Pregnancy Physical Activity Questionnaire

We appreciate the interest of Brett et al.¹ in our Pregnancy Physical Activity Questionnaire (PPAQ).² The highest priority in designing a questionnaire for epidemiologic practice is the ability of the questionnaire to rank individuals (i.e., to discriminate among individuals with respect to their physical activity) rather than to estimate their absolute energy expenditure. Therefore, in developing the PPAQ, we selected activities which were the most important contributors to between-person variation in pregnancy physical activity. This approach maximizes the ability of the PPAQ to correctly classify individuals into activity rankings and avoids unnecessarily lengthy questionnaires. More importantly, this approach facilitates the ability of the PPAQ to predict maternal and fetal health outcomes. Indeed, prior studies have found that women ranked by the PPAQ as least active were at statistically increased risk of cesarean section,³ small-for-gestational-age infants,⁴ and preeclampsia.⁵ In contrast, Brett et al. did not evaluate the ability of the PPAQ to predict health outcomes and therefore cannot validly comment upon its ability to do so.

Brett et al. fail to point out the limitations of the Actical accelerometer as a criterion measure of physical activity. For example, when an accelerometer is worn on the hip, error results from its inability to accurately measure upper body movement, pushing or carrying a load, stationary exercise (e.g., cycling), and weight-lifting.⁶ Hip-worn monitors are also affected by factors specific to pregnant women, including changes in body girth, placement site, and monitor tilt.⁷ A more important concern is that the cutpoints used to categorize accelerometer data into intensity levels vary substantially according to subject characteristics and the activities performed during the generation of the calibration equations.⁸ This results in markedly different estimates, particularly for light and moderate intensity activity.⁹ The cutpoints used by Brett et al. were developed among a convenience sample of 38 male and non-pregnant female volunteers in Saskatchewan aged 9 to 59 performing treadmill walking and running, which likely led to misclassification of many moderate intensity activities.

These issues, along with their small sample size (29 women), make the findings of Brett et al. difficult to interpret. Furthermore, approximately 28% of their sample did not wear the actigraph immediately after completing the PPAQ which is a concern as it is well established that activity levels decrease over pregnancy.¹⁰ The low average wear time of study participants (13.5 hours/day) was likely an important contributor to lower observed accelerometer estimates of duration. Assuming 8 hours

of sleep per night, the accelerometer failed to capture several hours of activity each day.

In summary, Brett et al. found moderate correlations between the accelerometer and the PPAQ that were comparable to those observed in our original validation study and consistent with those reported for other activity questionnaires. The differences in *absolute* activity levels between the PPAQ and accelerometer are not an indicator of the PPAQ's ability to discriminate between the *relative* activity levels of pregnant women and therefore not relevant to the PPAQ's ability to predict maternal and fetal health outcomes.

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