Dynamic Chiropractic

Steps to Successful Rehabilitation, Part 1: Understanding Soft-Tissue

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Before employing rehabilitative exercise in the office or counseling a patient on rehabilitative exercises to be performed at home, you must have a basic understanding of soft-tissue injuries. This understanding will help in all aspects of rehabilitation including stretching, aerobic exercise and strength training.

The key lies in the understanding the four types of sprains and strains and the three phases of soft-tissue healing. Sprains are injuries (tears) of ligaments. Strains are injuries (tears) of muscles and/or their tendons. Both develop from macrotrauma and/or microtrauma to the tissues. Macrotrauma is a more sudden and violent type of injury that results in significant tearing of tissues. Microtrauma results in small tears over a period of time. Either way, the healing process for the tissues will be the same.

Sprain and Strain Injuries: The Grading System

- Grade I: Consistent with tearing of *less than 50 percent* if the tissue fibers. This is the same for ligaments and/or tendons/muscles.
- Grade II: Consistent with tearing of *more than 50 percent* of the of the ligament, tendon and muscle tissue fibers.
- Grade III: A *complete* tear*;* the muscle or ligament has been separated into two sections.
- Grade IV: Also a complete tear, but with the *separation occurring at the muscle's or ligament's attachment to the bone*.
  This results in the tissue detaching a small fragment or chip of bone. This is termed an *avulsion fracture*.

It must be stated here that grades three and four create instability and should not be subject to adjustment. These injuries are typically surgical cases. Chiropractors deal primarily with type I and type II sprains and strains.

The soft-tissue-injury grading system based on numbers has been in use for a few decades. Prior to its use, the terms *mild*, *moderate* and *severe* were used. Mild equaled a grade I sprain or strain. Moderate equaled a grade II sprain or strain. Severe equaled a grade III sprain or strain.

However, this original system fell into disfavor as it was often confused with the system uses for rating a patient's degree of pain as mild, moderate or severe. If the doctor found physical evidence of a moderate sprain and/or strain, and the patient rated their pain a severe, an immediate conflict occurred. Third parties often choose to interpret the patient's "severe" as a complete rupture. To avoid this situation, use grades I through IV for your assessment of tissue damage and a 0-10 pain scale to rate the patient's pain.

While the grades for sprains and strains are usually described as individual entities, they can occur in combination. More than one grade can be present in a joint or series of joints. Varying degrees of sprain and strain can occur in the cervical spine following cervical acceleration-deceleration

injuries.

With this in mind, consider the insurance industry's diagnostic coding system. Using the cervical spine as an example, there is only one code for cervical sprain/strain (847.0). The code does not differentiate between ligamentous and muscular tissues, or between the various grades of injury or the number of possible combinations for the injured area. This explains to a degree why some doctors see a patient for this diagnosis for only a few visits while others see a patient for an extended period of time for the same diagnosis.

A grade I strain is much easier to treat and resolve than a grade II strain.

To an insurance carrier, the doctors are treating the same diagnosis regardless of their. The carrier will then show preference to the doctor with the lowest utilization and cost.

The Three Phases of Soft-Tissue Healing

Phase One: The Inflammatory Phase. Inflammation is the highlight of the first phase, which lasts 48-72 hours. Torn tissues leak blood and exudates into the area. Swelling begins and the blood and exudates irritate surrounding tissues, causing pain. The key to controlling phase one is controlling the inflammation. Rest, Ice, Compression and Elevation (RICE) are standard procedures just after injuries. Therapy modalities aimed at reducing swelling and pain are helpful. Early movement with minimal weight-bearing and stress are recommended.

Phase Two: The Repair Phase. After the initial 48-72 hours, the repair phase begins and lasts six or more weeks. During this period of time, care is predominately passive and the tissues begin to repair and regain tensile (functional) strength. Increases in exercise, stretching, and aerobic and resistance activity are all gradually employed. Once the tissues have achieved the strength needed to stabilize the area and resist further tearing, the remodeling phase begins. Activity usually increases significantly during the phase. Care is a mixture of passive and active activities during the repair stage.

Phase Three: The Remodeling Phase. Remodeling occurs as the body redirects the healing fibers attempting to increase the strength and orient the tissue fibers along the lines of greatest stress. This is the longest of the three phases. Beginning at six weeks, the process can continue for up to two years. This may seem like a very long time, but it is a necessary process.

To provide an example of this time frame, think about a surgical scar you or someone you know had or currently has. The scar remains red for a considerable period of time after surgery. It eventually fades from red to skin color. The red color seen after surgery is the result of capillary vessels in the scar that are supplying the nutrients for healing and remodeling the scar. Once remodeling is complete, the capillaries are absorbed and the red color (blood) will disappear.

Care is predominately active during the remodeling phase. It is obvious the soft-tissue healing is not a quick process. Additionally, the process is not perfect. The scars formed during soft-tissue healing are not as functional as the injured tissues. Scars are fibrous, inflexible and weaker than the original tissue. This leaves the area of the injury(s) vulnerable to future injury. Appropriate rehabilitation helps reduce the factors, but it is not a complete or perfect cure. The key is to start treatment early and provide proper care during each phase in order to achieve the best results.

Resources

- Baechle T, Earle R, editors. *Essentials of Strength and Conditioning, Second Edition*. Human Kinetics, 2000.
- Cotton R, Ekeroth C. *Personal Trainer Manual, The Resource for Fitness Professionals*.

American Council on Exercise, 1997.
- Deuster P. *The Navy SEAL Physical Fitness Guide*. Department of Military and Emergency Medicine, Uniformed Services University of the Health Sciences, F. Edward Hebert School of Medicine, August 1997.
- Siff M. *Facts and Fallacies of Fitness, Fourth Edition*. Self-published, 2000.

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