

# Muscle Contractions

A Short Lesson in the Kinesiology of Exercise

## Concentric

In a *concentric* contraction the muscles shorten and produce movement. Concentric strength is sometimes known as overcoming strength. In other words, when the muscle contracts, it overcomes the resistance and puts the object or your body into motion.

## Eccentric

In an *eccentric* contraction (often known as a yielding contraction), the muscle lengthens (stretches back to its original length) as it contracts. The more the muscle lengthens or the faster it is stretched the greater the tension that is developed.

## Isometric

In an *isometric* contraction you exhibit strength, but there is no movement of the limbs. The muscle develops tension and there is some shortening of the muscle fibers and tendon, but there is no limb or body movement.



When executing a strength exercise, all three muscle contraction regimes are involved. As you perform a movement, the main muscles (agonists) undergo a concentric contraction while the opposing antagonist muscles undergo an eccentric contraction. The adjacent joints and parts of the body that are not in use are stabilized via the isometric contraction. Thus, all three muscle contraction regimes are in operation at the same time, each with a very important purpose.

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