Your Muscles Work Harder When You Watch Them Work

6 MIN READ

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The surprising connection between visual feedback, your nervous system, and how much power you actually produce during a workout.

Here’s something worth noticing next time you’re at the gym: a screen showing your effort in real time might be doing more than tracking your progress, it might be actively improving your performance.

A study published this month in the ***Journal of Strength and Conditioning Research*** found that when people could see a live graph of their power output during resistance training, they produced significantly more force than when the screen was off. Not a little more. A consistent 4–5% more, across both upper- and lower-body exercises, session after session.

That might not sound like much. But in the world of neuromuscular performance, a reliable 5% bump from a single environmental cue (no extra reps, no heavier weight) is notable.

4–5% More Power From One Visual Cue

The research came out of the University of Miami’s Laboratory of Neuromuscular Research and Active Aging, led by **Dr. Joseph Signorile, Ph.D.**, a professor of exercise physiology who has spent more than 25 years studying how the body produces and maintains power across the lifespan.

Twenty-eight healthy adults trained twice a week for two weeks on HUR pneumatic resistance machines, the kind with built-in tablets that can display a real-time power graph. (The study used machines made by HUR, a Finnish company that specializes in this technology; lead researcher Dr. Signorile has a collaborative relationship with the company, including educational presentations on their platform. Worth noting, though the underlying principle of visual feedback enhancing motor performance is **well-established in neuroscience research** independent of any specific equipment brand.)

Each session included three sets of eight repetitions on both leg press and chest press, with one-minute rest between sets.

The variable was simple: during one session each week, the screen showed a live graph of power output. During the other session, the screen was off. Same people, same exercises, same load.

With the screen on, people produced more peak power and more average power in both exercises (about 24–26 watts more on leg press and about 21 watts more on chest press). The pattern was consistent across weeks.

But the more interesting finding was this: in the leg press, power didn't just hold steady across sets, it actually *increased* from set one to set three when visual feedback was present. The researchers described this as a "neuromuscular facilitation" effect, meaning the visual cue seemed to help the nervous system progressively recruit more muscle fibers over the course of the exercise. That's the opposite of what you'd expect. Normally, power fades as fatigue sets in. Here, the signal kept the system engaged.

How Visual Feedback Trains Your

Nervous System

This is about how your brain produces more force when it can see what it's doing.

Think of it as a feedback loop. The screen gives your nervous system a target and a result, in real time. You push, you see the curve respond, and something shifts: your motor cortex gets a clearer signal of what "full effort" feels like. **Neuroscience research has shown** that visual feedback strengthens the connection between intention and execution, essentially sharpening **the brain's ability to activate muscle**.

Dr. Signorile's broader body of work underscores why this matters. His lab was one of the first to identify that the functional declines we associate with getting less active are driven more by loss of ***speed* and *power* than by loss of raw strength**. The ability to produce force quickly — catching your balance, standing from a chair, carrying groceries up stairs — depends on your nervous system's ability to recruit muscle fibers fast. A **2022 meta-analysis** confirmed that muscle power declines more rapidly than muscle strength with age — making interventions that support power output, like visual feedback, especially relevant. Visual feedback appears to directly support that ability.

And this isn't limited to pneumatic machines with tablets. The principle applies anywhere you can see your performance reflected back to you: velocity-based training apps that track bar speed, wearable sensors, even a training partner giving real-time cues about your movement quality. What the study validates is that the *seeing* itself changes the doing.

Use Visual Feedback in Your Next Workout

If your gym has machines with performance displays, use them. Don't just glance, actively watch the power curve as you press. Try to beat your last rep. Don't track obsessively; give your nervous system a target and a mirror.

If you're training at home or with free weights, consider a velocity-based training device or app: tools like **WHOOP's Strength Trainer**, or even phone-based **motion tracking apps** that measure bar speed. They provide the same real-time visual loop.

If none of that is available, there's still a takeaway here: *intention matters*. The study's protocol didn't involve coaching or encouragement: the screen alone changed performance. But the underlying mechanism is about focus and neuromuscular engagement. Training with deliberate attention to the speed and force of each rep, rather than just counting to eight, activates similar pathways. Some trainers call this "training with intent." The research suggests your body listens.

One more practical note from the data: The lower-body facilitation effect (power increasing across sets with visual feedback) suggests that your first set might not be your best set, if you're properly engaged. A thorough warm-up followed by focused, feedback-driven training could mean your strongest set is your last one. That's a useful reframe for anyone who tends to front-load effort and coast through later sets.

Try This: The Visual Power Check

Next time you're on a machine with a performance screen, **try this:**

- Do your first set of 8 reps normally, without looking at the screen.
- Note how the last few reps feel.
- Then, on your second set, watch the power graph the entire time and try to keep each rep's peak at or above the previous one.

- Notice the difference in effort, in engagement, and in how your muscles feel when they have something to aim at.

That feedback loop is your nervous system getting a better signal. Use it.

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