

# Epidemiologist updates and validates 'gold standard' of prenatal physical activity tools

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A University of Massachusetts Amherst public health researcher has updated and validated the widely used Pregnancy Physical Activity Questionnaire (PPAQ) to improve the measurement performance of this

self-report physical activity method.

Lisa Chasan-Taber, professor and chair of biostatistics and epidemiology, and her research group used novel and innovative tools—an advanced accelerometer and wearable camera—to assess PPAQ performance. The researchers developed the PPAQ in 2004 as the first validated pregnancy physical activity questionnaire. Listed on the UMass Amherst timeline of research breakthroughs, the PPAQ is considered the gold standard in the field of prenatal physical activity epidemiology.

"We're pleased to report that the updated PPAQ provides reliable and valid estimates of physical activity and sedentary behavior in pregnant women," says Chasan-Taber, lead author of the paper published June 8 in the *American Journal of Epidemiology*. "It's critical for public health researchers to have a toolbox of physical activity measurements—both self-report and objective measures such as monitors—at their disposal."

The paper points out that physical inactivity during pregnancy is "an urgent public health concern," implicated in a range of conditions, including excessive gestational weight gain, gestational diabetes, pre-eclampsia and pre-term birth.

The validated, updated PPAQ is an important tool with a variety of applications to close the knowledge gap on how best to quantify physical activity during pregnancy.

The PPAQ has been translated into 13 languages for use in 70 countries. In the U.S., it's part of the Environmental Influences on Child Health Outcomes (ECHO) study, a National Institutes of Health-supported longitudinal birth cohort across 35 centers. ECHO aims to understand the effects of early environmental influences on [child health](#) and development, in an effort to find ways to enhance it.

"The PPAQ is used in surveillance studies to see how active [pregnant women](#) are, it's used to measure compliance with guidelines for activity during pregnancy, to determine the optimal dose of physical activity for reducing risk of maternal and fetal disorders, and to evaluate the impact of exercise intervention studies," Chasan-Taber says.

In updating the PPAQ, the researchers aimed to take advantage of advances over the past two decades in calibration and validation methods and in the measurement of contemporary sedentary behaviors, such as texting and screen time.

"The accelerometer helps us validate the intensity of the activity, but it tells us nothing about what people are doing," Chasan-Taber says. "The camera takes repeated, frequent snapshots to determine the type of activity—was it sports, was it childcare, was it housekeeping? The two together provide a strong representation."

For the validation study, 50 participants in early, mid and late [pregnancy](#) completed the updated PPAQ and wore the accelerometer on their non-dominant wrist and the wearable camera on a lanyard around their neck for seven consecutive days. Afterward, they completed the PPAQ again. The data analyzed showed the PPAQ is a reliable and valid measure of a broad range of physical activities.

**More information:** Lisa Chasan-Taber et al, Update and Novel Validation of a Pregnancy Physical Activity Questionnaire, *American Journal of Epidemiology* (2023). [DOI: 10.1093/aje/kwad130](https://doi.org/10.1093/aje/kwad130)

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