

RELIABILITY AND VALIDITY OF THE IAROM ANKLE RANGE OF MOTION DEVICE

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INTRODUCTION: The importance of ankle range of motion to pathology of the foot and ankle has long been observed clinically and has been demonstrated in several recent studies. Though goniometry is the standard method of assessment, validity and repeatability can be problematic due to goniometer alignment, and variations in location and magnitude of forces applied to the foot. The purpose of this study was to determine the repeatability and validity of a newly developed, relatively inexpensive, device for ankle range of motion measurement at predetermined force levels.

METHODS: Range of motion testing was performed using the IAROM Ankle Range of Motion device. The device consists of a clear acrylic footplate connected to a base plate for securing the tibia. Angular measurement was made using a digital inclinometer zeroed on the tibial crest before it was fastened to the footplate. Ankle range of motion was recorded at torque levels of 10, 15, 20 and 25 Nm controlled through use of a hand held force gauge. Each subject was tested three times at each of the four force levels. To evaluate inter-tester reliability 17 subjects were tested by a licensed physical therapist and a recent high school graduate. To evaluate intra tester reliability 12 subjects were tested twice during the same day. To evaluate device validity 12 young healthy adults were tested simultaneously using the IAROM device and an Optotrak motion analysis system using a standard foot marker set up.

RESULTS: For the repeatability testing intraclass correlation coefficients (ICC) were calculated for each combination of force level (4) and cycle number (3) that were evaluated. For repeatability and validity testing all ICC values were greater than .88 with mean values greater than .92

DISCUSSION: The IAROM device has been shown to be a valid and reliable tool for documenting passive ankle ROM at specified torque levels. The advantages of this device including portability, ease of use, controlled force application and reasonable cost of production make it attractive as a clinical tool that can be used on a variety of patient populations for accurate documentation of ankle passive ROM.

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