

Wearable devices show that physical activity may lower atrial fibrillation and stroke risk

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Physical activity that conforms to medical and health association guidelines is associated with a lower risk of atrial fibrillation (Afib) and stroke, according to a study by researchers at Massachusetts General Hospital (MGH), who analyzed nearly 100,000 individuals equipped with wrist-worn accelerometers to measure their movement. The researchers' findings suggest that data from wearables, including a new generation of devices with sensors that allow for Afib detection, could provide an opportunity for the public health community to promote moderate physical activity as an effective way to improve health outcomes. The study was published in the *European Heart Journal*.

"Although some population-based studies have observed a lower risk of atrial fibrillation with exercise, the link has remained inconclusive in part because those studies relied on self-reporting by participants, a less than exact science," says senior author Steven Lubitz, MD, MPH, an

investigator in the Division of Cardiology at MGH. "Wearable accelerometers, on the other hand, provide an objective and reproducible measure of [physical activity](#). What we found was that activity in accordance with guideline recommendations is indeed associated with substantially lower risks of both atrial fibrillation and stroke."

Nearly 100,000 members of the UK Biobank agreed to wear accelerometers—electromagnetic devices that measure body movement and orientation to infer certain activities—for seven days. MGH researchers then compared that data with later diagnoses of atrial fibrillation and stroke among participants, most between 55 and 70 years of age, reported to the Biobank from 2013 to 2020.

"Our findings supported recommendations from the European Society of Cardiology, the American Heart Association, and the World Health Organization for 150 minutes or greater of moderate to vigorous physical activity per week," notes lead author Shaan Khurshid, MD, an investigator in the Division of Cardiology at MGH.

Given the explosive growth of 'smart' devices with increasingly sophisticated detection capabilities, the study stressed the exciting opportunities that now exist to link disease prevention programs to atrial fibrillation diagnostics. Those devices include wearables and smartphones able to measure heart rate and thus detect possible arrhythmias and other irregularities through their photoplethysmography (a technique that detects changes in blood flow through sensors on the skin) and electrocardiographic (ECG) capabilities.

"It's not hard to imagine how these devices could be used by physicians and patients to achieve a level of physical activity which we know to be associated with a reduced risk of atrial [fibrillation](#),"

explains Lubitz. "And by potentially identifying Afib through photoplethysmography and electrocardiography, users could be alerted to seek professional care before a stroke develops."

Lubitz is hopeful that these [emerging technologies](#) could be applied to not just Afib and stroke but also to other forms of cardiovascular disease, including hypertension, and to metabolic diseases like diabetes, which might be affected by guideline-adherent physical activity. "Wearable devices capable of objective activity monitoring, motivational messaging, and disease detection could be low-cost, highly effective interventions to improve health outcomes for countless numbers of people."

More information: *European Heart Journal* (2021). [DOI: 10.1093/eurheartj/ehab250](https://doi.org/10.1093/eurheartj/ehab250)

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