

The Validity of Brody's Navicular Drop Test

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The purpose of this study was to determine the validity of David M. Brody's Navicular Drop Test (NDT), recorded using the Postural Stability Indicator (PSI), by correlating the change in the vertical height of the navicular bone in weightbearing and nonweightbearing positions using clinical palpatory and radiographic measurements.

METHODS

Clinical palpatory and lateral radiographic measurements of the navicular bone were obtained in weightbearing and nonweightbearing positions. A small metal ball was attached with an adhesive over the structure to mark the palpated landmark on the navicular bone. The metal ball provided the standard reference point for both the clinical measure and the radiographic measure. The distance between the surface upon which the subjects' feet rested and the metal ball were recorded in millimeters (mm). Comparisons of the clinical palpatory measurements to the radiograph measurements were then assessed

for accuracy in nonweightbearing and weightbearing positions. Linear regression was run along with calculation of 95% confidence intervals. A Brand Altman plot was applied to look for trends in the data of tests that produce similar results.

RESULTS

Of the 52 subjects measured radiographically, three showed an increase in navicular height, three demonstrated no change, and 46 demonstrated a decrease in height from nonweightbearing to weightbearing positioning. The mean value of the palpated nonweightbearing group was 46 mm, while the radiographically derived nonweightbearing mean value was 47 mm. The palpated mean nonweightbearing measure was 42 mm and the radiographically derived average was 43 mm. The *t* test value for the weightbearing data was 0.194, and was 0.614 for the nonweightbearing data ($p > .05$ for both).

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DISCUSSION

Proper identification and application of orthotic intervention in patients with pes planus could prevent injury and improve performance within the kinetic chain of the spine and pelvis. The often-cited NDT has been both praised and criticized. A thorough search of the literature failed to uncover any studies documenting the accuracy of the measure. This study compared the navicular position in nonweightbearing and weightbearing conditions, as advocated by Foot Levelers, Inc. These values were compared to the more accurate values produced by radiography. The paired *t* test and other statistical tests showed that there was no significant statistical difference between the values

derived by palpation and from radiographs. This suggests that the clinically derived (palpatory) measure of navicular bone position was as accurate as the more reliable radiographic assessment.

CONCLUSION

This study suggests that the PSI card is an adequate tool to record navicular position, as advocated by Foot Levelers, Inc. The ability of the NDT to reflect navicular position accurately was verified by comparison to the currently accepted procedure, X-ray analysis. The PSI developed by Foot Levelers, Inc. is a simple, reliable test for navicular position.