Purpose: Smartphones have become a staple in our society. They are essential not only for our day-to-day lives but also as a healthcare tool in the face of the emergence of a myriad of health-based applications. Analyze the reliability and concurrent validity of an iPhone app as compared with traditional goniometry.

Methods: 21 subjects of our work centre, in 2016 had 4 measurements of their degree of knee flexion for a randomly chosen knee position: 2 by universal goniometry (UG) and 2 by the Goniometer-Pro (G-Pro) application. A different evaluator made each measurement. The radiographs were used as a gold standard to measure the actual knee flexion angle.

Results: The difference between mean intra-group values was $3.148^\circ (\pm 2.669^\circ)$ and $2.476^\circ (\pm 2.638^\circ)$ for G-Pro. The difference between the mean intra-group values was $5.45^\circ$. Inter-observer consistency for UG was 0.990 and 0.993 for G-Pro; As regards validity, the
values obtained were 0.976 for UG and 0.992 for G-Pro.

Conclusions: The Goniometer-Pro app seems to be a reliable and accurate tool for determining the values of knee flexion. The values obtained are slightly more accurate than those of traditional goniometry.

Implication: This study intend to promote the use of apps of systemic form in the health system, as a component integrated into the management of the health. This work not only compares the reliability of two methods of measurement, compare the reliability or validity with a gold standard, as it is the radiological measurement.

References

1. United States government agency responsible for regulating food, drugs, cosmetics, medical devices, biologic products and blood derivatives (FDA), United States of America, 2016.
Reliability and Concurrent Validity of the Goniometer-Pro App vs a Universal Goniometer in determining Passive Flexion of Knee


**Index Terms**

Computer Science  
Biomedical
Keywords

Goniometry; smartphone app; knee flexion; knee.