

Abstract

The bachelor thesis focuses on a pilot assessment of selected tests for the prediction of fall risk in the elderly. The theoretical part deals with falls and their risk factors, the possibilities of assessing the risk of falls by means of functional tests and instrumental methods, as well as the possibilities of fall prevention. A total of 81 seniors (mean age 78.5 ± 8.5 years) were included in the actual study, 78 of whom completed the entire follow-up. All probands completed The Timed Up and Go (TUG) test and subsequent gait and standing stability measurements via Oculus' Meta Quest 2 virtual reality (VR) headset using piloted apps designed by VR Medical. Incidence of falls was collected by telephone and email correspondence over the following 6 months. There was no statistically or substantively significant difference in the duration of the TUG test between the control group and the group of probands who suffered a fall during the follow-up period (12.9 ± 6.9 vs. 11.5 ± 5.0 s; $p=0.99$; Cohen's $d=0.02$). The probands in the control group who did not suffer a fall showed a higher step cycle time variability compared to the probands who suffered a fall ($SD=0.54 \pm 0.40$ vs. 0.38 ± 0.55 s). However, the difference between the groups with and without a fall in step cycle variability was far from statistically significant and the substantive significance of the difference between the groups was small ($p=0.11$; $d=0.33$). Subjects in the group that suffered a fall during the follow-up period showed a trend towards a higher value of the trajectory length of head movements during resting standing (615 ± 351 vs 344 ± 152 mm). However, due to a technical error with loss of data of part of the probands, this difference between groups could not be validly statistically evaluated by significance test.