

SWIMMER'S SHOULDER

Introduction

With the arrival of the warmer weather, more and more of us are taking to the pools and beaches for both exercise and recreation.

Aside from being relaxing, fun and refreshing, swimming is an exercise that is commonly prescribed as an alternative to many of the higher impact sports.

The benefits of exercising in a buoyant environment are plentiful and many people suffering from lower back pain, peripheral joint pain and osteoarthritis will attest to these, often citing a reduction in pain and/or swelling, improved cardiovascular fitness and strengthening.

However, swimming, like almost all activities, has its own group of injuries common to the sport, with the majority affecting the shoulder. In fact, the shoulder is so commonly injured in swimmers, that the condition of "Swimmer's Shoulder", has been coined.



Swimmer's Shoulder

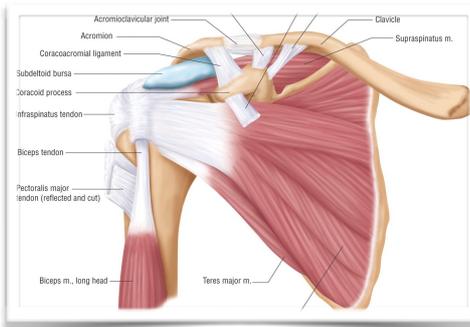
Generally speaking, the condition known as "Swimmer's Shoulder" is a blanket diagnosis for many shoulder conditions, but it is a term loosely used for what might otherwise be a clinical sign of impingement or a diagnosis of rotator cuff tendinopathy. Therefore, the term "Swimmer's Shoulder" should be used judiciously, since the management of any shoulder injury should be individualised and specific to the pathology, impairments and patient's goals.

Incidence

The incidence of shoulder pain in swimmers is very high. In competitive swimmers, this is reported to be somewhere between 40%³ and 91%². Unfortunately, swimming-associated shoulder pain or pathology, has negatively impacted some of the most notable swimming careers, including those of Olympians Stephanie Rice, Eamon Sullivan and James Magnussen.

Etiology

When we consider that "approximately 90% of propulsion is generated through the upper limbs"¹ and the high number of repetitions or strokes involved in swimming, the impact this has on the shoulder joint and associated soft tissue structures is understandable. In the elite swimmer, this may be approximately "15,000-20,000 individual arm elevations per week, (or) up to a million per year"⁵. These repetitive shoulder elevations are thought to cause "microtrauma and 'wringing out of the sub-coracoacromial structures"^{4,5}. Even further, the risk of shoulder injury is significantly increased if the swimmer has reduced range of motion in the thorax, neck or shoulder; or weaknesses or imbalances in key muscle groups of the glenohumeral (shoulder), scapulothoracic (shoulder blade and rib cage), cervical (neck) joints and the "core". Finally, sub-optimal variations in technique or biomechanics may also increase or contribute to the risk of shoulder injury in swimmers.



What is Impingement?

Impingement is currently understood to be a condition involving mechanical irritation of the rotator cuff tendons, which become “impinged as they pass through the subacromial space formed between the acromion, coracoacromial arch and AC joint above and the glenohumeral joint below”. This results in swelling and damage of the tendons.¹

What is a Rotator Cuff Tendinopathy?

A Rotator cuff tendinopathy is essentially a tendon that fails to tolerate load. The tendon swells, undergoes cellular changes, the collagen fibres become disorganised and the tendon weakens. In swimmers, “the major determinant of the onset of tendinopathy is the volume ...of work”, e.g. distance swum.¹

What is the role of Physiotherapy in treating Shoulder Pain in Swimmers?

A thorough physiotherapy assessment must be performed to determine the true diagnosis of the individual’s shoulder pain, in addition to the contributing factors, which led to the development of the pathology in the first place. Treatment is directed towards impairments identified in the physical assessment and history, and will often involve strategies to reduce or modify loading of the shoulder throughout the rehabilitative process.

Patients attending The Physiotherapy Clinic can expect their Physiotherapist to take a thorough history, which includes understanding the load, volume and demands placed upon the individual’s shoulders. Training drills and techniques will also be discussed. In some cases, the use of video analysis of the patient’s stroke may be valuable in understanding the biomechanical faults associated with the development and management of shoulder pain associated with swimming. Key areas of the physical examination will include assessment of the lumbopelvic, thoracic and cervical regions, in addition to the scapulothoracic and glenohumeral joints. This will include assessment of range of motion and muscle strength and endurance. We will also assess the patient’s ability to facilitate their core, including transversus abdominis and pelvic floor. The use of real time ultrasound can be an invaluable tool in assessment and rehabilitation of the deep stabilisers of the lumbopelvic region, which can significantly influence force generation and transfer through the upper and lower limbs.

Based on the findings of the subjective and physical examination, a treatment plan will be developed and implemented to rehabilitate the injured swimmer and return them to full sport participation, when appropriate. Variables of load (swimming frequency, laps, training drills, use of swimming aids/resistance devices, etc) will likely need to be manipulated. This may not mean complete cessation of swimming, and may enable the swimmer to continue working towards their goals whilst avoiding aggravation of their injured shoulder.

References

- 1 Brukner and Kahn (2008) Clinical Sports Medicine, 3rd Edition. McGraw Hill
- 2 Sein et al. Shoulder pain in elite swimmers: primarily due to swim-volume-induced supraspinatus tendinopathy. *Br J Sports Med* 2010;**44**: 105-113
- 3 McMaster WC and Troup J. A survey of interfering shoulder pain in United States competitive swimmers. *Am J Sports Med* 1993;**21**:67-70
- 4 Rathbun and MacNab (1970) & Neer (1972) in Boettcher (2013)
- 5 Boettcher (2013) “New Moves’ in preventing and managing swimmer’s shoulder!” ?presented at the APA Melbourne conference.

The Physiotherapy Clinic

Suite 904/3 Waverley Street, Bondi Junction | (P) 93871011 | www.physiotherapyclinic.com.au