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Jessica White
University of Dayton

Anna Rushing
University of Dayton

Katie Durisek
University of Dayton

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Recommended Citation

White, Jessica; Rushing, Anna; and Durisek, Katie, "Reliability of the Arch Height Index Tool as a Foot Measure in Children Ages 1-7 Years" (2020). *University of Dayton Doctor of Physical Therapy Annual Research Symposium*. 3.

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Reliability of the Arch Height Index Tool as a Foot Measure in Children Ages 1-7 Years

*Poster presented at the Combined Sections Meeting
of the American Physical Therapy Association, Denver, CO, February 2020.*

AUTHORS

Jessica White, SPT, University of Dayton
Anna Rushing, SPT, University of Dayton
Katie Durisek, SPT, University of Dayton

ADVISORS

Trisha A. Renner, PT, DPT, University of Dayton
Betsy Donahoe-Fillmore, PT, PhD, University of Dayton

ABSTRACT

Background/Purpose: An objective and reliable measure is needed to track longitudinal changes in the young child's foot. The Arch Height Index (AHI) tool measures the arch height of a foot. There is one study investigating the reliability of the AHI tool in children ages 6-12 years. Currently, no studies have determined the reliability of the AHI tool in children younger than 6 years. The purpose of this study was to determine the intra-rater and inter-rater reliability of the AHI tool in daycare, preschool and early school-aged children as an objective foot measure.

Methods: Thirty-two children (13 males, 19 females), ages 1-7 years, (mean 4.75 years) were included. Two age groups were utilized for data analysis: school-age group (n=15) and preschool/daycare group (n=17). Two investigators, each completed two trials measuring foot length, truncated foot length, and height of the dorsum of the foot at 50% total foot length with the AHI tool for each foot in sitting and standing. AHI was calculated by dividing height of the dorsum of the foot at 50% of foot length by truncated foot length.

Results: A two-way random effect intraclass correlation coefficient (ICC) with absolute agreement and 95% CI was utilized. Intra-rater and inter-rater reliability each had an ICC ≥ 0.804 . Reliability statistics were repeated with data in two age groups. Inter and intra-rater reliability in sitting and standing had an ICC ≥ 0.706 and ICC ≥ 0.75 , respectively.

Conclusion: The AHI tool was found to have good to excellent inter and intra-rater reliability in ambulatory children ages 1-7 years in sitting and standing. With the data split into two age groups, the AHI tool has moderate to good inter and intra-rater reliability in sitting and standing, respectively.

Clinical relevance: The AHI tool is a reliable foot measure that can be utilized in young children ages 1-7. More research is needed to determine the reliability of the AHI tool with involved patient populations.