

What Is a Step and Why Does It Matter? A Comparison of Devices to Track Activity

Latz, Samuel (School: Covington Latin School)

Purpose: Determine the consistency and accuracy of various step counting devices during three activities: Walking forward, walking on stairs, and steps during daily activities. Tracking steps is important to monitor the activity and health of individuals.

Procedure: Participants were fit with various step counting devices and with a chest mounted video camera. Next, participants performed each of the three activities. Steps counted from each device were recorded before and after each activity and for each participant. Using the video footage in slow motion, the actual number of steps were counted for each activity and for each participant. **Data:** The number of steps identified by each device was divided by the actual number of steps counted on the video to provide a step count ratio that could be compared from one device to another. The closer each step count ratio was to 1.0, the more accurate the device. Consistency was identified by the relative range (variability) of the step count ratio across participants and for each device. Data was entered into an Excel spreadsheet. Bar graphs were created to demonstrate the results.

Conclusions: The greatest consistency across all participants and all activities was found with the StepWatch. However, the step count ratio of the StepWatch was close to .5 versus the expected 1.0. After further review, the StepWatch counts only steps on one leg. IF I compare the StepWatch to a .5 ratio, then I found the StepWatch to be most consistent AND most accurate of all devices, and across all participants and all activities.