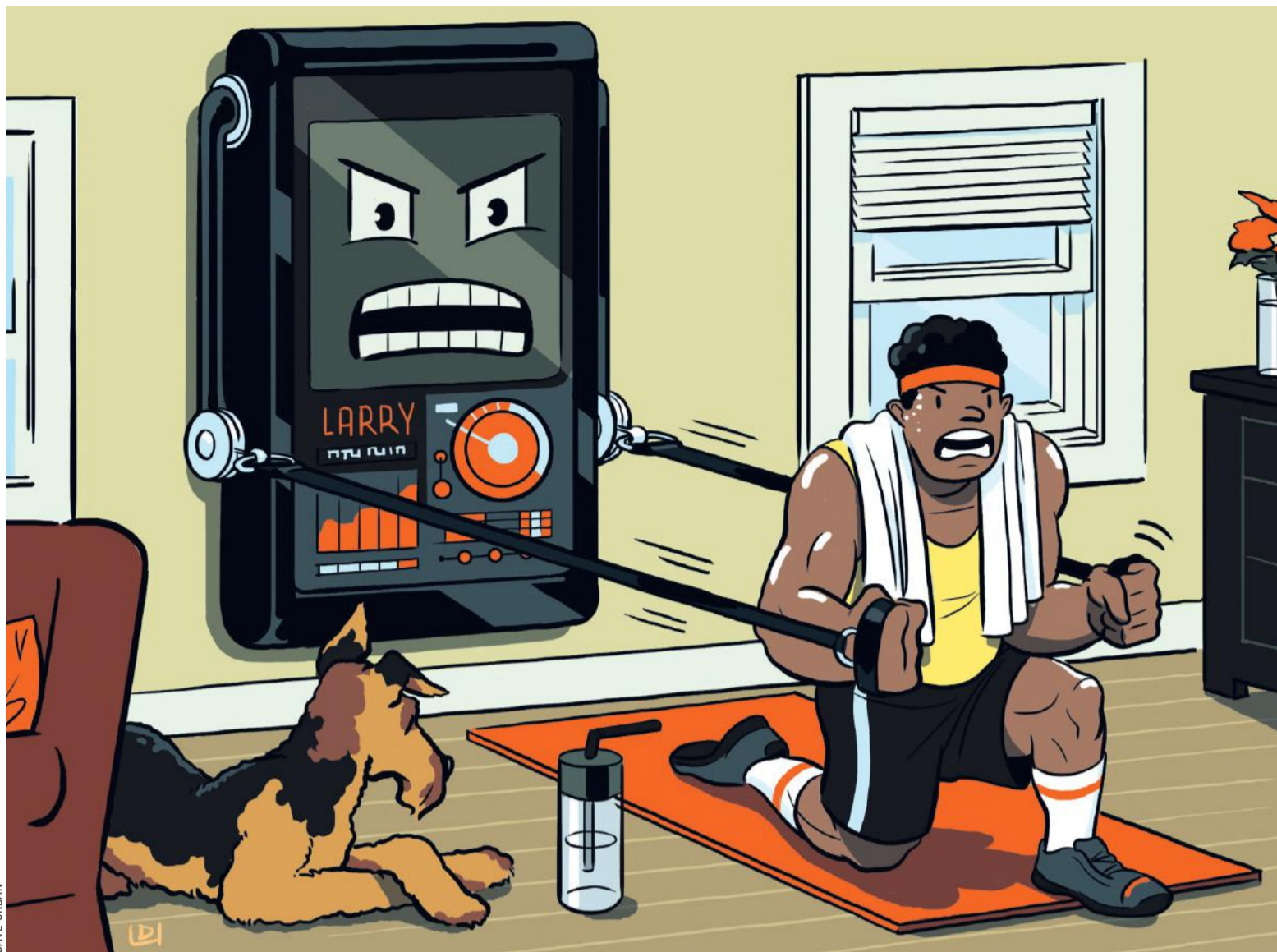


GEAR & GADGETS



# Lean, Mean, Intelligent Machines

Using algorithms to craft efficient at-home workouts, these fitness gadgets put the A.I. in pain and gain

By Ashley Mateo

**I**MAGINE FURIOUSLY cranking your pedals in a dark, sweaty spin studio and hearing the instructor command you to ramp your resistance up one full turn. Do you do it, or cheat a little to avoid the burn? Consider a strength training move that calls for a “heavy” set of dumbbells. Do you interpret “heavy” as “not too taxing”?

It’s difficult to motivate yourself to push past your limits, especially when no one’s watching. But an assertive new breed of fitness devices uses artificial intelligence to take that decision out of your hands. Instead of meekly complying with what you think you’re capable of, these techie tools test your limits—and then propel you past them.

Adding A.I. to a workout might sound overly complex, but it just means “using a specific data set to map incoming data,” said Stephen Intille, Ph.D., an associate professor at Northeastern University specializing in health tech. These machines, he explained, examine your baseline fitness level to optimize the resistance you need and customize cues to help you hit your workout goals.

Tonal, a wall-mounted home gym with two arms that extend from its digital console—think a poster-size iPhone—can generate up to 200 pounds of resistance. You choose

from goals such as “Gain Strength,” “Get Lean” or “Boost Energy,” then perform an initial battery of moves at various weights to help Tonal find your ideal starting point. From there, it progressively increases the weights as you get stronger.

These new machines ingratiate themselves with the lazy by removing personal responsibility from the equation. The tech “objectively measures our performance in a way that couldn’t be done before,” said Renee J. Rogers, Ph.D., programming director at the Healthy Lifestyle Institute at the University of Pittsburgh.

Despite the perks, these futuristic fitness gadgets come with the typical caveats: They can be exceedingly pricey, take up valuable space in your home, and won’t actually move your limbs and muscles or promise a shredded superhero’s body by summer. Plus, argued Mr. Intille, people who like the routine, the camaraderie and the competitiveness of going to the gym won’t necessarily find the same satisfaction using machines that offer no scope for flirting, and can easily be shut off when the going gets a little rough.

Still, it’s nice that with the smart spin bike CAR.O.L., you needn’t be hectored by the live, grunting instructors associated with Peloton bikes. It instead asks you to hop on for three “calibration rides” to determine how hard you can push your legs. After that, its algorithms apply

the resistance needed to surpass that intensity for short cycling sprints, offering cardio and strength benefits similar to those of much longer moderate-intensity workouts.

“These machines gradually increase the resistance level at a rate that’s just enough for someone to handle without sending them over the edge,” said Mr. Intille. “Which is what a good coach would do in a gym: figure out what you’re capable

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of then push you just a little harder.”

In some cases, the machines can challenge you more precisely than even a practiced, equally unsentimental coach. The Tempo home fitness studio uses a motion sensor camera to pinpoint 25 essential joints and create a skeletal 3-D model for the machine to assess. As you work out, the A.I. generates personalized coaching notes that pop up on the 42-inch HD screen to help improve your form. If you miss living, breathing humans, you can also join live classes during which

coaches use Tempo’s real-time analysis to adjust your approach as you move through various exercises.

Such adjustments, whether exacted by machine or man, can crucially prevent injuries, said Ms. Rogers. If you’re at home or at the gym, getting fit isn’t always about how much weight you can lift or how many reps you can do—but how well you perform the move. Safety is always a concern when a trainer can’t be with clients, she said. “If this is a way to help people with their form, it’s a really cool opportunity.”

But even without auto-resistance or 3-D models, the adaptive coaching that A.I. technology provides can almost approximate working with a trainer, said Ms. Rogers. Hyfit’s smart resistance bands use sensors to track more than 20 data points during a workout, from reps to rest time. The partner app downloaded to your smartphone then uses this data to deliver workouts customized to your fitness goals. Bowflex’s JRNY, a digital platform built in to the brand’s Max Total Elliptical machine, similarly assesses and tracks performance to provide coaching and personalized daily workouts.

If you warm to the A.I.’s demands, you can take simple things—selecting your regimen, slowly dialing up your resistance or counting your reps—for granted. And stay focused on what really matters: like how you look in the mirror.

**SWEAT SMARTLY / AT-HOME A.I.-BASED FITNESS DEVICES**



**CAR.O.L.** offers intense spin workouts in 9 minutes, maxing out your intensity in short bursts. \$2,995, [carolfitai.com](http://carolfitai.com)



On its 42-inch screen, **Tempo** helps suggest the right weight and fix your form during live classes. \$1,995, [tempo.fit](http://tempo.fit)



**JRNJ** smart workouts are built into Bowflex Max’s Total Elliptical. \$2,799 for elliptical; \$20/month JRNJ, [bowflex.com](http://bowflex.com)



The **Tonal** A.I. auto-adjusts the weight so you can finish the move even if it senses you’re struggling. \$2,995, [tonal.com](http://tonal.com)

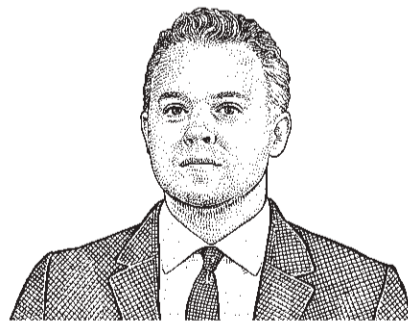


**Hyfit Gear 1** personalizes your workouts using smart bands that track acceleration, force and power. \$249, [hyfitgear.com](http://hyfitgear.com)

**MY TECH ESSENTIALS**

## Jason Hehir

The director of ‘The Last Dance,’ ESPN’s Michael Jordan docuseries, on racing through his podcasts and why a corkboard is his North Star



Stylistically, a big inspiration for “The Last Dance” was “**The Defiant Ones**,” an HBO documentary series about Jimmy Iovine and Dr. Dre. It used their unlikely friendship as the lens to examine their musical careers and the evolution of rock and hip-hop music during their lifetimes. The production value is A+. The storytelling is A+. I’ve watched it end-to-end several times. I can’t get enough of it.

I have two herniated discs in my lower back and that’s exacerbated by the fact that I’m sitting there in an edit room all day. When I started running, I wanted to be sure that I got the right shoes, so I went to a running shop in Manhattan called JackRabbit to get my feet and stride analyzed. I ended up with a pair of **Brooks Adrenaline GTS 19s**.



I listen to podcasts like “Conan O’Brien Needs a Friend” at 1.5x-speed. I’m so behind on episodes so I want to listen to everything as quickly as I can. Malcolm Gladwell’s and Rick Rubin’s music podcast, “**Broken Record**” and Hrishikesh Hirway’s “Song Exploder”—kind of an audio documentary about tunes—are two of the few shows that I listen to at regular speed.

I have the **Nike Run Club app** on my Apple Watch, so I don’t have to carry anything else. I just put in my headphones and select a run. If it’s a 22-minute course, the app can narrate exactly how hard to run for how long. It’s almost like having a coach run alongside you, but they’re just in your ear. That’s been hugely helpful to me.



When crafting the story of “The Last Dance,” the most important technology we had was a **huge corkboard**. It was our North Star: 10 columns of color-coded notecards, each column representing an episode. Every day, we’d meet at that board, move the cards, write new ones and figure out how to tell the story. When I realized I wasn’t going to be able to get back to the office, I took several pictures of that board so I could recreate it at home.—*Edited from an interview by Chris Kornelis*