The Departments of Physical and Occupational Therapy present

Rehabilitation Science Dissertation Defense

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Final Dissertation Defense

THE EFFICACY OF COMPUTERIZED VISUAL SCANNING TRAINING TOOLS IN VISION REHABILITATION FOLLOWING ACQUIRED BRAIN INJURY

Various neurological conditions, including acquired brain injuries, can cause visual scanning deficits, which disrupt the ability to gather and interpret visual information. Computerized training tools, such as light boards, are utilized to enhance functional vision and occupational performance. The Dynavision (D2) is a well-established visuomotor training tool primarily utilized to address visual field and visual scanning deficits. The Bioness Integrated Therapy System (BITS) is a touchscreen-based rehabilitation tool designed to assess and enhance vision, motor skills, cognition, and balance. To our knowledge, normative data for BITS visual scanning programs have not been established. We conducted a scoping review to identify and summarize computerized training tools used to address visual field and visual scanning deficits. It confirmed that these tools may be a viable option for screening and compensating for visual field and visual scanning deficits. Overall, we found limited evidence on visual scanning training tools, especially in the context of occupational therapy practice. We then conducted a descriptive study to provide preliminary normative data for BITS user-paced and time-paced visual scanning programs among 40 young adults (aged 19–29 years) and 40 middle-aged adults (aged 50–59 years). Participants were randomly assigned to one of two age categories and completed four sets of both programs. Accuracy, reaction time, and number of hits were collected following each actual trial. We established preliminary normative data for accuracy, reaction time, and number of hits for each condition. Reaction time and number of hits were the most sensitive metrics in assessing and addressing scanning deficits.
To further validate the use of BITS, we compared the standardized reaction times of BITS user-paced and time-paced programs to Dynavision modes A and B among the 80 participants. Participant reaction times for user-paced and time-paced programs were comparable to their reaction times for modes A and B. The analysis within each group showed no significant main effect for instrument, program/mode, or central fixation. These findings were supported by equivalence and Bland Altman analyses. Additionally, our findings showed high reliability in reaction time scores between BITS and Dynavision (ICC ≥ 0.713, $p < 0.001$).

UAB The University of Alabama at Birmingham

School of Health Professions

EVENT DETAILS

Free to UAB students, faculty and clinicians.

DATE/TIME

Monday, October 6, 2025

10:30am-11:30am

LOCATION

Zoom
https://uab.zoom.us/j/86049219085

CONTACT

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For more information about the Rehabilitation Science Program, please check out our website: uab.edu/shp/rehabsci