

PERFORMANCE 101: HOW DOES MUSCLE GROW FROM EXERCISE

PERFORMANCE 101



Summary: Skeletal muscle size increases when a person continually challenges the muscles to deal with higher levels of resistance or weight. This process is known as muscle hypertrophy. It can decrease from disuse, that is known as atrophy. During muscle growth two types of hypertrophy occur, contractile elements enlarge (1) and the extracellular matrix expands to support growth. Myofibrillar Hypertrophy is when muscular overload through exercise causes damage which sets off a chain of myogenic events that ultimately leads to an increase in the size and amounts of the myofibrillar contractile proteins actin and myosin and the connective tissue that encloses them. Sarcoplasmic Hypertrophy (2) is when increase in various noncontractile elements and fluid, which may result in greater muscle bulk without concomitant increases in strength because contractile protein does not increase. bodybuilders tend to display a greater amount of this type of hypertrophy. [Read On!](#)

PERFORMANCE 101: HOW DOES MUSCLE GROW FROM EXERCISE



The most adaptable tissue in the human body is skeletal muscle, which are the muscles that moves us. These muscles are remarkably remodeled after continuous, and carefully designed, resistance exercise training programs ([article](#)). Skeletal muscle size increases when a person continually challenges the muscles to deal with higher levels of resistance or weight. This process is known as muscle hypertrophy. It can decrease from disuse, that is known as atrophy.

In simple terms muscle hypertrophy occurs when the fibers of the muscles sustain damage or injury. The body repairs damaged fibers by building them back up bigger, which increases the mass and size of the contractile protein and increases the fluid within. *Fiber is another word for muscle cell because of their longer threadlike appearance.*

Types Of Muscle Hypertrophy (STUDY).

Myofibrillar Hypertrophy

During hypertrophy two types of hypertrophy occur, contractile elements enlarge and the extracellular matrix expands to support growth. When skeletal muscle is subjected to an overload stimulus, it causes perturbations in myofibers (contractile protein elements) and the related extracellular matrix. This sets off a chain of myogenic events that ultimately leads to an increase in the size and amounts of the myofibrillar contractile proteins actin and myosin and the connective tissue that encloses them. This, in turn, augments the diameter of individual fibers and thereby results in an increase in muscle cross-sectional area (sarcoplasmic hypertrophy). There is some belief that training can increase ones muscle fiber count. This is a highly debatable issue. This is termed Hyperplasia. Please see our article on hyperplasia.

Sarcoplasmic Hypertrophy

Why are body builder's more muscular than weight lifters. Possible answer is sarcoplasmic hypertrophy. It is hypothesized that hypertrophy may be augmented by an increase in various noncontractile elements and fluid. This has been termed "sarcoplasmic hypertrophy," and may result in greater muscle bulk without concomitant increases in strength because contractile protein does not increase. Increases in sarcoplasmic hypertrophy are thought to be training specific, a belief perpetuated by studies showing that muscle hypertrophy is different in bodybuilders than in powerlifters. Specifically, bodybuilders tend to display a greater proliferation of fibrous endomysial connective tissue and a greater glycogen content compared to powerlifters, presumably because of differences in training methodology. Although sarcoplasmic hypertrophy is often described as nonfunctional, it is plausible that chronic adaptations associated with its effects on cell swelling may mediate subsequent increases in protein synthesis that lead to greater contractile growth.