SWACSM Abstract

Reliability of the Stryd Accelerometer on an Incline and Decline

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ABSTRACT

Modern technology has evolved to include various health and fitness trackers to help the general population become more aware of their physical wellbeing. However, the reliability of these technologies is not well-established. **PURPOSE:** Determine the reliability of Stryd accelerometer during trail running. **METHODS:** Seventeen participants (25 ± 9 years; F = 7) completed a trail run. Each participant was fitted with one Stryd accelerometer (model 25; Stryd, Boulder, CO 80301) on the shoe of each foot, and both devices were started simultaneously. The participant then did a self-paced out and back run on a moderate difficulty hiking trail. The trail began at approximately 6000 feet elevation and climbed approximately 200 feet/mile. After ten minutes of running up the trail, the participant turned around and returned on the same trail. Upon finishing the run, the Stryd accelerometers were stopped simultaneously. Data collected by Stryd sensors includes distance, altitude, speed, power, form power, cadence, vertical oscillation, and leg stiffness. These Stryd data were exported to csv files. We divided the data into uphill and downhill phases of the run based on the peak elevation achieved and found the average and peak values for uphill and downhill phases of the run. We calculated the within-subjects coefficient of variation for each measure during downhill and uphill trail running. **RESULTS:** Of the mentioned variables, six were considered reliable-each with a CV less than 0.1-and three were considered unreliable-with a CV of over 0.1. The least reliable measures were form power (uphill: CV=0.124; downhill: CV=0.126) and power (uphill: CV=0.132; downhill: CV=0.135). The most reliable measures were cadence (uphill: CV=0.002; downhill: CV=0.005) and altitude (uphill: CV=0.004; downhill: 0.004). **CONCLUSION:** As the majority of the measures were statistically reliable, the Stryd accelerometer can be considered reliable. However, the power measures were the least reliable. This finding is important because Stryd advertises the ability to track training intensity based on power output. If this data is unreliable in outdoor locations Stryd may provide inaccurate training advice. Based on our findings tracking outdoor run intensity based on Stryd power may provide inconsistent results.