Intra-rater & Inter-rater Reliability in 2nd Year DPT Students Performing The Navicular Drop Test

Kirsten Buchanan PhD, PT, ATC, Nick Allard, SPT, David Buchan, SPT, Mike Curtin, SPT, Andrew DiBartolo ATC, SPT
University of New England, Portland, Maine

INTRODUCTION

• The Navicular Drop Test (NDT) is used as a clinical measure of mid-foot pronation.
• Objective measurements are rooted in the trust of the tool. When utilizing the NDT, the tool is the practicing clinician.
• Research has revealed that experienced clinicians have good-excellent intra- and inter-rater reliability when measuring navicular drop (ND).
• Current data reports ~25,000 practicing US PTs have < 3 years experience.
• There is limited research exploring the intra- and inter-rater reliability of less experienced DPTs when performing the NDT.

PURPOSE

• To determine the intra- and inter-rater reliability of three 2nd year DPT students.

METHODS

• Three 2nd year DPT students (testers) performed two sets of three trials assessing left and right navicular drop (L/RND) on a random sample of female basketball athletes (age 16± 1.1).
• Foot templates were utilized to minimize each subject’s foot placement variability. (Figure 1)
• ND was measured from sub-talar joint neutral to single limb standing relaxed position utilizing a modified Brody protocol. (Figure 2)
• Testers designated as Brown, Green, and Blue were blinded to all results.
• The instrumentation used to collect data in standard millimeter measurements was the Tacklife DC01 Digital Caliper® (Shenzhen, Guangdong, China). ICC statistical analysis was performed utilizing SPSS 21 software.

RESULTS

<table>
<thead>
<tr>
<th>2-way Inter-rater Reliability</th>
<th>Right Navicular Drop ICC (p)</th>
<th>Left Navicular Drop ICC (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown vs Blue</td>
<td>0.91 (p=0.60)</td>
<td>0.60 (p=0.23)</td>
</tr>
<tr>
<td>Green vs Brown</td>
<td>0.94 (p=0.01) *</td>
<td>0.63 (p=0.09)</td>
</tr>
<tr>
<td>Blue vs Green</td>
<td>0.95 (p=0.01) *</td>
<td>0.98 (p=0.01) *</td>
</tr>
</tbody>
</table>

DISCUSSION

• Good-excellent intra- and inter-rater reliability was determined for 2nd year DPT student testers.
• Outcomes were consistent with experienced clinicians, despite a low sample size.
• The variance in data could be due to inconsistent subject performance.

CONCLUSIONS

• Our findings suggest 2nd year DPT students are prepared to administer the NDT.
• Future research may consider investigating the role of subject leg dominance when assessing reliability.

ACKNOWLEDGEMENTS

Maine Girls Academy, Jim Cavanaugh, PT, PhD

REFERENCES

1. Physical Therapy Workforce Data. APTA. http://www.apta.org/WorkforceData

Figure 1: Foot Template Visual

Figure 2: NDT position visual

Figure 3: Intra-rater (ICC) * Indicating Significance

Figure 4: Three Way Inter-rater Reliability (ICC) * Indicating Significance