INFLUENCES OF CLINICIAN TECHNIQUE ON DIAGNOSTIC ACCURACY AND AGREEMENT OF CLINICAL JUDGEMENTS
Hurley WL, Buckley WE, Denegar CR: The Pennsylvania State University, University Park, PA

Objective: This study explored the influence of clinician technique on diagnostic accuracy of an isolated examination procedure and examined agreement of clinical judgments of anterior tibial translation (ATT) between two sample populations. The goal was to have clinicians perform the Lachman test in the manner consistent with their typical clinical practice to determine the influence of clinician technique on: 1) the level of agreement for judgments of ATT; and, 2) diagnostic accuracy. Design and Setting: Randomized, blinded, controlled clinical trials conducted in a laboratory setting. Subjects: One orthopaedic surgeon, 22 certified athletic trainers, and 12 model patients. Measurements: Videotape analysis of clinician technique was made for certified athletic trainers during Lachman test performance. Trials were categorized by classifying clinician technique according to “tibia hand” grasp preferences. Categories represent preferred “tibia hand” grasp preferences demonstrated during at least 80% of Lachman trials by an examiner. Categories of clinician technique were operationally defined as condition A (Lachman test) and condition B (generalized anterior tibial translation test). Weighted kappa coefficients were calculated to determine agreement of clinical judgments of ATT between sample populations. Diagnostic accuracy was operationally defined as the percentage of correctly evaluated “laxity grades” (ie. Grad I, Grade II, Grade III.) or ATT determinations, as compared with the diagnoses of one orthopaedic surgeon. Diagnostic accuracy values were calculated using the formula: Diagnostic accuracy = [(# of correct laxity grade judgments)/(# of correct laxity grade judgments + # of incorrect laxity grade judgments)] x 100 where, correct laxity grade judgments represent clinical judgments of ATT in agreement with orthopaedic diagnoses of ATT, KT1000™ measurements, and history of ACL injury. Results: In the sampled populations, concurrence was poor for clinical judgments of ATT while diagnostic accuracy varied according to clinician technique. While only 18% (N=4) of the sampled clinicians demonstrated correct Lachman technique (category A) they achieved greater mean scores for agreement of clinical judgments of ATT than those clinicians in category B (F= 14.335; p=.001). Sixty-eight percent (N=15) of the clinicians demonstrated overall low levels of interrater agreement for judgments of ATT with corresponding low weighted kappa values (weighted kappa ≤ .27). Conclusions: Clinician technique using a grasp preference consistent with a generalized anterior tibial translation test appears to alter judgments of tibial displacement relative to the femur. Ligamentous stability would therefore be masked during the Lachman test potentially hindering diagnostic accuracy. Key Words: weighted kappa coefficient – Lachman test – interrater agreement