



## REVIEW OF LITERATURE ON SWIMMER SHOULDER IN ATHLETES AND ITS REHABILITATION

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### ABSTRACT

Swimmer's shoulder" changed into first described through Kennedy and Hawkins (1974), who defined the situation as a painful presentation because of repetitive impingement of the shoulder in swimmers. Swimmer's shoulder is a condition with a gradual onset because of repetitive hobby and may be labeled as microtrauma and macrotrauma, the etiology of microtrauma is multifactorial and may be due to intrinsic elements or extrinsic elements. Acute shoulder subluxation can arise in swimmers with underlying shoulder laxity. Patellar subluxation can arise in people with underlying generalized laxity meniscus tear in an older athlete may be exacerbated. Acute onset of back ache can occur in swimmers. The repetitive hyperextension may additionally cause spondylolysis. In swimmer Shoulder patient rehabilitation is more effective than pharmacological or surgical treatment as it can cure the problem without any harmful effect and reduce the symptom with exercise.

**Keywords:** Swimmer, Rehabilitation, Review, Athlete, Shoulder

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## 1. INTRODUCTION

Search was performed at the beginning of feb,2022 on PubMed and Google Scholar databases. A combination of Keywords and Medical Subject Headings including “Swimmer’s Shoulder”, “Rehabilitation in Swimmer’s Shoulder”, “Supraspinatus Impingement”. The affiliated information in this research project was attained from both review articles and clinical trials published from the year 2001-2022.

As Selection criterion, it was decided that articles included in the study needed to describe at least 1 possible risk factor associated with swimmer’s shoulder or or a rehabilitation protocol for the same. The articles which were not written in English, not available in full text, assessing a region other than shoulder complex were excluded.

### 1.1 Search Strategy

The search strategy identified 23 potentially relevant articles on PubMed and 34 on Google Scholar amounting to a total of 57 articles. After title and abstract review, only 40 articles were considered relevant and retained for analysis.

Swimmer’s shoulder” changed into first described through Kennedy and Hawkins (1974), who defined the situation as a painful presentation because of repetitive impingement of the shoulder in swimmers. As said through (Fone and van den Tillaar (2022).

Swimming is a competitive recreation that is popular worldwide and has been part of the Olympic application for the reason that first contemporary Olympic Games in 1896. Today, aggressive swimming consists of sixteen Olympic pool occasions from 50 to 1500 m lasting from about 21 s to fifteen min. Swimming differs from most different sports in numerous factors, along with: (1) swimmers are in a inclined, horizontal position at some point of performance and education; (2) both arms and legs are used actively for propulsion; (3) water immersion causes stress on the frame and impacts breathing; (4) aside from starts and turns, the forces from the athlete are at all times carried out to a shifting detail; and (5) the gadget (e.g. Swimming match and cap) used during swimming has a minimum impact on swimming performance.

In Swimmers ,the shoulder is the most not unusual body element to be injured, accounting for 31% to 44% of all of the injuries, accompanied by way of the backbone (sixteen% to 21%) and the knee (5.Five% to 14.Nine%) (Chase et al., 2013; De Almeida et al., 2015; Kerr et al.,2015; Wolf et al., 2009). The higher percent of shoulder injuries suggested might be explained by using the 90% of the propulsive pressure that comes from the upper limbs at some point of swimming (Pink & Tibone, 2000).

Shoulder pain has been said as the principle component for neglected or changed schooling in aggressive swimmers (Chase et al., 2013;De Almeida et al., 2015; Kerr et al., 2015; Wolf et al., 2009). The higher percent of shoulder injuries suggested might be explained by using the 90% of the propulsive pressure that comes from the upper limbs at some point of swimming (Pink & Tibone, 2000).

As a result of this, shoulder ache might intrude with schooling and competition performance, developing continual accidents and leading in a few instances to the retirement from sports activities participation (Hibberd & Myers, 2013).

Swimmers shoulder may be averted with adequate preseason screening which could identify impairments and schooling errors that can result in signs. If a swimmer does come to be symptomatic at some point of the season, the bodily therapist ought to become aware of the most likely impairments or schooling errors and rule out any big tissue pathology that would warrant a referral to an orthopedic health practitioner. A complete rehabilitation program typically includes strengthening of the rotator cuff and Page 1 of 2 Source scapular stabilizers, stretching anterior

chest musculature that may be shortened, and enforcing activity modification so the athlete can nonetheless take part in the game.

## **1. 2. Etiopathogenesis**

Swimmer's shoulder is a condition with a gradual onset because of repetitive hobby and may be labeled as microtrauma and macrotrauma, the etiology of microtrauma is multifactorial and may be due to intrinsic elements or extrinsic elements. (Tovin B et al. 2006).

Intrinsic Factors Swimmer's shoulder usually offers as subacromial impingement concerning the rotator cuff tendon, bicipital tendon, or subacromial bursa.

Primary subacromial impingement involves compression of those systems between the acromion and more tuberosity. The purpose of number one impingement is usually a tight posterior pill or bizarre acromial morphology.

Secondary impingement takes place via a series of impairments, usually starting up in a swimmer with accelerated anterior glenohumeral laxity. (Tovin B et al. 2006).

Extrinsic Factor microtrauma is because of overuse. Overuse in sports is appearing a mission with a frequency that doesn't allow the tissues to get better and signs and symptoms can be because of loss of muscle power or persistence.

## **1. 3.Clinical Presentation**

### **1.3.1 Common Medical Issues**

### **1.3.2 Acute Injuries**

- (i) Acute shoulder subluxation can arise in swimmers with underlying shoulder laxity.
- (ii) Patellar subluxation can arise in people with underlying generalized laxity meniscus tear in an older athlete may be exacerbated
- (iii) Acute onset of back ache can occur in swimmers. The repetitive hyperextension may additionally cause spondylolysis. (Khodae M et al. 2016).

## **1.4 Musculo-skeleton Conditions**

- Shoulder ache is the maximum common in swimmers because of overuse. . A multitude of problems make contributions to the "swimmer's shoulder": a hypermobile glenohumeral joint combined with method flaws or fatigue can lead to impingement of the rotator cuff. Microtears or stretching of the glenohumeral ligaments exacerbate static instability .
- Hip and Groin Breaststroke, a ways greater normally than other competitive swimming strokes, can cause quite a few hip and groin lines and accidents. Adductor pressure, iliopsoas strains, and sports activities hernias .
- Knee Up to seventy five % of breaststrokes file medial knee pain. Medial knee ache can arise from pressure on the medial collateral ligament, infection of a medial plica, or, in unusual instances, medial meniscus tears.
- Lumbar Spine modern-day swimming approach can lead to pars interarticularis pathologies (e.g., spondylolysis). The L5-S1 disc is any other not unusual location of inflammation with overuse. (Khodae M et al. 2016).

## **1.5 Miscellaneous Medical Conditions**

Skin Problems in Open Water Swimmers problems in open water swimmer. Sunburn is perhaps the most commonplace environmental pores and skin problem in any organization of athletes Page 1 of 2 Source constantly exposed to ultraviolet light (UVL) radiation.

## **2. INVESTIGATION**

Diagnostic imaging Imaging can help evaluate various anatomic abnormalities that could be present in patients.(Bishop M et al. 2022).Computed tomography (CT) scan may be

warranted if bony defects are present. Magnetic resonance imaging (MRI) allows for clearer visualization of the soft tissue anatomy of the shoulder. Ultrasound is a useful tool in the rapid management of shoulder modification of the players. Moreover, US is low cost and very helpful tool to be used in everyday practice in sport medicine. (Galluccio F et al. 2017). Pain assessment Visual analog pain scales were used to assess pain.

ROM Assessment Painless active ROM (flexion, abduction, internal rotation, and external rotation) was measured in the shoulder joint using the goniometer. (Mehrpour Z et al . 2020). Muscle power of the shoulder girdle was examined in each direction when performing the motions of abduction, adduction, flexion and extension. Special Tests Special tests for joint instability and impingement also need to be included in the evaluation. Tests for impingement include the Neer impingement test and the Hawkin's test. (Delbridge A et al.2017).

### 3 .REHABILITATION

- TENS is normally used at the end of treatment to relieve an affected person of ache from their damage and reduces pain notion for patients with shoulder ache. (Morgan K2017). Tens application at high frequency (100 HZ) with a pulse period 120µ and 10w intensity (30-40 ma) for 10min has enormous role in decreasing pain degree and practical disability. (Mishra, 2020)
- Kinesio taping KT has become an critical part of shoulder ache as a result of an extended duration of swimming, (Jaroń A et al.2021) Cryotherapy cryotherapy subjects said a great reduction in frequency and depth of pain, as well as much less ache at some stage in shoulder rehabilitation, (Zedan A et al. 2022).
- Aquatherapy The advantage of water-based, openchain, UE exercising is the trunk muscle cocontraction. Arm movement through the water has a tendency to sell stability and stability.
- Yoga Incorporating yoga in a schooling routine may also assist a swimmer to control and be aware about their frame and to enhance their respiration coordination at the same time as additionally growing normal energy. (Haddad M et al. 2021).
- Acupuncture It is a healing opportunity for shoulder impingement syndrome, continual shoulder ache. It can mobilize nice factors inside the body to strengthen anti-infection, boom analgesic and antishock results, and relieve spasms Cupping In the 2016 Olympic Games, marks of blood stasis on the returned of swimmer Michael Phelps won attention, cupping hastens muscle excretion, which is useful for emergency remedy of acute injuries.(Zhang Het al 2022).
- Dry needlingdry needling is commonly used y used to reduce myofascial ache because of cause factors. Three muscle tissues are the maximum commonplace muscles with cause factors that cause shoulder ache. (Morgan K 2017)
- The rehabilitation protocol became divided into four phases, totaling 24 classes of physical therapy with a frequency of 3 times a week (Allegrucci et al., 1994). The initial aim became to reduce the signs and symptoms, after this segment, sports to increase strength, stability and practical ability have been executed. Page 1 of 2 (Almeida G et al. 2011).

#### 3.1 Phase Wise Treatment for Swimmer's Shoulder

##### 3.1.1 Phase I (1st to 4th session)

Initially, myofascial release and trigger point inhibition were achieved (Vernon and Schneider, 2009). The shoulder mobilization strategies were accomplished. Isometric strengthening paintings changed into started for the rotator cuff and posterior depression

of the scapula, strengthening expanded in step with the potential to perform the workout without pain.

3.1.2 Phase II (fifth to 13th session)

Exercises for the strengthening of the dynamic stabilizers of the scapulothoracic and glenohumeral joints, stretching, core stability physical activities, proprioception and aerobic conditioning were emphasised.

3.1.3 Phase III (14th to 20th consultation)

Functional swim movement training became carried out. At the give up of this segment, the affected person reported no shoulder pain.

3.1.4 Phase IV (21st to 24th consultation)

This section involved the go back to the sport. The stretching, plyometric, sensory-motor and functional exercises remained on this segment. At the give up of rehabilitation, the athlete became capable of go back to her sport activities on the pre-injury degree. (Almeida G et al. 2011).

#### 4. CONCLUSION

This Systemic review highlights important risk factors for swimmer shoulder in athletes. Prevention is an existing topic, but the small numbers of prospective studies published on this topic in the literature and the variability of the quality of the studies included in this systemic review show that risk factors of swimmer shoulder injuries are still not completely demonstrated. In my review of literature, we included the risk factors causing swimmer's shoulder disease through investigation and searched the rehabilitation to treat the condition. In swimmer Shoulder patient rehabilitation is more effective than pharmacological or surgical treatment as it can cure the problem without any harmful effect and reduce the symptom with exercise.

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