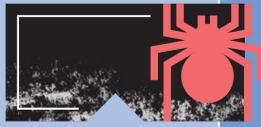


# WEARABLE HEALTHCARE TECH

## Phobia treatment

**Virtual reality** is being used to treat a variety of phobias. With the help of psychologists, 360-degree videos place the user in different levels of anxiety scenarios, encouraging them to practise relaxation techniques to manage their fears



## Artery de-clogging

The **Max Planck Institute for Intelligent Systems** has developed a robotic caterpillar that could revolutionise minimally invasive medical procedures. The ingestible, 4mm rubber "millirobot" houses tiny magnets enabling it to "walk, crawl and roll", and could one day be used to deliver drugs to specific parts of the body or clean out clogged arteries



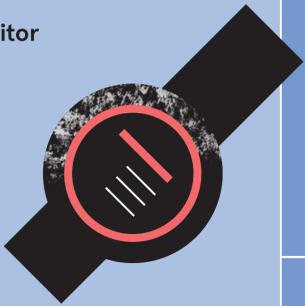
## Stress-busting headband

InteraXon, the company behind the **Muse** "brain-sensing headband", wants to make meditation easy. Used with an app and headphones, the headband guides your breathing through changing sounds of weather based on the real-time state of your brain to reduce symptoms associated with stress, depression and anxiety, and improve focus



## Blood-pressure monitor

**Omron HeartGuide** is a medical-grade blood pressure tracker, with an inflating band to take an oscillometric measurement like you'd expect at the GP's surgery. The device, which can also be programmed to take readings at night, syncs to an app and can be shared directly with a doctor



## INTELLIGENT THERMOMETER

**TempTraq** has developed a 24-hour smart thermometer that continuously senses, records and sends alerts to parents whose children are unwell. The sticky patch sits under the arm and monitors temperature round the clock so carers can detect changes in fever and sickness



## UV sensor

L'Oreal's **UV Sense** is a mini adhesive UV sensor to help people track how much time they spend in the sun. At only 2mm by 9mm, the near-field communication device can be worn on a fingernail or stuck to a pair of sunglasses



## Smart tattoos

Researchers at **Harvard** and **MIT** have developed a way of embedding health sensors into human skin using smart tattoo inks that change colour according to the chemistry of the body's interstitial fluid. Meanwhile, researchers at the **University of Illinois** have worked out a way of embedding flat, flexible electronic sensors into temporary tattoos to monitor electrical signals produced by the heart, brain and muscles



## Irregular heartbeat check

The latest update to the **Apple Watch** now includes the ability to detect atrial fibrillation, a common abnormal heart rhythm that can increase the risk of stroke. Using green LED lights flashing hundreds of times per second and light-sensitive photodiodes, the built-in heart-rate sensor gathers signals to isolate heart rhythms from other noise



## Smart contacts

Needleless blood-sugar monitoring could soon be a possibility, with scientists working on a smart contact lens to **measure glucose levels using tears**. Google threw its hat into the ring in 2014 by launching its own connected contact lens research project, though a regulatory-approved product is still yet to make it market



## Virtual doctors

2017 saw an influx of **virtual consultations with doctors**, as a variety of apps were launched to videolink patients directly with GPs, without the need to visit a surgery



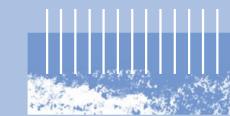
## Wearable ECG

**CardioCore** is a wireless electrocardiogram (ECG) aimed at improving detection and monitoring of cardiac conditions with minimal disruption to daily life. The lightweight band sits around the chest and doesn't have the wires and sticky patches of a conventional ECG



## Smart insulin patches

For many patients with type-2 diabetes, maintaining a consistent level of insulin is a daily struggle, full of finger pricks, injections and a strict diet. Researchers are developing **wearable microneedle patches** that are able to monitor glucose levels and autonomously administer insulin directly into the blood, or administer drugs to stimulate the pancreas to release more insulin



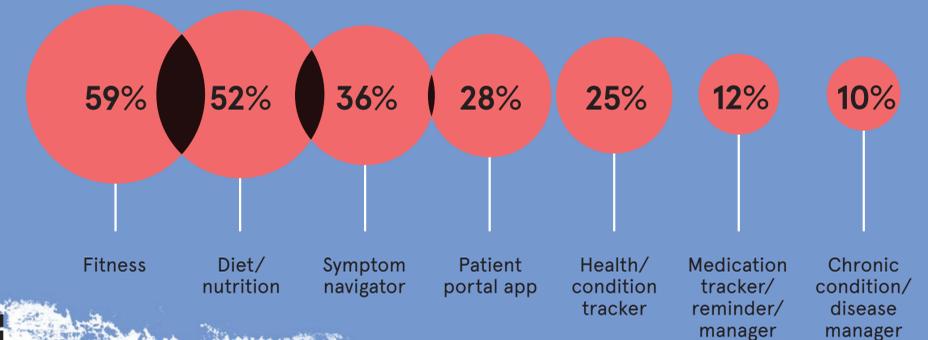
## Implantable wearables

Ingestible sensors offer new insights into patient health patterns and medication treatment effectiveness, according to the world's first digital medicine company **Proteus Digital Health**. Proteus Discover is a microscopic sensor that activates on contact in the stomach and links with a patch worn on the torso to monitor the impact medication is having. Results are then shared with healthcare providers to determine the appropriate action



## Most popular healthcare apps

Percentage of global app users that use the following



62%

of consumers agree that wearables will put people in control of their own health

58%

agree that wearables with feedback and alerts will provide personalised care

60%

agree that wearables will lead to healthier lifestyles

Survey of smartphone mobile broadband users across the globe

Ericsson 2017

90%

of consumers would be willing to share personal data from a wearable device or app with a doctor

Accenture

63%

would be willing to share data with their health insurance provider

\$0.9bn

global wearable healthcare market in 2017

Tractica

\$17.8bn

industry in 2021

RACONTEUR