

Validation of Nike Fuel Band Step Counter in Children with Visual Impairments

David W. Albaranes, Brooke E. Starkoff, Elizabeth K. Lenz, Joanna C. Colgan, Lauren J. Lieberman.

The College at Brockport, Brockport, NY, Penn State University, University Park, PA

Children with visual impairments (VI) are at greater health risks compared to sighted children due to lack of physical activity (PA). Following the rising trend in fitness tracking, Nike has created the Nike+ Fuel Band SE Activity Tracker (Fuelband) to further promote and encourage PA and exercise. **PURPOSE:** To determine how accurately the Fuelband counts the number of steps taken while performing PA for children with VI. **METHODS:** Twenty-six participants (21 M, 5 F; 13 ± 1.8 years; 22.1 ± 4.8 kg/m²) with varying degree of VI [blind - B1 (n= 4), travel vision - B2 (n= 11), and legally blind - B3 (n= 11)] completed two, 400 meter laps around a track while wearing the Fuelband. Participants walked the track with a Fuelband on the dominant hand or the hand opposite their guide or walking cane. Steps were recorded by video and the Fuelband. A two tailed t-test and Pearson correlation was done to compare the number of steps recorded by video and Fuelband. Mean difference scores were calculated to determine whether the Fuelband over or under estimated steps taken. **RESULTS:** The average number of steps registered by the Fuelband was 95 steps less than the steps counted on video per 400 meters walked (660 ± 82 steps vs. 565 ± 116 steps; $p < 0.000$ $t(25) = 7.37$) Correlations revealed a strong positive relationship between observed steps and the Fuelband ($r = .835$, $p < .001$.) **CONCLUSION:** The Nike+ Fuel Band SE Activity Tracker may not be an appropriate device for counting steps in children with visual impairments as continuous use of the step counter will under record the actual PA performed throughout the day.