

# Ambulatory mobility and physical activity monitoring of the elderly

## A pilot study

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### INTRODUCTION

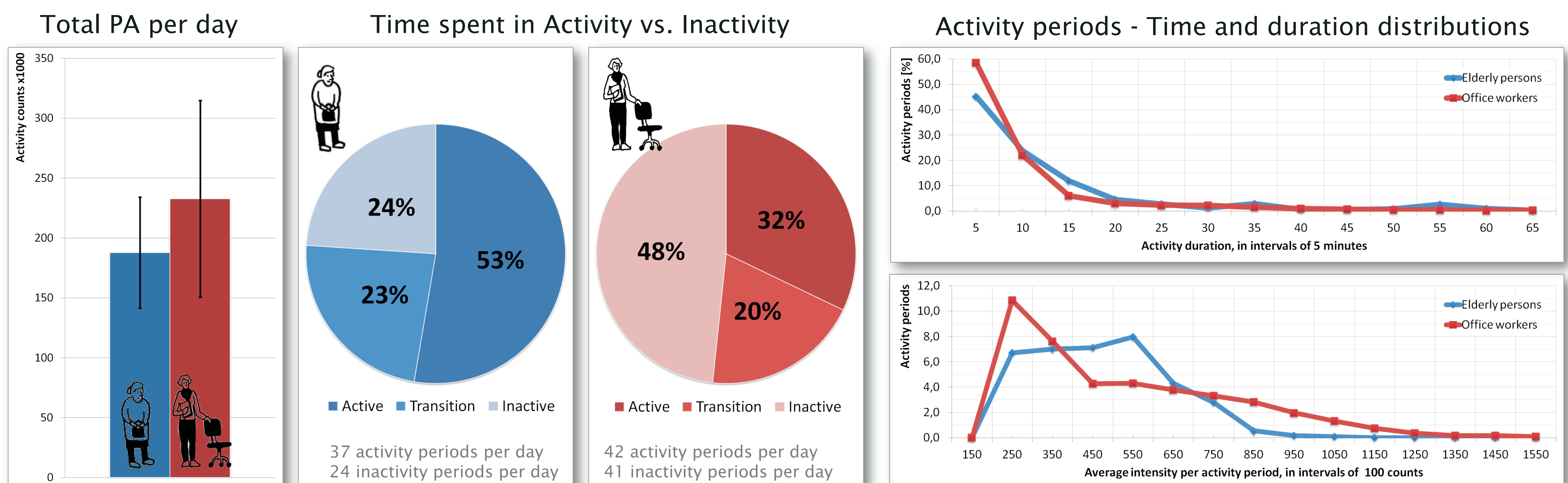
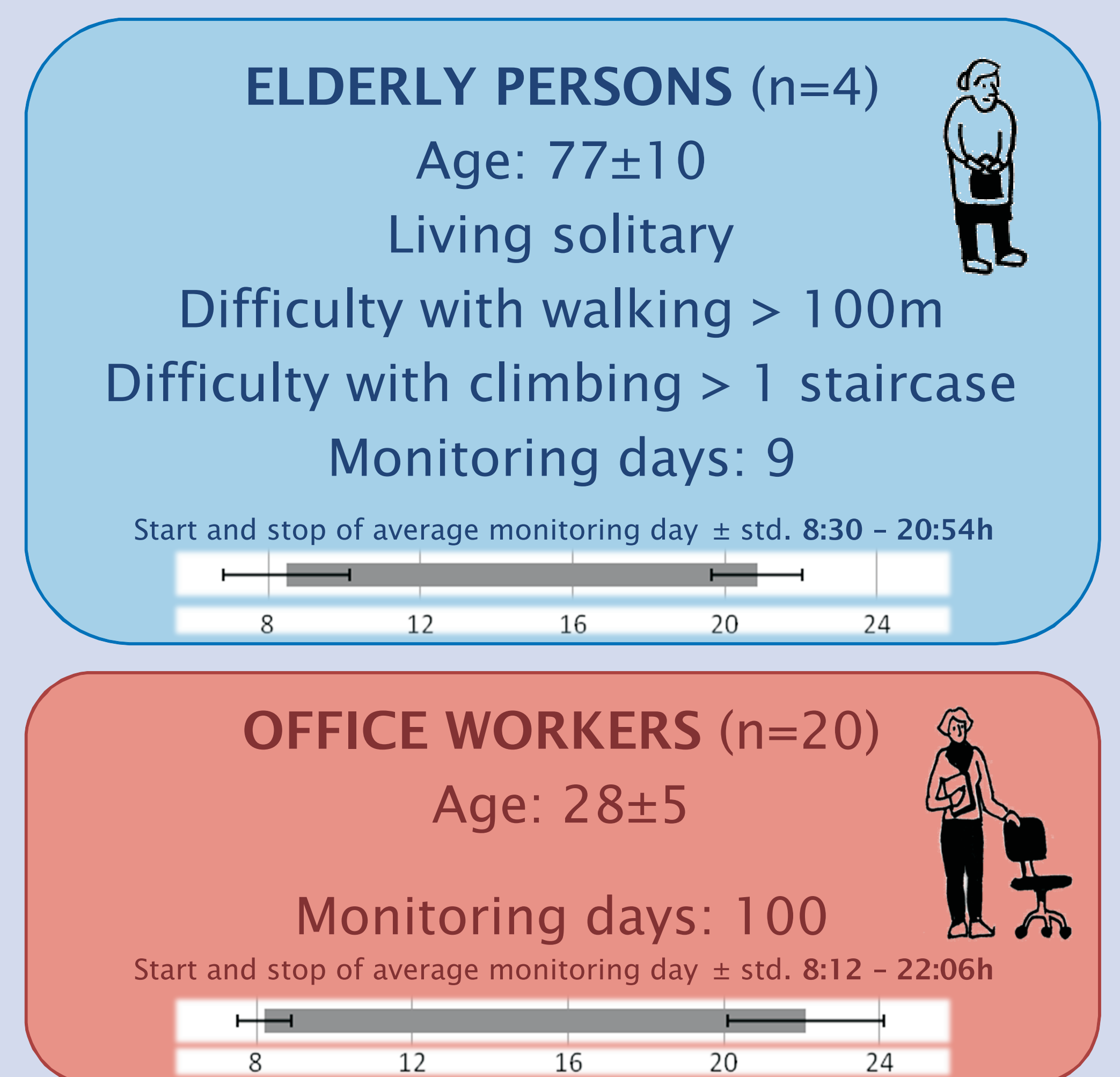
As we age, our ability to be mobile – the ability to move physically – deteriorates slowly, which results in an increasing need for assistive devices. We investigated a method to objectively monitor mobility and physical activity (PA) using ambulatory wireless technology during daily living. We compared activity patterns of elderly persons with sedentary healthy office workers to see if group similarities and differences in PA behaviour could be identified.

### METHOD

Four elderly persons wore an wireless activity sensor (figure 1), during waking hours for 1-3 days. PA is reported in average cumulative scores per day, and in terms of activity vs. inactivity periods, based on an intensity thresholds of 50 and 150 counts/min. This data was compared with data for 20 healthy office workers. Characteristics of both groups are shown on the right.



**Figure 1:** The Promove3D contains a 3D accelerometer with output in counts per minute, according to Bouten et al. (1997). To be worn at the hip.



### RESULTS

The elderly persons had shorter waking hours. During these waking hours, they generate less activity counts, by being less active overall. This is also reflected by the lower percentage of total time spent in activity periods and a lower number of activity periods per day. The elderly persons accumulated their total PA in activity periods with a shorter duration and lower intensity than office workers.

### CONCLUSION

Although both elderly and office workers have sedentary lifestyles, their activity profiles strongly differ. This study showed that (in)activity profiling is possible and seems promising for further specifying behaviour for prevention and intervention studies on healthy physical activity behaviour.



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