

# Electrical Muscle Stimulation (EMS).

Electrical Muscle Stimulation (EMS) is a clinically used technology designed to activate muscles using controlled electrical impulses. It's widely used in physiotherapy, rehabilitation, and performance settings to support muscle activation, prevent atrophy, enhance recovery, and improve neuromuscular function.

At its core, EMS works by tapping into how your body already operates. Your muscles don't contract because of exercise itself, they contract because of electrical signals from motor neurons. EMS leverages this same principle by delivering external impulses to motor nerves, triggering controlled muscle contractions without voluntary input.

In other words, it doesn't replace movement, but provides a direct, targeted way to engage muscle tissue at the level where contraction actually begins.

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## HOW DOES EMS WORK?

EMS works by sending electrical impulses through the skin to motor nerves, triggering muscles to contract, just like your brain would during movement. The difference is that EMS contractions are involuntary and highly efficient, as multiple muscle fibers are recruited simultaneously, and deeper or less-used muscle groups can be activated. The frequency range doing this is around ~20–75 Hz, while the intensity (amplitude) can reach ~20–70 mA, depending on individual tolerance, with a pulse width of ~100–400 microseconds.



The reason these numbers matter, is because they determine which motor units are recruited, the depth of nerve activation, and the resulting force and quality of the muscle contraction.

In simple terms: EMS doesn't act directly on the muscle itself; it depolarizes motor nerves, generating action potentials that then trigger muscle contraction.

## WHAT MAKES IT WORTH IT?

EMS doesn't replace movement, it complements how your nervous system activates muscle. By externally stimulating motor nerves, it produces controlled contractions without relying on a conscious signal from the brain. At a biological level, this increases motor unit recruitment and improves activation efficiency, helping engage more muscle fibers in a targeted way. Over time, and especially when combined with voluntary training, consistent EMS use is well-documented to produce measurable improvements in neuromuscular efficiency, not just "support" it.

### Benefits and Applications

EMS is widely used in rehabilitation and physiotherapy. At a biological level, EMS works by recruiting more motor units and enhancing neuromuscular efficiency, meaning your muscles are activated more effectively. Rather than "training" muscle on its own, EMS supports how muscles are activated and used within the nervous system. It can:

- Increase muscle force and activation
- Help prevent muscle loss during inactivity
- Support recovery by improving blood flow
- Modulate pain signals

Over time, consistent use has been shown to improve overall muscle function (often by ~10–15%).

## IS IT SAFE?

Yes, it is non-invasive, adjustable, and tailored to individual tolerance.

However, it should be avoided or used under supervision in individuals with pacemakers, during pregnancy, or with certain neurological or cardiac conditions.

## WHAT DOES IT FEEL LIKE?

EMS feels noticeably different from subtle therapies like microcurrent. You'll experience rhythmic pulsing and visible muscle contractions, often similar to a workout sensation without movement. Sessions typically last 15–25 minutes, with intensity ranging from mild to strong.

## RECOVERY THROUGH ELECTRICITY?

By activating muscles through controlled signals, EMS supports recovery, performance, and muscle function more efficiently.

Light Tree Technology takes it further by integrating EMS into multi-technology systems, enhancing results across the whole body.

Because when you work with your body's electrical language, you don't just move better, you do better.

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