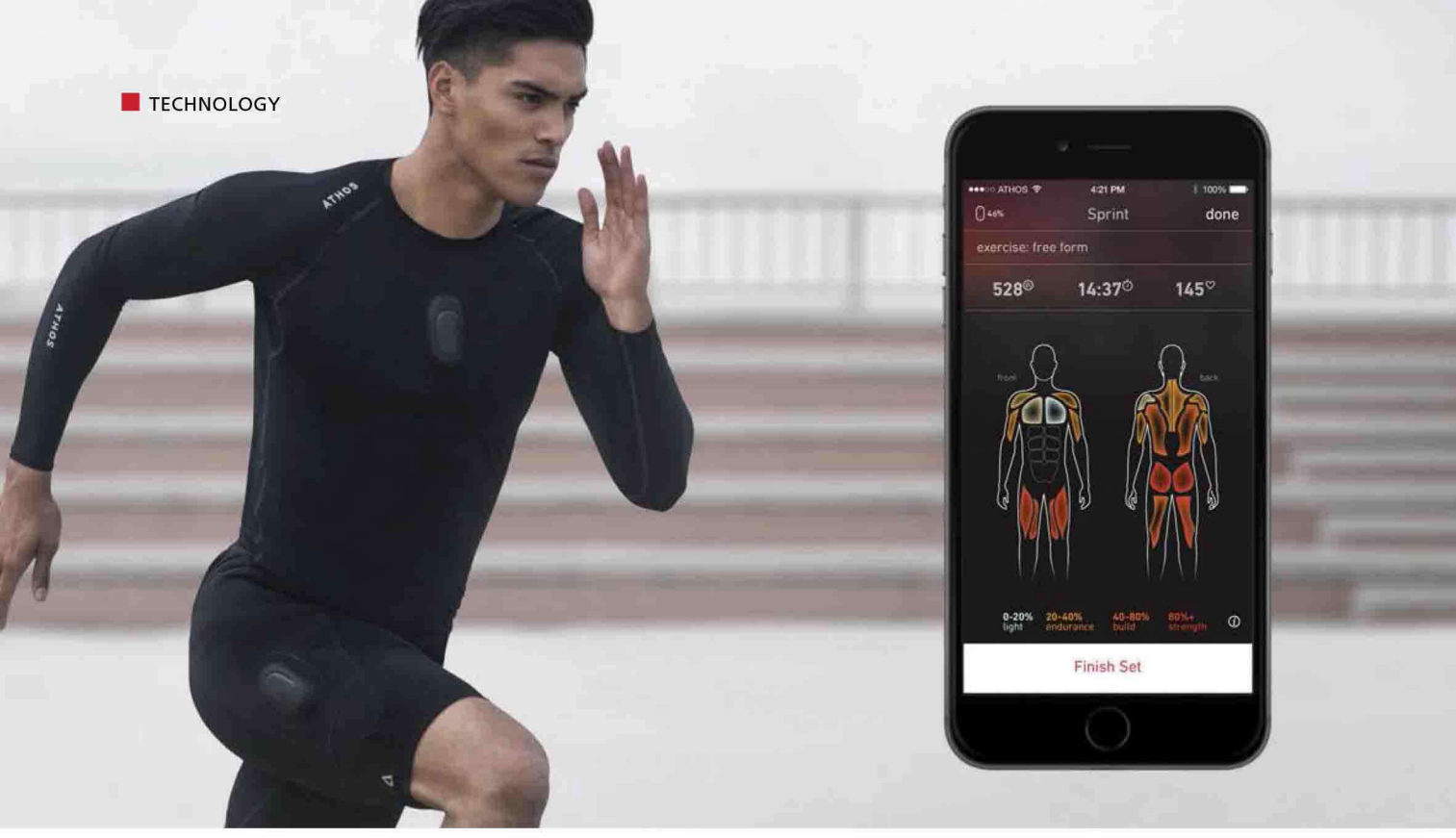

LOOKS SMART, IS SMART

Wearable technology migrates to the rest of the ensemble

by SANDY SMITH

There it is: the pony-riding polo player over the left breast, just as on any other Ralph Lauren shirt. But this one, the Ralph Lauren Polo Tech, comes with a user manual. Yes, it's a shirt, but it's also the latest in health and fitness gear.

The Polo Tech, like any number of smart clothing products, monitors basic health stats. In this case, it keeps up with calories burned, steps taken and breathing efficiency.

The first wave of wearable applications "centered on fitness-focused use cases," says Ryan Martin, senior analyst with ABI Research, a market intelligence company focused on technology. "While companies like Polo haven't traditionally played in this space, they are making a push. But whether market momentum is manifested in new partnerships or the extension of an existing brand, the fact that non-tech companies are already starting to jockey for position evidences a broader shift in baking connected capabilities into the clothes we wear."

Athos is one of those companies leading the way. Using sensors attached to clothing, it measures muscle effort in real time with a goal of helping athletes improve.

"The reason we integrate technology into clothing is that it lowers the bar for adoption, so it's intended for anyone who would like the benefits of the technology," says Dhananja Jayalath, Athos' co-founder and chief performance officer. "We are very focused on developing our technology in a manner that doesn't sacrifice comfort or style — where you get all the functional benefits of compression clothing and the added unique value of Athos personalized performance data."

Items worn on the wrist — a smart watch or activity tracker — remain the dominant force in the market. But smart clothing is making a mad dash to catch up.

Deborah Weinswig, managing director of

Fung Global Retail & Technology, estimates the smart wearables market at $28.7 billion in 2016, with 275 million units shipped. She says wrist wearables are expected to grow at a compound annual rate of 30 percent through 2017, and that apparel, sportswear and body cameras will grow 12 percent annually over that same period.

ABI Research is even more bullish on the growth of the smart clothing market: It predicts 16.5 million units will ship by 2021 — up some 500 percent from 2016. "Although it's still early for smart textile manufacturing as a whole, this is a high growth-potential area," Martin says.

THE MARKET

Not surprisingly, smart clothing made its initial entrance at major sporting events. Under Armour, widely expected to be a big player in a market it seldom discusses publicly, put Cam Newton through the 2011 NFL Scouting Combine — in which college players "audition" for pro coaches and talent evaluators — in its connected compression shirt.

In the years since, smart clothing has drawn the attention of major athletic wear players — like Nike and Adidas — as well as tech giants and startups. Google has joined with Levi Strauss on Project Jacquard, a stylish jacket that is focused on tech — not necessarily athletic in nature. Wearers can control music or access maps.

But it is the major fitness brands that are pursuing the sector most aggressively, Weinswig says. Since 2013, Adidas, Under Armour and Asics have spent a combined $1 billion acquiring companies that develop fitness and health software applications, she says.

Nike dropped its fitness-tracking-band division in 2014, but has since developed the Nike+ fitness-tracking software application, which is featured on the Apple Watch. Underscoring the importance of software applications to the sportwear market, in January Under Armour joined with IBM Watson "to ensure that UA Record software users receive notifications that help them optimize their daily fitness, wellness and sleep rhythms."

Weinswig anticipates the emergence of the next wave of wearables, which "will shift the category from stand-alone devices to lifestyle-enhancing systems tying together multiple connected devices and cloud services."

Currently, most wearables "include technology that is easily copied, and they have limited functionality and normally require a connection via a smartphone," Weinswig says. "The second generation of wearables will consist of smart devices that act in conjunction and integrate with the Internet of Things autonomously."

One example of this type of product is Sony's Experia system, which combines wearables and the IoT "in order to function as a personal assistant," she says. Another is connected garments from SensorKit, which rely on multiple sensors to detect the wearer's activities. "The sensors then communicate the data to a software platform that interprets and measures the wearer's movements."

Under Armour entered that market this year with the release of its Connected Fitness line, which integrates a band, heart monitor and scale with smart shoes that store running data, including distance and duration. The products are all powered by UA Record, Under Armour's health and fitness platform. In early 2015, Under Armour opened a digital headquarters in Austin, Texas, employing 100 engineers, data scientists, designers and innovators to develop and enhance its Connected Fitness portfolio.

Athos' Jayalath expects the field to become even more crowded. "We will definitely see more clothing becoming smarter," he says. "It will start off with functional clothing, clothing that serves a specific purpose, and these clothes will be enhanced to provide more value as we learn more about the needs of consumers and what provides the most value. Over time, all pieces of clothing will evolve into fulfilling a purpose beyond providing coverage, comfort or displaying your sense of style."

"We are very focused on developing our technology in a manner that doesn't sacrifice comfort or style."

— Dhananja Jayalath, Athos

NEXT SOURCE OF BIG DATA

Wearable technology also will generate a plethora of new data, Martin says. "On the consumer side, the benefit for retailers and manufacturers is to not only provide additional functionality to end users, but also to collect information on garment usage, consumer buying behavior and patterns of that nature." And with occupation-specific equipment — think nurses' scrubs or safety glasses for manufacturing workers — "there is no reason why those garments and tools can't be connected. It provides an additional layer of functionality."

But who owns the data may be another bridge to cross. "Ideally, there would be a veil of privacy and security between the brand and an individual," Martin says. "Brands can get around this by collecting user-generated data in aggregate. For individuals, granting access to personal data provides greater visibility into the lives they're living but with greater granularity."

ABI Research predicts the smart clothing market will grow some **500 percent** by 2021.

For the consumer, "Data is king," Weinswig says, "but turning it into relevant, usable insights is still a challenge. No one cares about 'step counting' in a vacuum, so there must be a deeper reason for consumers to buy wearable tech, and companies should recognize and take advantage of that information."

Data may yield its own incentives, especially if consumers are willing to share the information with their insurers. "If you can get better coverage or more favorable rates by sharing that data, it creates the structure to drive adoption," Martin says. "This has already started to take shape with usage-based insurance" in the automotive industry.

CHALLENGES AHEAD

One challenge — and the reason Martin believes this segment is somewhat volatile — is the resilience of smart fabric and textile manufacturing. "At minimum, this includes an ability to wash garments with sensors in them on a recurring basis."

The final hurdle smart cloth manufacturers must clear is decidedly low-tech, Martin says. "To some extent, if it is worn, it is going to be a fashion statement."

Weinswig agrees. "Makers of wearables must design products that people actually want to buy. The devices need to provide valuable data, but not feel like technology — because no one wants to look like an android."

Athos, Jayalath says, is "exceptionally focused on comfort and style. If our clothing is not comfortable to wear, the benefits wouldn't matter because people won't wear it. I'm really happy that we are consistently getting the feedback from our athletes that our gear is just as comfortable as what they used to wear from traditional manufacturers."

FUTURE OF WEARABLE TECH

Jayalath predicts that clothing "will evolve to be something that has more value than just covering your body. This is because apparel is a seamless way to integrate technology into people's lives without having to make them develop a new habit. People have apparel that serves different purposes, and use technology that's needed in different settings. For example, we change into workout clothing, which is why it's ideal to have workout technology integrated, so it can be adopted seamlessly and add a host of value."

Martin anticipates a day when our shirts and socks connect in a way that goes well beyond matching. "Clothing as a channel or a vehicle for driving a connected lifestyle is attractive, but the reality is that people generally wear one shirt at a time, and that shirt, if connected, needs to be able to communicate with socks, shoes and everything else that completes an outfit."

Unlike a watch — of which the average person may have one or two — "with connected garments, you would have many, likely from different brands," he says. "The challenge is that consumers need a friction-free way to access their information through a common platform, and the brands will need to work together to make this happen to win mind share." STORES

Sandy Smith grew up working in her family's grocery store, where the only handheld was a pricemarker with labels.