



Sports Injuries

Sports injuries include a wide variety of soft tissue, skeletal and joint-related injuries associated with physical exercise, sporting events and various athletic activities. These are commonly described as strains, sprains, dislocations, fractures, lacerations, cuts, abrasions, blisters, bruising, inflammation, hernia and pain. More than 20% of all reported accidents are sports-related.

Approximately 38% of high school teenagers and 34% of middle school children will sustain a physical activity-related injury, and of these injuries, about 50% will occur as a result of overuse-type mechanisms. Average cost for individual treatment is estimated in the U.S. at \$200.00, which equates to approximately 1.8 billion dollars (Hawkins, D., et al, Overuse injuries in youth sports: biomechanical considerations, MSSE, Vol. 33, No. 10, 2001, pp 1701-1707).

Outside of direct impact injuries, additional symptoms may include delayed onset muscle soreness (DOMS), muscle cramps or stitches, exercise-induced asthma, upper respiratory tract infection, compromised immune function and increased susceptibility to different cancers, cataracts and even premature aging.

The degree of impairment or tissue damage caused by sport-related activity greatly depends on the athlete's present state of health and physical condition. Other variables include training frequency, training intensity, quality of diet and sport specificity.

Strains and Sprains

The difference between a strain and a sprain is one of intensity and location. A strain describes the change, which occurs in the shape of a muscle or soft tissue when acted upon by external forces or resistance, such as a throwing movement. A strained muscle is an over-stretched muscle and may cause inflammation and pain.

A sprain is specific to ligament injury. This occurs when a joint is carried through a greater than normal range of motion, but without dislocation or fracture. Ligaments are tough, fibrous bands of connective tissue that attach bones together.

Sprains often involve the wrenching or twisting of a joint with partial rupture to its attachments. Damage to supporting blood vessels, muscles, tendons, ligaments or nerves may be extensive. Considerable swelling and pain due to hemorrhaging from ruptured blood vessels, often causes partial or complete immobility. The ankle, lower back and knee are particularly vulnerable to sprains.

Miscellaneous Injuries

Bruises or contusions are caused by ruptured blood vessels under the skin. After impact, blood seeps into the surrounding tissue, causing the familiar black-and-blue coloration. A dislo-

cation occurs when the end of a bone is pulled or pushed out of its normal position. A fracture indicates a broken bone. A stress fracture is a weak spot or small crack in the bone matrix.

Lacerations describe a minor or major cut in the skin. Severe bleeding requires immediate first aid attention, whereas minor cuts stop bleeding on their own and once cleaned, sterilized and covered, usually do not prevent the athlete from resuming play. Scrapes and abrasions are common to many contact sports. Cleaning is necessary to prevent infection and scarring.

Hernias (inguinal hernia) occur when abdominal tissue bulges through a weak spot in the abdominal wall in the groin area. These are more common in men and are associated with heavy lifting and strenuous exercise. The weak spot or susceptible tissue is often a function of poor nutrition and indicates weakness in surrounding collagen, membrane and capillary support. Pressure from within must be high, but a strong, elastic outer mesh and framework must be present to prevent the underlying tissue from breaking through. Such tissue requires reinforcement with ascorbate, vitamin E, EFAs, minerals, trace elements and bioflavonoids from a variety of sources including rutin, hesperidin, quercetin, anthocyanins, anthocyanidins and proanthocyanidins.

Cramping

The most common cause of cramping is simple dehydration. After that, electrolyte loss and insufficient mineral intake is a strong correlate. To optimize body hydration, drink 30 ml of clean, filtered water per kg of lean body mass daily. This quantity is based on the logic of how much cellular space you have to fill with water. Medical science teaches that an

optimum percentage of body water is 65-70% or greater. Muscle cells hold up to 75% water whereas fat cells max out at 15-20%. We also know that athletic performance and risk of sports injury increases as percentage of body water decreases, which is why all fitness athletes should consume 1-2 liters of water during workouts to compensate for fluid loss. This amount is in addition to the 30 ml per kg of lean mass standard.

I recommend adding an electrolyte/carbohydrate powder to your workout water bottle. Look for a mix that contains potassium, sodium, calcium, magnesium, chromium, manganese and selenium. Ideal potassium/sodium ratio is 7:1 in favor of potassium, which is the same ratio found in natural food when tabulated as an average across the board. For maximum absorption, the carbohydrate percentage should not exceed 8% when added to the water. B-6 also regulates fluid balance as do the essential fatty acids (EFAs).

Check This Out

Try adding 5 grams of MgCreatine powder and 5 grams of calcium ascorbate powder to 1.5 liters of filtered water in addition to 15 grams of a good clean electrolyte formula. Drink this during workouts in the gym between sets. It has a fantastic strength, endurance and recovery effect.

Stitches

Stitches or exercise-related transient abdominal pain (ETAP) were covered in Module Three. In the ischemic-pain theory, stitch arises

when blood flow to the diaphragm or other respiratory muscles is compromised by diversion of blood to the gut for digestion or to the muscles for exercise. The ligamentous-pain theory proposes that stitch arises from tugging of the gut on ligaments connecting the gut to the diaphragm. This notion is reinforced by the observation of increased frequency of stitch in motion after the gut is loaded with fluid sufficient to fill it. A third explanation associates ETAP with irritation of the parietal peritoneum (PP), suggesting that stitch is a form of exertional peritonitis (inflammation).

DOMS (delayed onset muscle soreness) was covered in Module One. We learned that internal damage to muscle filaments, joints and surrounding soft tissue, instigated through sport and strenuous training, can cause muscles to feel extremely stiff and sore for up to 72 hours or longer after engagement. Many still believe that lactic acid, a by-product of anaerobic metabolism and referred to as a waste product, is the culprit. Not so! We now know that lactic acid is neither wasted nor excreted by the body, and that super-oxide free radicals, hydroperoxides, hydroxyl radicals and excess ammonia are responsible for causing DOMS.

Besides taking a wide assortment of antioxidants from both food and supplements, DOMS and related forms of muscle fiber and membrane microdamage can also be modified by consistent training (thus improving endogenous antioxidant and enzyme response through adaptation), improving hydration, warming-up prior to workouts, sauna and hydrotherapy, routine massage therapy, electromembrane microcurrent therapy (mild electrical stimulation), hyperbaric oxygen treatment and stretching.

"If you are one of those folk prone to side aches or stitch, they almost always occur because of incorrect breathing. Once you get your breathing right, stitches disappear entirely from your running."

~ Dr. Colgan's Fat Loss Secrets (2017)