IS THERE A CORRELATION BETWEEN AGE-RELATED WRIST POSITION SENSE MATCHING ERRORS AND RISK OF FALLS IN OLDER ADULTS?

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BACKGROUND AND PURPOSE: Lower extremity proprioception declines with age, disrupts dynamic balance and is tied to increased fall risk in older adults. If age-related decline in wrist position sense is also associated with fall risk, we could design an upper limb screening tool for fall risk. Our purpose was to determine the correlation between wrist position sense and fall measures in older adults.

SUBJECTS: We recruited 107 participants (50 males, mean age, 70.8 +/- 5.15y) at the Minnesota State Fair with good cognitive function (Mini-Mental State Examination-brief version, >13/16), using convenience sampling.

METHODS AND MATERIALS: For this cross-sectional design, the participants completed the Falls Efficacy Scale (FES), Timed Up and Go (TUG) test, and reported their fall frequency/year. The participants performed active ipsilateral and contralateral wrist position sense matching tasks, with a custom-made manipulandum, using a 15° reference wrist flexion position.

ANALYSES: We used Spearman correlations to calculate the relationship between the three fall measures and wrist position sense.

RESULTS: There was no correlation between wrist position sense and fall measures. TUG and FES were fairly correlated (r=0.33, p=0.0005). Twenty-five participants (23.36%) fell at least once/year. Based on FES scores, 86 participants had low concerns, 19 moderate and 2 high concerns for falls. The TUG scores classified 86 participants as walking at expected age-related speed, 20 slower than their age group and one participant was predicted to fall within 6 months. Contralateral wrist position matching errors and precision were smaller than reported in the literature.

CONCLUSIONS: Wrist position errors, percentages of reported falls and concerns of falling were lower than reported in the literature (40%). For this active group, there was no correlation between wrist position sense and fall measures.

IMPLICATIONS: Further research is needed to investigate the association between upper extremity proprioception and fall risk in non-community-dwelling older adults.