Agreeability of ActiGraph and activPal 4™ Measures of Vigorous Activity

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Introduction: Wearable technologies are consistently used in research to track physical activity and study how it can improve overall health. ActiGraph and activPal are research-grade accelerometers that track activity levels of all intensities in humans. ActivPal has recently improved its technology to measure vigorous activity more accurately to be consistent with the gold standard Actigraph measures. The purpose of this study is to test the agreeability between the vigorous activity measures of the ActiGraph and activPal 4™ devices.

Methods: Regular exercisers are being recruited from the KSU Department of Exercise Science and Sports Management to participate. They are fitted with one activPal 4™ on the thigh which will be compared with two ActiGraphs: one worn on the waist and the other worn on the right wrist for three days. Participants record their exercise sessions in an activity diary. Rate of perceived exertion (RPE) and heart rate are also recorded to determine exercise intensity. Exercise is considered vigorous if RPE is 5 or more and if the heart rate is 76% of age-predicted heart rate max or higher. Statistics will include paired t-tests to determine the differences between the means, correlations to determine strength of agreement, and Bland Altman plots for inter-device agreement.

Results: Data collection is currently underway, and findings will be presented at the KSU Symposium for Student Scholars.

Conclusions: This study will determine the level of agreeability between the ActiGraph and activPal 4™ measures during vigorous activity. It will provide information about whether ActivPal 4 is acceptable to use for measuring vigorous activity in humans.