

Sports Injuries & Muscle Imbalances



SPORTS RELATED INJURIES....HOW SERIOUS ARE THEY?

There were approximately 20.3 million sports mishaps in the U.S. in 2002, but most were very minor: ankle twists, scrapes, bruises, sprains, strains and jammed fingers accounted for a majority of these momentary setbacks. 11.2 million injuries (53%) were self-treated (or untreated), while 6.1 million (30%) did not even hinder subsequent participation in the sport or activity; only 3.4 million sports injuries were serious enough to require Emergency Room treatment. Not surprising, 40% of all sports injuries were incurred by women...an oblique and perhaps unwelcome confirmation of their near-parity with men in U.S. sports participation. Women also account for 37% of all ER sports injuries. (These were among the preliminary findings of a Comprehensive Study of Sports Injuries in the U.S., conducted by American Sports Data, Inc. (ASD) a Hartsdale, N.Y.-based firm specializing in sports and fitness research.)

SOFT TISSUE ADHESIONS AFFECTS MANY ATHLETES

Common sports injuries involve sudden strains and tears of tissue from a blow, collision or sudden muscle contraction against an abnormal load. When trauma occurs, adhesions and tissue contractures form within the muscle and inhibit performance.

Problems arise when these tissues are injured either suddenly or over time from overuse or improper use. What happens is that the adhesions (scar tissue) form within or between muscle and bone structures. This leads to decreased function, range of motion and strength.

There is a very specific sequence of events that the body goes through during the healing process. The result of this process is a scar. It may be microscopic, cell-to-cell, but it is there. And as a result, the tissue is weaker and less functional than the original. And the athlete's performance suffers and is more susceptible to future injuries.

POOR MECHANICS CAUSED BY WEAK AND/OR PAINFUL HANDS AND ELBOWS

Suffering from weak and/or painful hands and elbows causes every athlete to compensate by recruiting strength from other muscle groups, but in unbalanced proportions. This alters the athlete's ability to move and react as they ordinarily should; causing a decrease in their performance.

AVOID TOO MANY CONSECUTIVE TRAINING DAYS

One important factor in reducing injury development is to limit the number of consecutive days of training that takes place, as this often contributes to the development of biomechanical imbalances throughout the upper extremity. The more consecutive days trained, the higher the

chances of causing a biomechanical imbalance to rear its ugly head and reduce performance levels.

The real answer is creating balance in each person's training regimen. More training simply means increased development to the already overdeveloped muscle groups of the upper extremity (Flexors / Adductors, Radial / Ulnar Deviators, Pronator / Supinator Muscle Groups),

causing impingement to underlying nerves and blood vessels, or more repetitive stress and exacerbation to the 'weak links' in the upper extremity (Extensors / Abductors, Radial / Ulnar Deviators, Pronator / Supinator Muscle Groups) causing tensile strain to the already weak muscles/tendons which are prone to injury.

INCREASE STRENGTH AND FLEXIBILITY FOR BETTER PERFORMANCE / REDUCED INJURIES

Scientific support for strength training as an injury preventer is very strong. For example, studies carried out with tennis players reveal that athletes who do not carry out regular resistance training have a higher incidence of common injuries such as 'tennis elbow'. In addition, competitors who undergo a preventative resistance training program AFTER developing tennis elbow have only about a 30-per cent re-occurrence of symptoms, compared to 41 per cent in those who don't strength train ('An Epidemiological Study of Tennis Elbow,' American Journal of Sports Medicine, vol. 7, pp. 234-238, 1979).

To keep your fingers, hands, wrist and elbows free from injury, they must be strong, and to prevent an injury re-occurrence, the damaged area must be totally revamped; strengthening the injured areas beyond the amount of stresses that they will be subjected to in the future.

The key, however, is not to increase GENERAL strength but actual strength of both the agonist and antagonist muscle groups that are involved while performing specific movements, which are required and appropriate for your sport. That means specific, weight-bearing, closed-chain resistance training which forces the flexor / extensor, pronator / supinator, adductor / abductor and radial / ulnar deviator muscles of the upper extremity to be well balanced in order to function powerfully.

PROPER REHABILITATION IS THE KEY TO A QUICK RECOVERY

Fifty percent (50%) of sports injuries are actually new trouble areas; the rest are recurrences of previous problems (Archives of Internal Medicine, vol. 149(11), pp. 2561-2564, 1989). This certainly tells us that athletes are not taking care of their injuries properly.

An injury should be more than just an annoyance, it should be a warning sign that a body part is simply over developed or not strong enough. The fact that injuries tend to re-occur means that athletes are not doing a good job of increasing, correcting or maintaining a balance between specific agonist and antagonist muscle groups in the upper extremity that are subjected to a high load volume and/or overuse. Strengthening and/or lengthening specific muscles or groups of muscles that are subjected to high volume training or overuse is the most important aspect in preventing and rehabilitating potential or existing injuries. The term known as pre-habilitation is the approach to eliminating or at least reducing sports related injuries caused by high volume training, before they develop. Performing a sport or activity does NOT PREPARE a person for that sport or activity. Increasing strength and flexibility levels beyond what the body would require in order to participate at an optimal level, no matter what the sport, is the key to avoiding injuries. (i.e. AVOIDING TENNIS ELBOW: Situation: A tennis backhand performing 10 "returns", each requiring 60 lbs. of force from the finger, wrist and elbow extensors. Solution: Strengthen the finger, wrist and elbow extensors to withstand 20 "returns" requiring 100 lbs. of force. If the individual is only strong enough to perform the 10 "returns" at 60 lbs. of force, it will not take long to strain the extensor group, causing micro-tears, developing scar-tissue and exhibiting lateral epicondylitis....Tennis Elbow.)

Most athletes take a totally wrong approach to injury treatment and prevention. When an injury pops up, they practice the principles of 'RICE' – Rest, Ice, Compression and Elevation, as well as ARI, Anti-inflammatories, Rest, and Ice. These remedies do tone down the severity of an injury, however, the real problem is that many athletes believe that these therapies are the 'cure' for their injuries. The truth is that RICE and ARI may simply allow athletes to return to the

precise activities and movement patterns which injured them in the first place. No wonder 50 percent of these injuries are re-occurrences!

All recreational and professional athletes need to strengthen, lengthen and correct biomechanical imbalances affecting the upper extremity, as well throughout the entire body - not just rest and ice vulnerable body parts so that those areas will hold up to future training stresses. Not performing the correct rehabilitation and training program can lead to chronic injuries and the development of scar tissue which will limit future performance.

KEEP YOUR FINGERS, HANDS WRISTS, FOREARMS AND ELBOWS INJURY-FREE

A combination of both flexibility and strength throughout the entire body is very important. But, because the fingers, hands, wrists and elbows are one of the most injured areas in many sports, the ability to increase their overall flexibility, dexterity and strength can prove to be one of the greatest methods of preventing injury and increasing performance in golf, weightlifting, basketball, equestrian/bull riding, tennis, or any sport or activity that requires extensive use of the upper extremity. Whether you are a weekend warrior or a professional athlete, you too can decrease your chance of injury, and increase your overall performance.

Strengthening the muscles and tendons of the fingers, hands, wrists and elbows with *FLEXTEND* helps to prevent and eliminate injuries. Strong, flexible muscles are much less susceptible to micro-tears, tendonitis, sprains, strains, epicondylitis and other musculoskeletal disorders that afflict both recreational and professional athletes every year. *FLEXTEND* restores soft-tissue function, thus increasing flexibility, endurance, coordination, and overall grip-strength. Pre-habilitation with *FLEXTEND* is the key to injury prevention and post-injury rehabilitation. The goal of *FLEXTEND* is to restore the highest possible function and not just get rid of the pain. *FLEXTEND* is the most successful method of increasing performance and reducing soft tissue injuries of the upper extremity.

INCREASE YOUR PERFORMANCE

- Performance enhancement is measured in a variety of ways. It's the actual getting there that is most difficult. How much time and money do both recreational and professional athletes and musicians spend to get that little "extra" that makes the difference? *FLEXTEND IS THE DIFFERENCE* between power, strength, flexibility, and endurance (Success), and weakness (Failure).

PREVENT AND REHABILITATE UPPER EXTREMITY INJURIES

- *FLEXTEND* eliminates the symptoms upper extremity disorders by correcting the strength / length imbalance between the flexor / extensor, pronator / supinator, and adductor / abductor muscle groups of the fingers, hand, wrist and elbow.
- *FLEXTEND* actively strengthens the weaker, less developed finger, wrist and elbow extensors, forearm pronators / supinators and finger abductors while simultaneously stretching the strong, short, tight finger, wrist and elbow flexors, pronators / supinators and finger adductors; thus reducing compression / impingement of the median and ulnar nerves at both the wrist and elbow junctions.

REFERENCES:

- "The theory we propose explains pain, paresthesia, and muscular tenderness on the basis of multilevel nerve compression caused by postural abnormalities and muscle imbalance." Philip E. Higgs, M.D. and Susan E. Mackinnon, M.D. Department of Surgery, Washington University School of Medicine, St. Louis, Missouri. *Annu. Rev. Med.* 1995. 46:1-16

- **"All of the extrinsic hand muscles become involved in a power grip, in proportion to the strength of the grip."..... "Strong agonist-antagonist interactions are needed between the flexors and extensors of the hand and fingers to produce forceful hand-grip. Powerful flexion of the distal phalanges requires strong activity also of the finger extensors."** Janet G. Travell, M.D. and David G. Simons, M.D. *Myofascial Pain and Dysfunction-The Trigger Point Manual. Volume1 Upper Extremities, Ch:35, pg. 501. Copyright 1983.*
- **"If certain muscle groups are underused, opposing muscle groups will be overused. Muscles in either a lengthened or shortened position will be at a mechanical disadvantage and weak. The overused group will hypertrophy, and the underused group will continue to be weak. This combination produces a self perpetuating condition that maintains the abnormal posture and muscle imbalance."** Philip E. Higgs, M.D. and Susan E. Mackinnon, M.D. *Department of Surgery, Washington University School of Medicine, St. Louis, Missouri. Annu. Rev. Med. 1995. 46:1-16*
- **"Muscle balance must be restored with specific exercises.** Otherwise, the already strong and overused muscles get stronger, and the weak and underused muscles remain weak. Individuals get good at using the overused muscles and must be trained specifically to recruit and strengthen the weak underused muscles." Philip E. Higgs, M.D. and Susan E. Mackinnon, M.D. *Department of Surgery, Washington University School of Medicine, St. Louis, Missouri. Annu. Rev. Med. 1995. 46:1-16*