

Wireless Medicine

By Matt Sloane Reviewed by Brunilda Nazario, MD on January 13, 2015

Fitbits, Fitbugs, Flex bands, Basis bands... Everybody is using some type of wearable wellness device, it seems. And as more of them come on the market, some reports estimate that personal health and wellness devices will grow from a \$4 billion industry to \$8 billion by 2018.

Judging from the 2015 Consumer Electronics Show -- the world's largest electronics trade show -- wearables are still the "next big thing."

They're not the novelty they once were, though. So in an effort to keep users motivated, and to keep improving upon the amount and types of data collected, device makers are always looking for a new trend.

Michael Gorman, editor-in-chief of Engadget magazine, says we'll see more products in two areas this year: sensor-laden clothing for fitness and head-band wearables for meditation.

"There's the EEG headband kind of wearable -- a lot of people building software to help you train to calm your mind and keep you focused," he says.

Sensor-laden clothing isn't new, but Gorman predicts we'll see more this year than in previous years.

A new entry that's about to hit the market is a line of clothing made by Athos. The clothing is designed to track muscle movement and exertion. A sweat-wicking gym shirt includes 14 muscle-movement sensors, 2 heart rate sensors, and 2 breathing sensors.

The sensors sync over Bluetooth with your mobile device, and the goal is to help you train more efficiently in the right areas and avoid injury.

"I was only using light weights, but it was easy to see which muscles were working hardest, and to correct my form when I was relying too heavily on one side of my body or falling back on helper muscles," writes Jeremy Kaplan of the Digital Trends tech web site. He reviewed Athos's shorts in September.

"As physicians we're always looking for more tools in our black bag to help motivate and encourage patients to reach their goals." -Sharon Berquist, MD, Emory University

Sensoria's Smart Sock has features that help you keep track of your run form, activity level, step counts, and distance covered. The goal is to improve how you run and to prevent injuries.

The \$200 set includes two pair of sensor socks, along with the connected anklet.

Training for the Brain

Gorman's other prediction for the wearable market, the EEG headband, is a type of device that was once reserved for sleep specialists, brain researchers, and lab scientists.

These devices use electricity-sensing leads to track the brain waves that might help calm you.

Muse is a \$299 headband full of sensors that works over Bluetooth with an app called Calm. It provides real-time feedback to help you get deeper into a self-reflective state and keep distractions at bay, the band's maker says.

Other devices, like NeuroSky's \$79 MindWave headset, work with a variety of third-party apps, which promise to allow you to use your brain waves to play games, control real-world devices, and meditate more effectively.

NeuroSky's apps include programs that say they can help ease anxiety, control ADHD symptoms, and even reduce symptoms of certain brain-related stomach disorders like irritable bowel syndrome.

And don't worry -- these devices only read your brain waves. They don't affect them or control them.

Devices like Muse and MindWave hope to capitalize on a growing body of research showing meditation and mindfulness can be as good for the body as they are for the brain.

Studies have shown that meditation can help reduce blood pressure, anxiety and depression, and pain. It can also improve balance, stress management skills, and sleep.

While meditation has been around for centuries, device makers claim their technology will help you do it more quickly and easily. But, Gorman says, the fledgling field of mindfulness and technology still has a long way to go.

"Consumer EEG headbands are in their early days, but as the software improves and users get better acquainted with the technology, I believe it will appeal and have greater utility for a wider market."

A third product category that got some attention at this year's Consumer Electronics Show was smart beds.

There were two major entries into this market: the ReST Smart Bed and the SleepIQ System from Sleep Number.

Both mattresses feature a layer of fabric with smart sensors built in, which relay sleep data to your smartphone for sleep-quality tracking, and adjust air pockets in the mattress to your sleep position in real-time.

SleepIQ mattresses are available starting at \$999, and the ReST smart bed is available for pre-order with a deposit of \$500.

Smart mattresses are less "wearables" than they are "sleepables," but they all face a similar challenge: Are they useful and will people keep using them?

An Internet survey of over 6,000 people done by Endeavour Partners in 2013 found that while 1 in 10 Americans has a wearable of some sort, half of those who bought a fitness tracker no longer use it, and a third stopped using it within 6 months.

Smart mattresses and sensor-laden clothes might help improve those numbers, as it's harder to "forget" your device. But the fact remains that there are still no long-term, scientific studies on whether these devices improve health.

Regardless, Emory University doctor Sharon Bergquist, MD, says she often recommends some type of fitness tracker or app when she's trying to get a patient to make lifestyle changes.

"As physicians we're always looking for more tools in our black bag to help motivate and encourage patients to reach their goals," says Bergquist, an internal medicine doctor. "Even though we know exercise is beneficial for our health, currently less than half of Americans are meeting their physical activity goals. These devices help me give patients very tangible, practical goals."

Atlanta-based fitness trainer Robert Dothard, who has been in the fitness business for over 25 years, also believes the devices can help keep people motivated.

"It's a big babysitter," he says. "I get data real-time. (Clients) can e-mail it to me, I can print it out and keep it as part of their permanent record, and it lets me know what they're doing when they're not training with me."

From step counters to brain trainers, one thing is for certain with all of these devices, says Dothard: They are only useful if you use them.

"There are a lot of good devices out there, and there are some that may need some work, but the device is just feedback," he says. "I always tell clients the best device is the one you're going to use."

Sources:

- Michael Gorman, editor-in-chief, Engadget.
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- Robert Dothard, fitness trainer, Fit Family, Atlanta.
- Consumer Electronics Association web site.
- Endeavour Partners Report: "Wearables and the Science of Human Behavior Change."
- Digital Trends Magazine: "A smartass to match your smartphone and smartwatch."
- Athos web site.

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