



Measuring Movements 24 Hours per Day in Older Persons Living in a Nursing Home - A Pilot Study

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ABSTRACT

Background: Physical activity plays a crucial role in maintaining function and movement in daily life among nursing home residents. Modern technology allows research on physical activity and gait parameters measured with mobile devices and for a long time. The purpose of this study was to describe physical activity, sedentary time and gait parameters among nursing home residents.

Methods: Five participants, ranging in age from 75 to 98 years old were recruited at a nursing home in Lund, Sweden to control the environment (median 88 years old). Over a two-week period, the Inertial Measurement Unit (IMU) device was used to measure various position changes and gait function for 24 hours. We specifically measured lying down, sitting and standing time, as well as gait parameters such as walking speed, step length, step regularity, and number of steps per day. The variables were described using mean, median, minimum-maximum, and percentage values.

Results: The median of mean values for all lying down at 6 hours and 17 minutes. In particular, side-lying position was 22 hours and 22 minutes, including sitting position of 7 hours and 39 minutes among nursing home residents. The gait parameters were represented by a median of mean value elements of walking speed was 0.35 m/s, step length was 18.55 cm, and the number of steps was 65 steps per day. Nevertheless, the median of mean value for step regularity was illustrated in high percentages at 71.43.

Conclusion: Time spent in lying down and sitting positions for more than three hours indicated lack of physical activity and high level of sedentary behavior in nursing home residents and also had a poor walking ability corroborating the logical theory of aging. Hence, the findings are able to enhance physical activity and gait function among nursing home residents further.

Keywords: *physical activity; IMU device; walking speed*