

## **Comparison of Kinovea and Force Platforms for Postural Stability Assessment in Older Adults**

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### ABSTRACT

Postural stability declines with advancing age due to degeneration of the musculoskeletal and sensory systems. Force platforms are currently the gold standard for evaluating postural stability, but are costly and must be carried out in person. Kinovea, a free for use sports analysis software, has been suggested as a telehealth solution. **PURPOSE:** To investigate the validation of Kinovea for postural stability assessment in older adults. **METHODS:** 10 older women ( $73.9 \pm 5.7$  years old) completed 30 seconds of quiet standing on force platforms with eyes opened (EO), eyes closed (EC) and on a foam pad (FP) with a camera placed sagittally. Movements at the hip and shoulder were analyzed frame-by-frame by two blinded raters using Kinovea. Correlations between Kinovea and force platforms were evaluated using Pearson's Correlation Coefficient ( $r$ ) and interrater reliability was evaluated using Intraclass Correlation Coefficients (ICC). **RESULTS:** Tracking of the shoulders had a strong, positive correlation during EC ( $r=0.756$ ,  $p<.001$ ) and FP ( $r=0.776$ ,  $p<.001$ ). Shoulders during EO showed moderate correlation ( $r=0.436$ ,  $p=0.016$ ). Excellent interrater reliability (ICC from 0.957-0.982,  $p<.001$ ) was found at shoulders in all conditions. Further, tracking at hips had a moderate correlation during EC ( $r=0.641$ ,  $p<.001$ ) and on FP ( $r=0.644$ ,  $p<.001$ ) while the relationship in EO was weak ( $r=0.374$ ,  $p=.042$ ). There was a moderate interrater reliability in EO (0.611) and FP (0.565), while a good interrater reliability with EC (0.757). **CONCLUSION:** As the conditions become more difficult, the movements become bigger, and consequently easier to track. Validity between force platforms and Kinovea is strongest with shoulder displacements with excellent interrater reliability. Tracking of the shoulder using Kinovea appears a valid method to assess postural stability remotely.