

## ANGLAIS

En vous appuyant uniquement sur les documents du dossier thématique qui vous est proposé, vous rédigez une synthèse répondant à la question suivante :

*To what extent can it be said that wearable technologies are the future of sports and healthcare?*

Votre synthèse comportera entre 450 et 500 mots et sera précédée d'un titre. Le nombre de mots rédigés (titre inclus) devra être indiqué à la fin de votre copie.

### Liste des documents :

1. What Will New Tech Look Like?, Stanford Medicine
2. The Future of Sports, cnn.com
3. Wearable tech will transform sport – but will it also ruin athletes' personal lives?, *The Guardian*
4. Growing trends in wearable technology, raconteur.net
5. Technology That My Kids Will Have to Explain to Me, *The New Yorker*

## Document 1

### What Will New Tech Look Like?

Jerilyn Covert, Stanford Medicine, <https://med.stanford.edu>, August 23, 2022

Science fiction has been promising us cool new stuff on our skin for decades – but what will our wearables actually look like and what will they be able to do? The future's gaining pace thanks to advances in materials, sensors, and power sources aimed at next-gen wearables that accomplish two main objectives: be less intrusive and more reliable.

In fact, this brave new wearable-world spans stages of development, and you can buy some of the gadgets right now. Smartwatches measure heart rate and sleep patterns – emerging apps can use this data to spot a COVID-19 infection before you do. A snug shirt can measure your vital signs continuously in real time. And a skin patch on the back of your arm can measure your glucose levels 24 hours a day, no finger pricks needed – you can see in real time how your diet impacts your blood sugar, giving you a personalized road map for how to eat.

[...] “Big data” is positively gargantuan in health and medicine. As machine learning, artificial intelligence (AI), and data analytics evolve to harness the power of all this data, wearables are the ideal vehicles for collecting it. [...] Unlike conventional methods – which you likely use only at doctor visits maybe once or twice a year – wearables can be donned anywhere, anytime, tracking data continuously and revealing health trends. That may help doctors “fill in the gaps” when making a diagnosis or prognosis, Michael Daniele, an associate professor of electrical and computer engineering at North Carolina State University says. “It gives doctors another arrow in the quiver.”

[...] Geneticist Michael Snyder and his team have pioneered an app that pairs with a smartwatch to detect infection and disease. “We can now tell if you have COVID in 80% of cases before symptoms occur,” he says. “The median is 3 days prior to symptom onset.” He hopes to scale this technology within 5 years, making it available to every person. “3.8 billion people have a smartphone,” he says. “All you have to do is pair that with a smartwatch, and you have a health monitor for 3.8 billion people.”

Of course, before wearables can change the world, we must be willing to, you know, wear them. That means devices that don't scream “Hey, I have a health condition!”. [...] As these devices become more accepted, they'll cross over from health care into consumer wellness, improving not just medical outcomes but also lifestyle changes on a wide scale. [...] Still the real-life transition raises questions: Will people wear the wearables? Will these devices provide quality data? How will that data hold up to our current gold standards across medicine?

[...] Many of us are already used to having data collection devices on or around us. Which means the future of health and medical tech, in so many ways, is already here and on your wrist ... just waiting for an upgrade.

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## Document 2

### The Future of Sports

Tommy O'Callaghan, cnn.com, April 27, 2022

Rugby can be a complex game, but there is one rule clearly understood by all: you cannot pass the ball forward. Though the concept might sound simple, it can be difficult to officiate. When it comes to marginal calls, referees can get assistance from a Television Match Official, a secondary referee who reviews video footage, but their decisions are only as accurate as the best camera angle shown to them. Now UK firm Sportable has pioneered what it calls "Match Tracker" technology, inserting a microchip into a rugby ball to provide insights on the ball's movement.

Built with an array of tiny sensors that track acceleration, rotation, temperature, pressure and position, as well as flight-tracking radar and radio chips, the ball can communicate with pitchside sensors up to 20 times per second. The data it collects on the ball's movement is then sent to a software interface that can be accessed by match officials.

"You have to really get into the math of what a forward pass is," explains Sportable co-founder Pete Husemeyer, [...] a South African with a PhD in nuclear engineering. He figured his physics knowledge was better served in his passion for sport, and helped launch Sportable in 2015, developing tracking devices fitted onto players' shirts to provide information about their movement. The ball-based technology can be used without player-tracking, and Husemeyer believes it may prove the most foolproof way to identify a forward pass. "The algorithm is quite simple in theory but complex to get right in practice," he says. [...]

The Match Tracker system is currently on trial in Premiership Rugby, English rugby union's top tier, and in Australia's National Rugby League. The technology's potential could go far beyond its ability to help referees spot forward passes. In England's Premiership, it has been used by TV broadcasters to provide in-match data to viewers, and teams are making use of Sportable's Skill Tracker app for training, getting real-time data on kicking distance, power, spin rate and hang time (the time the ball stays afloat). "We've gamified it for the players," says Husemeyer. "They find it fun, they get competitive about their accuracy."

[...] Sportable is not the only company developing "smart ball" technology. [...] It's a sign of how sport is increasingly embracing innovation in data gathering. Northern Ireland's STATSports has developed performance analytics wearables used by most teams in English Premier League (EPL) football and by top rugby and American football teams. Australia's Catapult has a smart vest system that lets coaches monitor the performance and health of their players, which is also used in the EPL and NFL.

[...] With sport's increasing reliance on technology for key refereeing decisions, is there such a thing as too much objectivity? With fewer borderline calls to argue over, is there a risk of fans' authentic experiences being diluted?

### Document 3

#### **Wearable tech will transform sport – but will it also ruin athletes' personal lives?**

Jared Lindzon, *The Guardian*, August 9, 2015

Wearable technologies and big-data analytics are enabling coaches, trainers and general managers to analyze previously unquantifiable aspects of athletic performance in fine detail. But as more technology gets strapped on to professional athletes, some are beginning to express concern over how such devices could be used to track their diet, sleep patterns and life off the field. [...]

As technology continues to penetrate arenas, training facilities and even the daily lives of athletes, Brian Bulcke, a defensive lineman in the Canadian Football League, anticipates a continued debate over the role of such innovations in sports moving forward. "I feel like a guinea pig [...]" he said. "We're professionals, so I think the respect line on privacy, security and all that kind of stuff needs to be maintained in athleticism". [...] Innovations are poised to forever change the sports landscape, and while technology has the potential to improve performance and training, reduce injuries and enhance the fan experience, concerns abound over security, privacy, and how a galaxy of new information will affect athletes on a personal level.

There's big money in wearable technology. Global revenues for sports, fitness and activity monitors are expected to grow from \$1.9bn in 2013 to \$2.8 bn in 2019, according to technology industry analysis firm IHS Technology.

[...] Bulcke says that conversations in the locker room regarding this influx of new technologies are mixed. Both athletes and coaches want players to remain at the top of their game and reduce injuries, however players remain concerned over the blurring line between their personal and professional lives.

"I do think there's a line there, and we focus purely on when you're at the workplace, and the workplace for athletes is when you're practicing or playing games [...]," said Brian Kopp, president of the North American division of Catapult, an Australian company whose wearable devices are used widely among professional athletes and major league teams in the NFL, NHL, MLB, NBA and college-level sports programs. "When you go home [...] you're not wearing our device, but certainly there are other devices that could track [you], and I tend to agree that there is a line, and to me I would draw the line at the workplace."

What's more concerning to Bulcke and other athletes, however, is that as more metrics are tracked and run through big-data algorithms, technology will not only detect minute changes in player ability, but could even predict future declines in performance. For example, an athlete at the top of their game could see a pay decrease during salary negotiations not based on their performance, but on macro patterns related to age, injury history and previously undetectable biometric data.

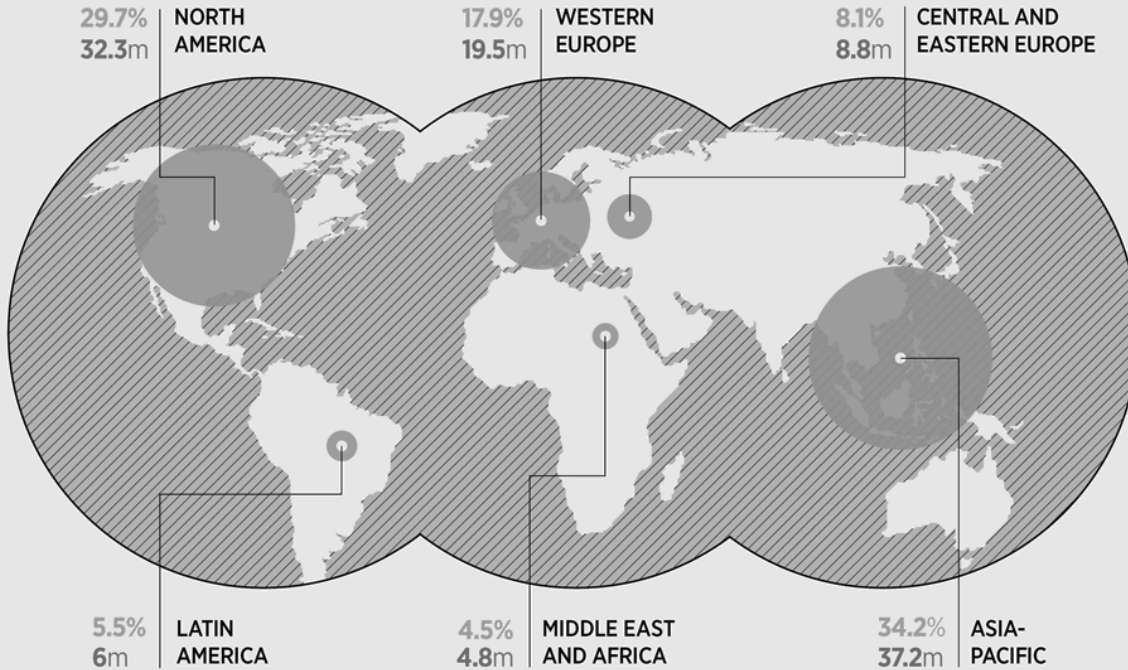
While sports are often reduced to numbers, Bulcke stresses that the most inspiring moments are unquantifiable. "There's an element of art that needs to be preserved", he said.

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## Document 4

### WEARABLES REGIONAL MARKET SHARE

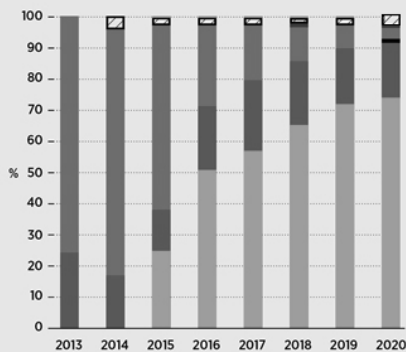
■ Percentage of total global share ■ Total number of wearable devices



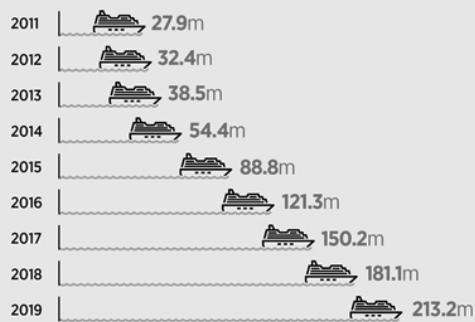
### GLOBAL ENTERPRISE AND INDUSTRIAL WEARABLE REVENUE SHARE BY DEVICE

■ Smartwatches ■ Smartglasses ■ Fitness trackers

■ Body sensors ■ Smart clothing ■ Wearable cameras



### TOTAL ESTIMATED SHIPMENT VOLUMES OF GLOBAL WEARABLES (IN UNIT SALES)



Adapted from "Growing trends in wearable technology", Raconteur ([www.raconteur.net](http://www.raconteur.net)), 2015

Document 5



Technology That My Kids Will Have to Explain to Me, Theora Kvitka, *The New Yorker*, January 30, 2022