BACKGROUND: Joint position sense (JPS) is mostly used to evaluate the proprioceptive ability. Proprioceptive function is crucial for balance, posture and motor control. Joint proprioception can be impaired after sports trauma. There are several methods to access proprioception like isokinetic dynamometer, digital goniometer, photo analysis, 3D video capture analysis. Isokinetic dynamometer is a well known device to measure active and passive JPS and also provides target angle result without any researcher bias. Mobile technology may currently be used in many ways but its use in medicine has not yet been widespread. In the last decade this technology has become popular to access acceleration, physical activity, gait, posture and range of motion. The aim is was access the validity of knee proprioception using mobile phone inclinometer application with comparison to isokinetic dynamometer.

METHODS: Active testing with isokinetic dynamometer was measured with active knee flexion of participant to previously detected target angles. For active testing of iPhone application, iPhone was stabilized to distal lateral part of tibia with an arm band and active knee flexion to target angles were noted. All tests were repeated six times for each device and target angle. Deviations from target angles were noted and named as absolute reproduction error. RESULTS: There was statistically significant differences between measurement methods at 30° and 75° target angles (P=0.03, P=0.01). At intraclass correlation, moderate correlation was found at 450 target angle (30°=-0.2, 45°=0.5, 75°=0.02). In evaluation of measurement method compatibility; at 30°, 45° and at 75° target angles moderate compatibility were found but differences more than 10° also seen. CONCLUSIONS: This is the first study that compares isokinetic dynamometer and smartphone application for major joint position sense. Isokinetic dynamometer was accepted as standard referenced proprioception testing method and comparable results were found between two testing methods. Mobile phone applications may be used for medical practice but may not have enough safety for scientific data collection. (Cite this article as: Unal M, Ercan S, Ogul A, Cetin C. Measurement of knee proprioception with isokinetic dynamometry and iPhone-based application: a comparative validation study. Med Sport 2017;70:________. DOI: 10.23736/S0025-7826.17.03118-0) Key words: Knee - Proprioception - Smartphone - Mobile applications.