

Sports Medicine Monthly

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FOCUS ISSUE:

Return to Play Guidelines in Sports Medicine

Most certified athletic trainers and sports medicine physicians are usually very familiar with the two following questions: "how bad is it," and "when can I play again." Sports, by its very nature, perpetuates the risk of injury, and, by that same nature, sport drives all of us alike to return an athlete as soon as safely possible to the playing field. For those who work in sports medicine, returning an athlete to pre-injury competition levels usually presents as a challenge and as an enjoyment of the profession.



Now while there is some consistency between a specific type of injury and its expected healing time, there is also a level of individuality that comes as an individual's level of commitment to the rehabilitation process, the number of rehabilitation sessions per week, the individual's range of motion, strength and endurance, and conditioning levels before the injury, the overall severity of the injury, and even the weather can lengthen or shorten the time spent away from the field. In short, individual rehab programs are just that, individual. Consequently, effective rehabilitation is not so much a standard timeline, as much as it is a stepwise progression of increasing difficulty and demand being placed on the healing tissue that parallels the healing timeline of the tissue involved.



In this edition of *Sports Medicine Monthly*, we will examine both sides of the return to play decision: The Healing Guidelines and Timelines of the body's tissues, as well as The Stepwise Progression.

Rehabilitation: Tissue Healing Guidelines and Timelines

After tissue (i.e. muscle, ligament, bone, etc...) is damaged, the body responds in three basic phases to re-construct the tissue integrity that was lost. Consequently, the phases that must occur for tissue healing to be effective are very similar to the phases that must occur for any construction site to be effective. By examining the basic nature of construction, the basic nature of tissue healing is easily understood.



#1. Site Preparation:

The Inflammatory Response Phase

(From injury onset up to 3-4 days)



Before any construction can begin, the area must be secured and any unnecessary items (i.e. trees, dirt, buildings, etc...) must be removed. In the body, chemical mediators and white blood cells flood to the area to do just that. The area is secured or walled off to prevent additional tissue damage, overall swelling is mitigated by clotting off the bleeding tissue, and cellular debris is removed. Much like a tree or a structure will restrict and delay construction of a new building, cellular debris, excessive swelling, and continual tissue damage due to limited rest, will restrict and delay tissue healing. Consequently, if this phase is never completed, construction can never begin; whether it be on a new building or on new tissue.

#2. Foundation and Framework:

Proliferation/Fibroblastic Repair Phase

(From 3 days up to 4-6 weeks)

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Tissue Healing:

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Once a job site is secured and free from unnecessary items, construction on the basic framework of the structure begins. For a building, this consists of a foundation and framework. In the human body, a delicate lattice framework of fibrin, and later collagen, is also created for additional construction to later build upon.

#3. Exterior and Interior Structure:

Remodeling and Maturation Phase

(From 4-6 weeks up to 6 months to a full year)

For a new building, once a basic framework is created, additional exterior and interior structure is added to stabilize, strengthen, and secure the entire structure and to also provide for the functional ability (i.e. electrical, HVAC, plumbing, etc...) of that structure. In the body, collagen continues to be laid down to re-enforce the delicate framework created in phase two to thereby produce a structurally and functionally stable scar.



Finally, much like construction requires an adequate and consistent supply of lumber, steel, concrete, etc... to build, the body requires the same in blood flow, oxygen, and nutrition to heal. The greater the vascularity (i.e. blood flow) of the tissue, the quicker the healing time and the better the overall outcome. This is why muscle heals faster than tendons and ligaments, and why bone heals whereas cartilage usually does not. The time difference is a function of resources.

In short, adequate tissue healing takes time and resources. Likewise, an effective rehabilitation and a strong individual commitment to rehabilitation is vital for tissue to heal to its utmost efficiency. Anything less will lengthen the healing process, delay a full return to competition, increase the likelihood of subsequent injury, and frustrate all who may be involved.

Rehabilitation:

A Stepwise Progression

In designing a rehabilitation program, the ultimate goal is to assist and encourage the body in its healing process. Rehabilitative exercises, therapies, and manual techniques are designed to do just that. Furthermore, by progressively increasing the demands placed on the healing tissue, the tissue responds and increases its structural integrity and functional ability. Successful rehabilitation therefore, is a byproduct of combining tissue healing guidelines and timelines with a specific stepwise progression of ever increasing tissue demands. Therefore, most rehabilitation programs, generally speaking, follow a similar standardized protocol.



#1. Control and Conclude the Inflammatory Response Phase:

Rest, Ice, Compression, and Elevation.

#2. Encourage the Proliferation/Fibroblastic Repair Phase:

Restore normal range of motion through passive, and then subsequently active motions.

#3. Encourage Tissue Remodeling and Maturation: Restore Muscular Strength and Endurance and Joint Stability through progressively resistive exercises.

A Note to the Reader.....

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