



THE QUADRICEPS MUSCLE GROUP

Just like virtually every other part of the body or muscle group - when it comes to running and to other sporting activities - the quadriceps have multiple roles.

Comprised of four parts - the muscle that is biarticular (spanning both the hip and knee) is the biceps femoris.

Like most muscles, the "quads" have multiple responsibilities -
depending on where a runner may be in the gait cycle.

When the foot hits and makes contact with the ground...the quads act to cushion our body against the forces of gravity and ground reaction.

This action is largely eccentric - and it's one reason why lots of downhill running (where these forces would naturally be greater) can result in much more quad soreness! :)

When climbing a hill...our quads provide most of the propulsion to get us up that hill quickly and powerfully, because of their strength when the knee is bent.

Contrary to popular belief, the quads have very little to contribute at knee extension at the end of push-off. That responsibility falls more to the calf and glute max.

An "eccentric" muscle action is one where a muscle is contracting (which by definition, means to shorten) **but at the same time, is also being lengthened.**

As a result, eccentric muscle contractions result in micro-trauma to the muscle cell due to the tearing which can occur due to the simultaneous shortening and lengthening.

How will we train the quadriceps with the above in mind?

The answer is a progressive "Three-Block" Training System utilizing the single best ISOLATERAL (one-sided) exercise to build leg and hip strength, the Rear-Foot Elevated Split Squat (aka Bulgarian Split Squat).

Block 1: We focus on a slow eccentric action (lowering) and then a "fast" powerful concentric action.

Block 2: We focus on a "fast" lowering eccentric action, but then HOLD isometrically...before returning to the start position. (Very challenging indeed).

Block 3: We focus on a rapid oscillation in a lower, disadvantaged position to improve reaction and relaxation skills.

There's a LOT more information about this training on each of those "Block" pages. Check them out!