

Unobtrusive Home Bed Transfer Monitoring in an Older Adult

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Background: Falls cause significant morbidity and mortality in older adults and are a financial burden on society.¹ Early identification of increasing fall risk could lead to early intervention.² Pressure sensitive mats have been successfully used to differentiate between transfers of healthy older adults and those having mobility impairment.^{3,4} The goal of this study is to collect longitudinal data on bed transfer variability in an older adult, with the ultimate goal of identifying changes that would alert to a new fall risk.

Methods: A 64 y.o. male living in a senior's apartment consented to take part in a home monitoring study. A Tactex Controls Inc. Bed Occupancy Sensor was installed under the subject's mattress. This was connected to a Dell Optiplex computer for 23 days. Custom algorithms and visual inspection of pressure videos were used to determine the timing of lie to sit (L-S), sitting (S) and sit to stand (S-St) for the first transfer of each morning.

Results: On average this subject got up at 9:17 AM (range 5:47 AM to 10:56 AM). His total transfer times averaged 71.8 ± 68.7 s, with L-S time of 16.4 ± 7.3 s, S time of 49.8 ± 65.9 s, and S-St time of 5.6 ± 2.6 s.

Discussion: We believe this is the first time longitudinal bed transfer timing data has been collected from an older adult in their home. The level of variability in morning transfers will create challenges in designing an automated mobility change detector.

References

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