REPRODUCIBILITY OF STEP ACTIVITY MEASUREMENTS IN HAEMATOLOGICAL CANCER PATIENTS AFTER MEDICAL TREATMENT.

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Background

Haematological cancer patients may benefit from exercise programs to improve levels of physical activity (PA)1. Objectively assessed step activity is a potentially important measure of the PA level in cancer patients. However, to be of use it is essential that a step activity monitor provides reproducible results at both the group and the individual patient level.

Objective

To determine the reproducibility of a step activity monitor at both the group and the individual patient level.

Methods

Study sample: Thirty outpatients (equally divided between males and females; mean age 47.9 $\pm$ 14.2 years) with leukaemia, lymphoma, and multiple myeloma were recruited after completion of medical treatment or during maintenance therapy.

Design: Test-retest study with repeated measurements for 2 consecutive weeks.

Device: Step assessments monitor Stepwatch 3© (Cymatech, Seattle, WA, USA).

Statistics: Indexes of reproducibility included the intraclass correlation coefficient (ICC 2,1), the 95% confidence interval (95%CI), the smallest detectable difference (SDD), and the difference against the mean plots of the average total steps and the peak activity index (expressed as the average number of steps/minute). The ICC cannot discriminate between random and systematic error, whereas the SDD is derived from the limits of agreement method and quantifies the random error of the Step Activity Monitor2. Differences between individual means were calculated by means of a paired Student's t-test, which quantifies the systematic error (also known as bias) of the step activity monitor.

Results

Moderate to high reproducibility was observed based on the ICC's for the average total steps (0.82), and for the peak activity index (0.79). The 95% CI and the SDD for the average total steps (mean = 4975 $\pm$ 1713) were 1503, and 2126 steps, respectively. The 95% CI and the SDD for the peak activity index (mean = 43 $\pm$ 7) were 6, and 9 steps, respectively. In the plots of the difference against the mean, the 1.96 standard deviations around the mean represent 2169 steps for the average total steps , and 9 steps for the peak activity index, respectively. There were no significant differences between week 1 and 2 for the average total steps and the peak activity index.

Conclusion:

These results demonstrate that the Stepwatch 3© is a reproducible instrument when used with haematological cancer patients after medical treatment. It can be employed in studies of the effect of intervention programs on the levels of PA of these cancer patient populations.

References:

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