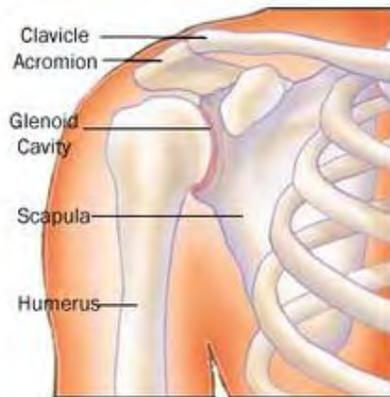


## Swimmer's Shoulder - Causes, Treatment and Prevention

*The shoulder joint has the greatest range of movement of any joint in the body. In the shoulder joint, stability is compromised to enable this great range of motion. This lack of stability makes the joint vulnerable to injury.*

### The structure and function of the shoulder joint

- 3 bones make up the bony framework of the shoulder joint: the clavicle (collarbone), the humerus (upper arm bone) and the scapula (shoulder blade).



- Several muscles are involved in shoulder joint motion but of particular significance in 'Swimmer's Shoulder' are the rotator cuff muscles (supraspinatus, subscapularis, teres minor and infraspinatus), and especially the subacromial space that houses the subacromial bursa and the tendon of supraspinatus.
- The key issue with joint function is range of motion versus stability.
- The shoulder joint has the greatest range of movement of any joint in the body. In the shoulder joint, stability is compromised to enable this great range of motion. This lack of stability makes the joint vulnerable to injury.

### 'Swimmer's Shoulder' – what happens and why

- Soft tissue impingement: When soft tissues get pinched in the subacromial space, they get inflamed, thus causing pain. The supraspinatus tendon is particularly vulnerable. This condition is commonly referred to as 'swimmer's shoulder'.
- The rotator cuff muscles provide the primary means of stability for the shoulder joint.
- They are small muscles that are frequently overlooked in exercise conditioning programmes, where the emphasis tends to be focussed on the big power muscles, such as the pectoralis, latissimus dorsi and trapezius muscles.
- Being inadequately conditioned the rotator cuff muscles are susceptible to overload, for example through excessive/incorrect use of hand paddles.
- The risk of shoulder impingement is increased through poor posture and particularly through swimming techniques that produce internal rotation of the shoulder.

- Unlike the belly of the muscle, tendons have a poor blood supply. This results in a reduced supply of nutrients to the tissues for growth and repair. This leads to a decrement in condition with advancing age, thus increasing risk of damage.

#### Treatment and rehabilitation – from the coach’s perspective

- The first sign of impingement is pain, often poorly localised within the shoulder, during and after training. As the condition worsens, the pain starts to affect other activities until the condition becomes chronic, carrying over into the evening and affecting sleep.
- The immediate treatment is to rest the affected shoulder joint. *The practice of ‘swimming through the pain’ is ill-advised!*
- Medical intervention may involve the use of anti-inflammatory drugs / cortisone injection but this is outside the bounds of this article which focuses on the coach’s perspective. Of course, the coach needs to be kept informed of medical treatment and respect same.
- Some therapists recommend the alternating use of ice and heat for the first 48 – 72 hours.
- Pain is the guide to rehabilitation. Keep moving the joint through the maximum range of motion without incurring pain. If it hurts, back off.
- Rotator cuff exercises are recommended, initially against minimal resistance. (Details below)
- Exercises to strengthen the scapula stabilisers are also recommended. (Details below)

#### Minimising risk

There are several actions one can take to minimise risk of shoulder impingement issues.

- Daily rotator cuff exercises. These can be done using a resistance band (e.g. Theraband), or a light weight, or using the opposite hand to provide resistance. They can also be done effectively in the pool.
- Strengthen the scapula stabilisers.
- Check your swimming techniques.
  - *Avoid internal rotation of the shoulder, especially in freestyle.*
  - Internal rotation is manifest whenever the thumb is below the index finger. It can occur insidiously at any phase of the stroke, but most commonly on entry and during the first phase of the pull. It is also common during the recovery stage of the stroke, especially if the swimmer lacks sufficient shoulder flexibility to lift the elbow.
  - ‘Rule of thumb’ – ensure the thumb is adjacent to the index finger at all times. (i.e. The palm will be facing down or back. If the palm is facing outwards, the arm is internally rotated.)
  - This neutral position will generally result in the knuckles facing square on with the fingers pointing downwards on entry and during the recovery phase of the stroke. During the pull, it will result in the palm facing backwards, not to the side.
- Use hand paddles judiciously.
  - Follow the rules for the safe use of paddles:
    - (1) Bigger is not better! It is advised that they approximate the hand size.
    - (2) Stroke slowly. Sprinting with hand paddles is increasing the risk of overload astronomically!
    - (3) Point the paddle downwards on the pull and recovery to avoid internal rotation. To cut in sideways with the thumb down is asking for trouble!

(4) Avoid overuse – not too far and not too often. It is not advised to use them in consecutive training sessions.

(5) If it starts to hurt, STOP!

### **ROTATOR CUFF EXERCISES**

#### **(1) Internal Rotation (closing the door)**

Stand with arm hanging relaxed by side.

Keeping elbow by side, bend elbow to 90 degree angle with hand in front (not to the side)

Keeping elbow by side, wrap forearm across body, forearm parallel to the floor.

#### **(2) External Rotation (opening the door)**

Stand with arm hanging relaxed by side.

Keeping elbow by side, bend elbow to 90 degree angle with hand in front (not to the side)

Keeping elbow by side, take forearm out to the side, forearm parallel to the floor.

These two exercises can be done squatting or standing in the pool with the shoulders submerged. Keep the wrist firm and the elbow tucked into the side.

On land, they can be done against resistance, by using a tethered exercise band or by pushing against the opposite hand.

They can also be done, lying on the side, same relative starting position, holding a light weight (a can of soup for example). Internal rotation – use the bottom arm; external rotation – use the upper arm.

### **SCAPULA STABILISER STRENGTHENING EXERCISES**

#### **(1) Rein back**

Using resistance band, hold arms straight out in front, parallel to the ground, thumbs on top.

Draw elbows straight back as far as possible, squeezing shoulder blades together.

#### **(2) Ball on the wall**

Stand with back against wall. With elbow bent at 90 degrees and tucked in against side, press a tennis ball against the wall using the back of the hand.

Slowly straighten elbow, sliding hand along the wall – and return.

#### **General notes:**

- Always work both sides of the body
- Resistance will vary according to health status of the joint
- Basic prescription: 3 sets of 10 reps daily (Rehab: 3 times a day, but much less resistance).

***Kathy Heenan***