The Accuracy of Pedometers in Lower-Limb Amputees

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ABSTRACT

The accuracy of the pedometer on lower limb amputees has yet to be explored. **PURPOSE**: To assess the accuracy of pedometers in lower limb amputees. **METHODS**: Thirty-nine participants (age = 48.0±14.1 yrs, ht = 172.7±9.3 cm, wt = 76.2±14.8 kg) had their height and weight measured and were then fitted with a pedometer belt around the waistline at the hip. They were then fitted with three pedometers: a SW-701 spring-levered pedometer on the anterior mid-line of the right hip, an NL-800 pedometer just laterally to the SW-701, and an Omron HJ-112 on the outside of the NL-800. They then engaged in one over-ground walk for 200m at a self-selected pace. At the end of each trial pedometer counts and actual step counts from a hand tally (AC) were recorded. A repeated measures ANOVA was used to determine significant differences between the counts. Single measure intraclass correlation (ICC) from a two-way random effects ANOVA was used to assess the agreement between AC and pedometer counts. Bland-Altman plots of AC vs. pedometer counts were also used to provide an indication of agreement of steps and agreement between the measures. Pedometer error was calculated as [((pedometer steps-actual steps)/actual steps) * 100]. **RESULTS**: Counts from the SW were significantly lower than AC (255.6±12.6 and 314.7±6.0 steps, p = .001) and counts from the NL and Omron were not significantly different from AC (p > .05). Agreement according to ICC was very low (0.26) for the SW, low for the NL (0.71) and high for the Omron (.98). Bland-Altman plots indicated agreement was strongest with the Omron and weakest with the SW. Percent error was greatest with SW at 18.0%, 2.1% for the NL, and least in the Omron (0.7%). **CONCLUSION**: The results indicate that of the three pedometers tested the Omron HJ-112 is the best pedometer for a person with an amputation wearing a prosthesis.