

THE MUSCLE ACTION YOU DON'T WANT TO MISS

What Is Eccentric Training?

On Exerbotics®, you don't just work one way. You work both ways—muscles shorten and muscles lengthen. That second action, the eccentric, is where the real power lies.

Because Exerbotics® is isokinetic, resistance is effort-dependent, not weight-limited. This means eccentric training is precisely controlled, safe for every fitness level, and scientifically proven to unlock unique benefits you can't get from traditional exercise.

Why Eccentric Is Core at The Exercise Coach®

Strength training builds lean mass, metabolism, and body composition. Eccentrics are how we amplify those results inside every Exercise Coach session—by leveraging the unique physiology of lengthening muscle actions on Exerbotics®.

The science is decisive:

- » More force with fewer fibers. Muscles produce ~40% greater force eccentrically while activating fewer fibers—which means each fiber works harder, delivering a bigger growth signal (Enoka & Duchateau, 2016; Nuzzo et al., meta-analysis).
- » Preferential Type II recruitment. Eccentric actions selectively activate high-threshold, fast-twitch (Type II) fibers—the ones most responsible for strength, power, and independence, and the first to decline with age (Franchi et al., 2017; Fisher, 2025).
- » Greater strength & hypertrophy. Programs emphasizing eccentrics produce larger increases in strength and muscle size than concentric-only approaches (Roig et al., 2009).

On Exerbotics®, controlled speed + effort-dependent resistance = precise eccentric targets on every rep, for every fitness level.



The Type II Fiber Edge

Type II (“power”) fibers drive strength, quickness, and confident movement—and they fade fastest with age. By emphasizing the lengthening phase on Exerbotics, we:

- » Rebuild and preserve Type II fibers that support daily strength and stability.
- » Restore power for real-world tasks (stairs, stands, catches).
- » Boost metabolic health by enlarging muscle’s most powerful engines.

Modern physiology explains the edge: beyond actin and myosin, the titin filament becomes mechanically active during eccentrics, increasing tension per fiber—so you get more force from fewer fibers and a stronger signal without extra systemic strain (Lenecky summary; Fisher, 2025).

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The Comfort & Cardio-Load Advantage

You don't need to "feel crushed" to get superior results. At matched workloads, eccentrics show:

- » Lower heart rate and oxygen demand (lower VO_2 and RER) than concentric or mixed actions—less cardiorespiratory load for the same (or better) muscular stimulus (Lastayo et al., 2003).
- » Lower perceived discomfort and fatigue at a given muscular demand—so the muscle can be pushed harder while the system feels easier, removing a common barrier to consistency (Isner-Horobeti et al., 2013).

Result: Greater stimulus, less systemic strain. That's the eccentric advantage—built into every Exerbotics® rep.

Added Benefits That Accelerate Your Progress

Beyond Type II targeting and comfort advantages, eccentrics deliver a wider dividend:

- » Bigger strength & size effects. Meta-analyses show greater effect sizes for hypertrophy and strength with eccentric emphasis—practically, faster progress per rep (Roig et al., 2009; Fisher, 2025).
- » Functional wins for adults 55+. Eccentric-focused training improves leg strength, muscle thickness, and real-world performance (sit-to-stand, timed up-and-go) vs. concentric in many studies (meta-analytic review; Fisher, 2025).
- » Tendon & tissue resilience. Lengthening under control strengthens connective tissues for durable movement.
- » Mobility and range. Eccentric work adds sarcomeres in series, improving length tolerance and flexibility—gains you feel in everyday motion.



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Bottom Line: The Built-In Advantage

At The Exercise Coach®, eccentric training isn't an add-on—it's engineered into Exerbotics. That's how we recruit the fibers that matter most, generate more force with fewer fibers, and drive greater gains with less strain.

If you want to build muscle faster, move with confidence, and fight age-related decline—don't just complete the rep. Own the lengthening. Own your future.

References

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- » Isner-Horobeti, M.E., et al. (2013). Eccentric training modalities: less discomfort, high-stimulus sustainability. *Sports Med*.
- » Fisher, J.P. (2025). The Breakthrough Benefits of Eccentric Training (conference session): ~40% eccentric strength advantage; titin three-filament model; preferential high-threshold motor unit recruitment; functional improvements with eccentric emphasis.