Reproducibility of Genucom knee analysis system testing

Abstract: The Genucom knee analysis system was studied to determine the reproducibility of test results. In the first phase of the study we investigated the reproducibility of anterior/posterior stress tests at 30 degrees and 90 degrees of flexion and varus/valgus stress tests at 20 degrees of flexion in 10 control subjects during three seatings on 3 separate days. In the second phase we studied the effect of errors in the digitization procedure (a part of the patient installation process) on anterior/posterior translation measurements. In the third phase we studied the reproducibility of a battery of tests in patients with chronic unilateral ACL deficient knees. The test battery was repeated 8 times on each knee on 6 separate days. In Phase I, analysis of variance revealed no significant differences between tests within a single seating. The day-to-day variance of all subjects was not significant, but we found a significant interaction between day and subject which was due to significant day-to-day differences in individual subjects. We found in Phase II that changing the location of the tibial joint line digitization points in the anterior/posterior or proximal/distal direction affected anterior/posterior translation measurements. Effects were larger at 30 degrees of flexion than at 90 degrees and when both the medial and lateral points were moved. Movement of the femoral condylar points resulted in a similar pattern of effects. In Phase III, although we found significant differences between our two examiners, there were no significant intraexaminer test-to-test (within seating) effects. Additionally, while there was no significant day-to-day variance overall, we found a significant interaction between day and subject.(ABSTRACT TRUNCATED AT 250 WORDS)