend to the biceps is how the pain is expressed. Extending up or behind oneself may also result in tightness and pain such as a tumor or an inflammatory disease if the patient exhibits fever, nighttime sweats, lethargy, or unexplained weight loss. Nervous system signs and indicators are a sign of neck nerve entrapment[22]. The most prevalent symptoms of AC are discomfort coupled with advancing tightness and a lack of shoulder external rotation movements. Moreover, there could be a loss of flexible mobility localized to the most severely afflicted capsule. When sleeping on a mattress, pain may be anterior or posterior and can spread over the biceps tendon, but it is frequently difficult to pinpoint its location.[23]. There are often three different grades: The first grade (freezing) lasts for ten to 36 weeks. Pain and discomfort are the most frequent side effect, most severe at night, and anti-inflammatory drugs. At this time, the ROM starts to be limited. The second Grade (frozen) has a duration of 4 to 12 months. After a time, the soreness usually clears up, but the rigidity persists, leaving almost minimal external rotation. While Grade III (thawing) can endure between 12 and 42 months, other authors claim stiffness can last up to seven years. At this time, stiffness gradually subsides, and ROM gradually recovers [24]. To reduce pain and enhance function, physical therapy techniques known as "electrotherapy modalities" (sometimes called "electrophysical agents") enhance energy in the body. This energy can be electrical, sound, light, or thermal energy. Non-invasive treatments include transcutaneous electrical nerve stimulation (TENS), low-level laser therapy, interferential current, therapeutic ultrasound, and pulsed electromagnetic field therapy (PEMF)[25]. While therapeutic ultrasound uses high-frequency electrical waves to provide analgesic effects and enhance tissue flexibility, TENS is a sort of electro-analgesia that works on the principle of the pain gate theory[26]. According to Russel et. al. depression and anxiety be the crucial factor of ACS syndrome and hysical therapy treatments were found to be more effective in reducing symptoms and warning signs[27]. Patients with trigger points and adhesive capsulitis exhibit pain, decreased range of motion and impaired functioning. Excess based on continuous use results in many shoulder aches. MET and ART can be helpful in decreasing discomfort, enhancing ROM, and decreasing functional impairment in frozen shoulders alongwith the TrPs.

DISCUSSION:

This study aimed to compare the effects of the ACT and the MET on ROM, pain and disability in patients having trigger points due to subacute adhesive capsulitis in the fourth and sixth weeks assessed through goniometer, NPRS and NDI, respectively. The Active Release Technique in this research indicated decreased pain and functional impairment with positive and instant outcomes. Due to trigger points in frozen shoulders, exercise regimens help reduce pain and related musculoskeletal issues. Individuals with trigger points in frozen shoulders should be given special attention using the active release technique and the muscular energy approach. With a p-value of 0.05, statistically, significant differences between ART and MET were discovered. In 2016, a comparable research study was carried out. The research investigated the impact of two manual therapies, the muscular energy technique (MET) and the active release technique (ART), on trigger sites in the Upper trapezius. Increased range of motion is achieved by using manual ART and MET procedures[28]. A 2019 experimental study evaluated the effects of muscle energy and active release approaches on TrPs of subscapularis muscle using quantitative methods like VAS, SPADI, and the International Goniometer. Group A who received Active Release Technique considerably outperformed than Groups B who received Muscle Energy Technique and group C who received Traditional Therapeutic interventions or Regular Physiotherapy for treating trigger points of subscapularis muscle.[29] According to experimental research published in 2019 that compared the efficacy of the 3 methods in the treatment of frozen shoulder, the MET alongwith Mobilization Technique have shown greater progress as compared to Cyriax Deep Friction method with mobilization approach.[30] In order to assess how the active release impacted ROM, pain and disability in subjects with subacute frozen shoulders having trigger points, this research used NPRS and pain. ACT instantly verified the reduction in pain and impaired functioning during this trial. Exercise interventions help reduce pain and other musculoskeletal conditions brought on by trigger points in frozen shoulders. The Maitland mobilization and muscular energy technique were used on 30 individuals from two groups of 15 individuals each in 2013, the most advanced therapy method ever created for treating idiopathic adhesive capsulitis (met). The met group was reported to have experienced higher pain reduction, and the Maitland mobilization group had better ROM gain[31]. In 2017, a study determined that individuals with adhesive capsulitis respond immediately to the active release technique (ART). Contrasting pre- and post-test means statistically demonstrate a significant improvement in shoulder full ROM and decrease in pain intensity, demonstrating the efficacy of the ACT in patients with frozen shoulder [subacute stage][32]. The results of one other study conducted in 2015 to evaluate the effectiveness of proprioceptive neuromuscular facilitation (PNF) and muscle energy techniques (MET) in the intervention of frozen shoulder showed that PNF is helpful in reducing pain and promoting ROM and feature recovery in people with a frozen shoulder after two weeks of post-intervention evaluation.[33] According to the present research trials, the active release approach effectively decreases shoulder discomfort and impairment

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