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Groin Injury Prevention

by **Sheila Klausner, MSPT, CSCS**

This article will focus on injury prevention of groin injuries specifically for **breaststrokes**.

If you have sustained a groin injury, your orthopedic physician, physical therapist, or athletic trainer should be consulted. An accurate diagnosis of tissues involved will help develop an appropriate treatment plan. Within this plan, the following discussion of flexibility and strengthening exercises can be incorporated. Determining frequency, duration and intensity of these exercises will vary along the spectrum of injury through to prevention.

Breaststrokes need to have a balance of flexibility and strength between their pelvic and thigh musculature. Your thigh muscles originate off of your pelvic girdle, which is the center of your core stability. A variety of muscles are constantly working against each other during the breaststroke kick. Flexibility is essential in the following muscles: quadriceps, hamstrings, adductors (inner thigh), abductors (outer thigh) and hip rotators. Breaststrokes typically perform the "butterfly sit" stretch but should also follow with positioning one leg out straight to the side while the other leg stays bent to isolate each inner thigh/hip.

You should never experience pain when you are stretching. Experiencing pain during stretching or strengthening can be an indication of damage to tissue whether it is muscle, tendon, ligament, fascia, capsule, nerve or bone. A mild soreness is acceptable if it resolves soon after the activity. Breaststrokes should choose both static and dynamic flexibility exercises. Static stretching should be held 30-60 seconds with a range of 3-6 repetitions. Static stretches are productive following an increase in your core body temperature and can produce benefits in tissue elongation. Dynamic stretching is helpful in warming up the tissues and stimulating the body for performance.

An example of dynamic stretching beneficial to breaststrokes is leg swings. To stretch and stimulate the inner and outer thigh muscles, swing the leg back and forth through abduction/adduction directions across your body. To stretch the hip flexors and extensors, swing the leg forward and back in front and behind your body. These swings provide an increase in extensibility of the muscles that attach from your pelvis to your thigh and also stimulate the muscles to prepare for activity in the water.

The leg swings can also be useful as an actual strengthening exercise for breaststrokes who need an increase in strength and range of motion in their hip muscles. This exercise helps address the concentric (shortening) and eccentric (lengthening) demands of the inner and outer thigh muscles. A swimmer can perform these swings through different angles for an increased amount of time to build range of motion and strength.

Imperative to hip strength is a balance of lower abdominal strength. Core training includes abdominal and low back strengthening. There are many ways to increase strength utilizing medicine balls, swiss balls, body blade, ab rollers or just your own body weight. Hamstring strength is involved in appropriate groin strength. The adductor magnus muscle is an example of the inner thigh's coordination with the hamstrings as it works to do both muscle actions. Hamstring curls can be incorporated with core training when using swiss balls and maintaining a "bridge" position with feet on the ball and pulling the ball up underneath you with your feet. Often there is an imbalance between the power of the quadriceps being much stronger than the hamstrings. The weaker hamstrings get overloaded and strained and can lead to a groin injury.

A weakness in gluteal and outer thigh muscles can be present as an imbalance with tightness of the inner thigh muscles. Exercises to increase outer thigh strength can be traditional leg lifts lying down, leg pulls against resistance in standing or become more sport specific by adding hip external rotation as you abduct your leg. You can utilize a band around your thighs in sidelying position and lift one leg up and away from the other while keeping your feet together. The Slide board is another excellent concentric/eccentric exercise for thigh/hip strengthening. Lunges front and side stepping directions should also be included.

The breaststroke kick involves multiple joints moving through rotation angles at the same time while abducting and adducting the legs. An exercise that I have found successful for breaststrokers is "standing hip rotations".

External Hip Rotation

Begin with the standing leg firmly planted, the free leg bent to approximately 90 degrees and hip internally rotated with the knee facing the floor, and the arms reaching toward the lateral (outer) side of the standing foot. This reach of the arms and torso internally rotates the standing hip slightly. (see **START - External Hip Rotation**)



START - External Hip Rotation

To complete the movement, open the arms and torso toward the free leg, opening the hips to externally rotate the free leg. The arms and free leg knee should now be facing the ceiling. This movement also externally rotates the standing leg from the hip. (see **FINISH - External Hip Rotation**)



FINISH - External Hip Rotation

Internal Hip Rotation

Begin with the standing leg firmly planted, the free leg bent to approximately 90 degrees and the hip in a neutral position with the knee facing the floor. Reach with the arms and torso toward the medial (inner) side of the standing foot. This externally rotates the standing hip slightly. (see **START - Internal Hip Rotation**)



START - Internal Hip Rotation

To complete the movement, transfer the arms and

torso inward, closing the hips to internally rotate the free leg. The arms and free leg knee should now be facing the ceiling. This movement also internally rotates the standing leg from the hip. (see **FINISH - Internal Hip Rotation**)



FINISH - Internal Hip Rotation

In each of the exercises above, the standing leg is rotating while balancing and the free leg is actively rotating through a plane of motion. Hip and knee rotation are involved in both legs and ankle rotations are included in the weight bearing leg. Core stabilization is included with abdominal and erector spinae (back) co-contractions during trunk rotation motions. The swimmer should perform as large an excursion of diagonal motion as he/she can control the technique of all the combined rotation motions. Perform as many repetitions until "burn" is felt in the weight bearing leg and then switch legs.

With all exercises, the swimmer can increase the speed of the exercises to increase sport specific demands. Once the technique is mastered, increasing speed will advance strength and stability through hip and pelvic musculature. Preventing groin injuries is possible if you maintain the proper balance of flexibility among different muscle groups as well as a balance of flexibility and strength throughout the hip and pelvis muscles.

Sheila is a participant in USA Swimming's Sports Medicine and Science Network and a former member of the USA Swimming Sports Medicine/Science Committee.

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