

Swelling: The Body's Reaction To Injury

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You step in a hole and turn your ankle, or tweak your knee. You throw too much and feel a twinge in your shoulder. You try to break your fall with your wrist. Acute injuries are easy to recognize: first comes the pain, and then comes the swelling. Chronic, or long term injuries, take weeks, sometimes even months, to develop, but it is the same story: first comes the pain, and then comes the swelling.

Swelling is a normal reaction of the body to an injury. Sometimes, though, the body goes overboard, and the inflammatory response is excessive and can actually begin to cause more damage than good.

WHAT IS IT?

In general, swelling is any abnormal enlargement of a body part. This can be due to fluid – including blood – bony malformation, muscle, or any number of things. **Edema** describes fluid, or swelling, that has accumulated in the tissue outside of your joint capsule. This includes swelling in your calf or thigh. **Effusion** describes fluid that is inside your joint capsule, such as a swollen ankle or knee. **Hemarthrosis** is a condition where there is blood in the effusion within your joint capsule and indicates either a ligamentous injury, such as an ACL tear, or a fracture. This is determined by extracting some fluid from the joint capsule with a needle. **Acute** refers to swelling that occurs within 24 hours of injury. If the swelling occurs within the first 2 hours, it is probably associated with hemarthrosis, and should be checked out by a physician. **Chronic** refers to swelling that occurs over a long period of time, and can be difficult for an athlete to detect, but is very detrimental if left untreated.

WHAT IS SO BAD ABOUT SWELLING?

The body always responds to an injury with a predictable inflammatory response, as the first step towards healing. Redness, heat, swelling and pain are associated with this first stage. Redness and heat are caused by increased blood flow. Swelling is the result of the increased movement of fluid and white blood cells into the area of inflammation. The release of chemicals and the compression of nerves in the area of injury cause pain. The

pain and swelling can keep the athlete from using the injured part, serving to protect it from further injury. However, often times, the body's response is excessive.

“Prolonged inflammation and pain can lead to atrophy of the muscles surrounding the joint and a decreased ability to activate the muscles,” states Lisa Kluchurosky, ATC, coordinator, Children's Sports Medicine. “If not treated appropriately, the swelling can become chronic, or long term. Chronic swelling leads to tissues becoming more rigid and less pliable than their healthy counterpart. Less pliable tissues are more susceptible to further injury.”

WHAT TO DO ABOUT SWELLING?

In the acute, or early phase, remember PRICE:

- P** = Protection from further damage
- R** = Rest to avoid prolonging irritation
- I** = Ice (cold) for controlling pain, bleeding, and edema
- C** = Compression for support and controlling swelling
- E** = Elevation for decreasing bleeding and edema

Protection can mean immobilization with a brace, or a wrap, or even just staying off the body part.

Rest means not moving the body part in a painful way. Movement is good, and can increase healing, but it should be pain free at this stage.

Ice for the first 72 hours, 20 minutes out of every hour. Leaving ice on longer actually reverses the effect it has, and may increase swelling. Chemical icepacks should never be applied directly to the skin, or frostbite can occur. **Do not** use heat for the first 72 hours; heat will increase the swelling.

Compression, with an ace wrap. Your athletic trainer or doctor can show you how to wrap the body part to minimize swelling.

Elevation, or resting with the injury above heart level, to encourage swelling to return towards the body, instead of collecting in the extremities where it is difficult to get rid of.

If your swelling is chronic, or lasts longer than 2-3 weeks, you should see your doctor. Your doctor will be able to recommend medication, exercise or therapy to resolve the swelling. Remember, swelling is the body's reaction to an injury; if the swelling is still present, so is the injury.

RETURNING TO PLAY

You are not ready to return to play until all the swelling is gone. Kluchurosky says, “You should be able to perform multiple repetitions of the activities your sport requires (jumps, sprints, kicks, etc) without an increase in swelling or pain in the injured area before attempting to return to competition.”

Consult your primary care physician for more serious injuries that do not respond to basic first aid. As an added resource, the staff at Nationwide Children’s Sports Medicine is available to diagnose and treat sports-related injuries for youth or adolescent athletes. To make an appointment, call 614-355-6000.