

Bodybuilding and the Rehab Connection

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Exactly what is rehabilitation? Rehabilitation is derived from the Latin adjective "habilis," which originally meant "to hold onto." Ability is derived from this root. Rehabilitation simply means to restore or increase ability to function. A patient who has injured their back, neck or other body-part usually has pain and a decreased ability to function in their normal day-to-day tasks (occupational or recreational activities). In most cases requiring rehabilitation after injury, the restoration of function (i.e., a return to normal) requires an actual change of body structure. This means that in order to improve the function of an area of the body, some kind of structural change must occur. In other words, the body must be physically changed or enhanced in order to increase performance. These same principles of rehabilitation also apply to bodybuilding.

What is bodybuilding? The very word implies structural change, and this is exactly the goal of the successful bodybuilder. The bodybuilder strives to improve size of their muscles and quality of their physique. The goal for an injured patient is improved function (like being well enough to go back to work). Even though the goals of the bodybuilder and patient appear to be different, the way to success for each of them is the same. The goals of both patient and bodybuilder are accomplished by eliciting what I call the adaptive response of the body.

The adaptive response occurs when the body is subjected to muscular overload or hard resistance exercise. This adaptive response to exercise is an actual cellular or tissue response, and results in a generalized structural enhancement of the involved bones, joints, and muscles. Structural enhancement comes in the form of increased muscular strength through muscle hypertrophy (which results from increased amount of contractile proteins), increased bone density (the bones of some powerlifters are almost like marble in their structural strength), and stretching of adhesions and scar tissue.

The adaptive response is the body's reaction, or response, to a stimulus. In the case of rehabilitation and bodybuilding, the stimulus is exercise. If the stimulus is overwhelming, the body's ability to adapt is exceeded and tissues are destroyed or disrupted. However, if the stimulus is appropriate, the exposed tissues will adaptively respond to accommodate the imposed stress. Research has shown that to achieve this beneficial response, the exercise stimulus must be intense but brief. This means that the level of physical exertion against resistance must be very high, but at the same time last only a very few minutes. When muscles are forced to contract against a load that is close to their capacity, the adaptive response resulting in muscle hypertrophy is elicited, but only if the tissues are allowed sufficient time to recover.

We know that exercise, when properly applied, can dramatically improve physical functioning. Actual structural changes result in improved mechanical function of injured areas; this in turn results in an improvement of overall function -- in other words, successful rehabilitation! You cannot have an increase in physical function (e.g., increased strength) without a physical change in the body and the reverse is also true. This is the basic principle that governs the science of rehabilitation, and is the biological and medical basis for recommending exercise to help patients.

The goal of science in the area of therapeutic exercise and rehabilitation medicine is to determine the dose-response relationship for therapeutic exercise. In other words, what is the best exercise regimen to achieve the best therapeutic response (increased ability to function)? Another critical question is how do we provide therapeutic exercise to someone who is injured without causing further injury? These questions need to be answered before a person continues or begins treatment.