NORTHERN SWIMMING

"SWIMMER'S SHOULDER" *GUIDE*

(See separate Shoulder Prehab Exercise Program)

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"SWIMMER'S SHOULDER" PREVENTION & TREATMENT GUIDE

Northern Swimming

(Material Sources: www.yourswimlog.com/articles/, Drayer Physical Therapy Institute, and Northern Head Athletic Trainer, Donnie Russell)

WHAT'S THE PURPOSE OF THIS GUIDE?

This guide has four major purposes:

1. PRIMARY - Enable you to train and compete pain-free in order to achieve your full potential as a competitive Northern swimmer.
2. Help you understand what "Swimmer's Shoulder" is, its possible causes and steps to possibly prevent it from occurring/reoccurring.
3. Provide a Prehab Program of exercises designed to try to ***prevent*** you from experiencing shoulder pain while swimming.
4. Help you understand the phases of treatment for Swimmer's Shoulder, should you find yourself experiencing it.

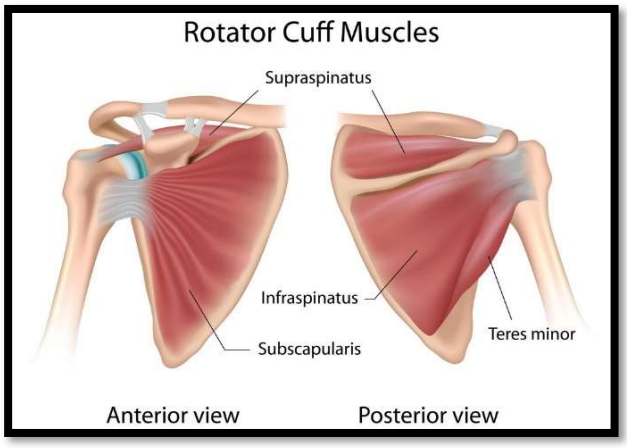
DID YOU KNOW?

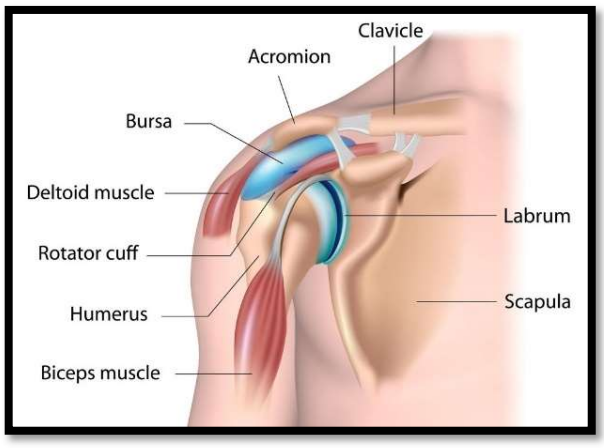
- The average high school swimmer performs 1 to 2 million strokes annually with each arm!
- Over 1/3 of top level swimmers experience shoulder pain that prevents them from normal training.
- 90% of complaints by swimmers that bring them to the doctor and/or osteopath/physiotherapist are related to shoulder problems.

SHOULDER ANATOMY

The shoulder complex is designed to achieve the greatest range of motion (ROM) with the most degrees of freedom of any joint system in the body.

Your shoulder is a ball and socket joint, with a rim of cartilage that goes around the socket to make it deeper and more stable. Surrounding the joint is your joint capsule, a fibrous material, with thicker parts of the capsule forming ligaments. A number of muscles, and the tendons from these muscles, run around and over your joint. The muscles that have the most effect on your joint stability are called the "rotator cuff". The 'cuff' is made up of 4 muscles which work together to help keep your shoulder centered in the socket.





WHAT IS "SWIMMER'S SHOULDER"?

Swimmer's shoulder is an umbrella term covering a range of painful shoulder overuse injuries that occur in swimmers. Because there are various parts of your shoulder that can be injured from your swimming stroke, your pain can be anything from a local pain near the shoulder joint, to a spreading pain that travels up your shoulder and neck or down into your arm. Being an overuse injury, it is caused by repeated trauma rather than a specific incident.

SWIMMER'S SHOULDER CHARACTERISTICS

1. Inflammation of the supraspinatus and biceps tendon within the subacromial space leading to a shoulder impingement syndrome.
2. The onset of symptoms is often associated with altered posture, shoulder joint mobility, neuromuscular control, or muscle performance
3. Training errors such as overtraining, overloading, and especially poor stroke technique (see below) may also contribute to this condition.

Many swimmers have inherent ligament looseness and often will have multidirectional shoulder instability - essentially, more movement in the joint.

However, all swimmers develop muscle imbalances where the adductors and internal rotators of the arm over-develop (due to the nature of swimming). Unfortunately, this leaves a relative weakness of the external rotators and scapular stabilizers - simply because they don't get used as much. Consequently, this muscle imbalance overuse and/or poor technique results in an anterior capsule looseness. These all culminate and allow the humeral head to move forward and up thereby, compromising the subacromial space (where the supraspinatus and biceps tendons run through) causing an irritation/impingement.

WHAT GOES WRONG IN SWIMMER'S SHOULDER?

The shoulder is a very mobile joint, and being so mobile, it needs to be well controlled by the muscles and ligaments that surround the joint. Over-training, fatigue, hypermobility, poor technique, weakness, tightness, previous shoulder injury or use of hand paddles that are *too large* can lead to your muscles and ligaments being overworked. If this goes on, injuries such as rotator cuff impingement and tendonitis, rotator cuff tears, bursitis, capsule and ligament damage, or cartilage damage can occur.

PREVENTION OF SWIMMER'S SHOULDER ➔ PROPER TECHNIQUE

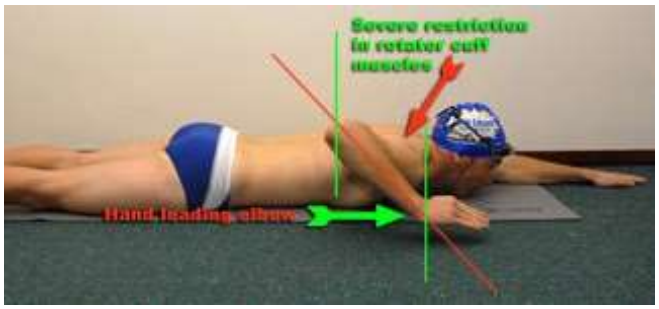
9 times out of 10, poor stroke technique is causing shoulder pain in the first place in swimming. Correcting your technique is not actually that difficult, but you do need to know what to look out for and, just as importantly, work diligently to improve in these areas.

THE FOLLOWING 3 SIMPLE TIPS ARE DESIGNED TO HELP YOU <u>AVOID</u> DEVELOPING A SHOULDER INJURY FROM YOUR SWIMMING:

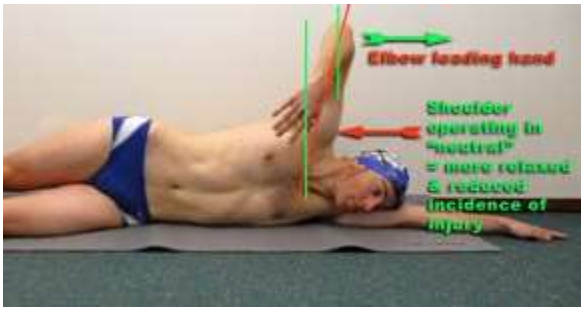
1. BODY ROTATION

Developing a good, symmetrical body rotation through the development of an efficient **<u>bilateral</u>** (to both sides) breathing pattern is key to minimizing the chance of a shoulder injury.

Swimming with a flat body in the water with limited rotation along the long axis of the spine causes the arms to swing around to the side during the recovery phase.



BAD BODY ROTATION



GOOD BODY ROTATION

This swinging action results in large amounts of internal rotation at the shoulder joint which is the major source of impingement and rotator cuff issues. **<u>Be sure to rotate fully to BOTH sides.</u>**

2. HAND PLACEMENT INTO THE WATER

A thumb first entry into the water leads to excessive internal rotation which, from approximately 3200 strokes per hour, can eventually lead to acute pain in the shoulder as an 'over-use' injury. **<u>Instead of entering the thumb first, change your technique to enter with a flat hand, fingertips first.</u>**

3. HIGH ELBOW CATCH

Many swimmers are unaware of how they pull through under the water. Typically swimmers will pull through with either a dropped elbow or with a very straight arm. Doing so loads the shoulder muscles excessively as the majority of the pull through phase is spent pushing down, rather than pressing back. Working to develop a 'high elbow catch' technique with enhanced swimming posture will really help you utilize the larger, more powerful muscle groups of your chest and upper back, rather than rely upon the shoulders.

SHOULDER PREHAB EXERCISE PROGRAM (See separate document)

TREATMENT FOR SWIMMER'S SHOULDER ➔ SEVEN PHASES

Researchers have concluded that there are essentially 7 stages that need to be covered to effectively rehabilitate swimmers shoulder injuries and prevent recurrence.

PHASE 1: PAIN RELIEF & ANTI-INFLAMMATORY TIPS

As with most soft tissue injuries the initial treatment is RICE – Rest, Ice, Compression and Elevation.

In the early phase you may be unable to fully lift your arm or sleep comfortably. You should stop doing the movement or activity that provoked the shoulder pain in the first place and avoid doing anything that causes pain in your shoulder.

You may need to wear a sling or have your shoulder taped to provide pain relief. In some cases it may mean that you need to sleep on your back, relatively upright or with pillow support.

Ice is a simple and effective way to reduce your pain and swelling. Apply it for 20-30 minutes every 2 to 4 hours during the initial phase, or when you notice that your injury is warm or hot.

Anti-inflammatory medication (if tolerated) and natural substances (e.g. Arnica) may help reduce your pain and swelling. However, it is best to avoid anti-inflammatory drugs during the initial 48 to 72 hours when they may encourage additional bleeding.

As you improve, supportive taping will help to both support the injured soft tissue and reduce excessive swelling. Your athletic trainer, doctor or physical therapist may utilize a range of pain relief techniques including joint mobilizations and massage to assist you during this painful phase.

PHASE 2: REGAIN FULL RANGE OF MOTION (ROM)

If you protect your injured rotator cuff structures appropriately the injured tissues will heal. Inflamed structures e.g. (tendonitis, bursitis) will settle when protected from additional damage.

Symptoms related to swimmers shoulder may take several weeks to improve. During this time it is important to create an environment that allows you to return to normal use quickly and prevent a recurrence.

It is important to lengthen and orient your healing scar tissue via joint mobilizations, massage, shoulder muscle stretches and light active-assisted and active exercises.

Researchers have concluded that osteopathic or physiotherapy treatment will improve your range of motion quicker and, in the long-term, improve your functional outcome.

In most cases, you will also have developed short or long-term protective tightness of your joint capsule (usually posterior) and some compensatory muscles. These structures need to be stretched to allow normal movement.

Signs that you have full soft tissue extensibility include being able to move your shoulder through a full range of motion. In the early stage, this may need to be passively helped (by someone else) e.g. your osteopath or physical therapist. As you improve you will be able to do this under your own muscle power.

PHASE 3: RESTORE SCAPULAR CONTROL

Your shoulder blade (scapular) is the base of your shoulder and arm movements. Normal shoulder-blade shoulder movement – known as “scapulo-humeral rhythm” is required for a pain-free and powerful shoulder function. Alteration of this movement pattern results in impingement and subsequent injury.

Researchers have identified poor scapulo-humeral rhythm as a major cause of rotator cuff impingement. Addressing any deficiencies will be an important component of your rehabilitation. Plus, they have identified scapular stabilization exercises as a key ingredient for a successful rehabilitation.

PHASE 4: RESTORE NORMAL NECK-SCAPULO-THORACIC-SHOULDER FUNCTION

It may be difficult to comprehend, but your neck and upper back (thoracic spine) are very important in the rehabilitation of shoulder pain and injury.

Neck or spine dysfunction can not only refer pain directly to your shoulder, but it can affect a nerve's electrical energy, causing weakness and altered movement patterns.

Plus, painful spinal structures can form poor posture or injury and do not provide your shoulder or scapular muscles with a solid pain-free base to act upon.

In most cases, especially chronic shoulder pain, some treatment directed at your neck or upper back will be required to ease your pain, improve your shoulder movement and stop the pain or injury from returning.

PHASE 5: RESTORE ROTATOR CUFF STRENGTH

It may seem odd that you don't attempt to restore the strength of your rotator cuff until a later stage in the rehabilitation. However, if a structure is injured we need to provide nature with an opportunity to undertake primary healing before we load the structures with anti-gravity and resistance exercises.

Having said that, researchers have discovered the importance of strengthening the rotator cuff muscles with a successful rehabilitation program. These exercises need to be progressed in both load and position to accommodate for which specific rotator cuff tendons are injured and whether or not you have a secondary condition such as bursitis.

PHASE 6: RESTORE TECHNIQUE, SPEED, POWER & AGILITY

As stated above, swimming requires repetitive arm actions, which place enormous forces on your body.

In order to prevent a recurrence as you return to swimming, your osteopath/trainer/therapist will guide you with exercises to address these important components of rehabilitation to both prevent a recurrence and improve your swimming performance.

PHASE 7: RETURN TO SWIMMING

Depending on the demands of your swimming season, you will require individual exercises and a progressed training regime to enable a safe and injury-free return to swimming.

Your osteopath/trainer/therapist will discuss your goals, time frames and training schedules with you to optimize you for a complete return to swimming.

The perfect outcome will have you performing at full speed, power, agility and function with the added knowledge that a thorough prehab and rehabilitation program has minimized your chance of future injury.