To Reduce Inflammation or Not to Reduce Inflammation?

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This is the question currently being revisited by some researchers at the Canadian Sport Centre. Referencing recent research investigating the role inflammation plays in muscle tissue repair, they are now questioning the traditional RICE approach to treating acute soft tissue injuries; sprains / strains, muscle pulls etc. Rest Ice Compression and Elevation is an anti-inflammatory approach that follows the idea that lower swelling allows for greater joint range of motion (ROM) and reduced pain, which collectively, speed recovery. Over the counter drugs such as ibuprofen (Advil) and ASA (aspirin) are non-steroidal anti-inflammatory drugs (NSAIDs) that act to do the same.

The research (which was done in mice, by the Cleveland Clinic) suggests that swelling is an integral part of tissue regeneration, and that reducing swelling, may lead to longer healing times and weaker future strength gains. By investigating the 1st response to muscle injury, the researchers found that macrophages (white blood cells) travel to the injured area, and basically digest the damaged cells as part of the body's immune response. The researchers are saying this triggers the process of recovery and regeneration. Macrophages induce damage to the muscle cell's membrane, which allows blood to rush in. What the researchers found, is that in addition to causing swelling, these macrophages also signaled the release of Insulin-Like Growth Factor-1, which stimulates muscle growth. Take away the swelling, you remove the growth factor is what they are suggesting.

This finding supports the growing amount of research that suggests the use anti-inflammatory drugs (Advil, aspirin, cortisone injections) in the acute stage of an injury leads to significantly lower strength developments at 6 and 12 months post injury when compared to athletes who rehab with exercise therapy alone. The resulting dilemma – feel better now or recover more fully later - is similar for elite athletes , who use techniques such as ice baths to help them recover after strenuous exertion. In the middle of a tournament or after a qualifying race, recovering quickly is vital (the *RICE* approach). But recovery from the wear and tear of daily workouts, or sessions on the slopes is a different story. This research suggests that to stimulate the muscle to grow stronger or gain endurance, we want to allow it to go through the inflammatory and healing process naturally. While this might slow people's adaptation in the short term, this research suggests it's probably better for the athlete in the long term.

One alternative is to use acetaminophen (Tylenol) for pain relief, since it doesn't have an anti-inflammatory effect. A 2005 study in the Annals of Emergency Medicine found no difference between NSAIDs and acetaminophen for pain relief of musculoskeletal limb injuries.

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While this research is new, its practical applications to treating the weekend-warrior and ski-buff on winter vacation are a matter of choice. For the average skier on holiday who slightly twists their knee on the slopes, applying ice and taking an Advil may be the easiest thing for them to do so they can hit the slopes the next day. For the competitive skier in training, or larger injuries on the other hand, you may want to allow the body to heal itself through the natural processes, and appropriate return-to-sport phyio and training. ***What do you think?***

Haiyan, Lu et al. Macrophages recruited *via* CCR2 produce insulin-like growth factor-1 to repair acute skeletal muscle injury *FASEB J* fj.10-171579.

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