

Consistency of Coach's Eye (TechSmith Corp) for Assessing Elbow Flexion Compared to Range of Motion Values by Goniometry

David Emmanuel Geddam

Faculty: Jeremy Patterson

Department of Human Performance Studies, College of Education

Introduction: Coach's Eye is a 2-D motion analysis mobile application. Sport coaches commonly use the app to measure movement and joint range of motion angles. Its validation has been previously reported in comparison to a 3-D motion analysis system and showed to be a poor alternative to measuring hip flexion.

Purpose: The purpose of this study was to compare the Coach's Eye analysis to goniometry using reflective markers to identify joints.

Methods: Prior to recording it was made sure that the plane of motion was parallel to the recording device. 15 subjects performed elbow flexion thrice recorded by the app (on an iPad [Apple Inc]). The anatomic landmarks marking the fulcrum and lever arm boundaries are marked by fluorescent paper markers based on the rules of goniometry. Snapshots of the movement to be measured were taken and lines connecting the fluorescent markers were drawn using a capacitive stylus followed by measuring the angles between them. Simultaneously joint angle data was measured with goniometry by an experienced physical therapist. Statistical analysis was done on the joint angle values obtained by goniometry and Coach's Eye.

Results: A paired sample t-test determined that there was no significant difference between methods of measurement.

Conclusion: The 2D app demonstrated excellent reliability and appeared to be a responsive means to detect clinical change when a reflective marker at the measured joints is used. For both the methods the only limiting factors for accuracy seem to be identifying anatomical landmarks and connecting them either with the goniometer's arms or with lines drawn in the app. This study shows that Coach's Eye can be used to measure joint range of motion values with accuracy on par with goniometry when reflective markers are used. Further studies are warranted to establish it as a clinical tool.