



Increasing Functional Task Performance in Adults with Low Vision

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SUMMARY OF BEST EVIDENCE

Nau, Pintar, Arnoldussen, & Fisher, 2015

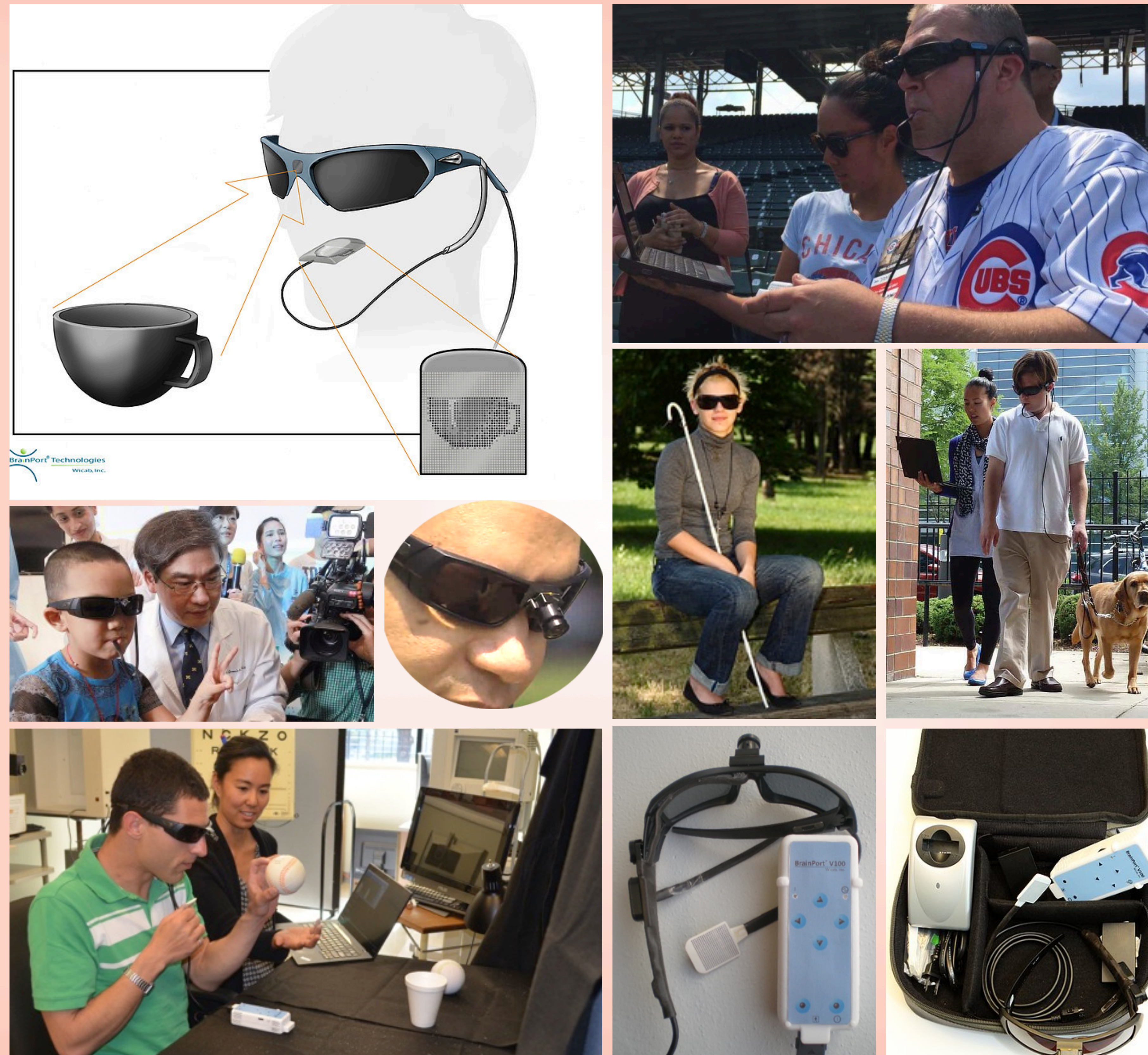
- The purpose of the study was to determine the effectiveness of a TDU on performance of selected functional tasks.
- Participants included 17 adults with bilateral visual acuity of light perception or worse.
- Functional task performance was measured for object identification and word identification tasks.
- Participants received device training from an optometrist and an occupational therapist that authored the study. Participants all received the same training protocol in the same controlled laboratory setting.
- Participants were tested at baseline, after 10 hours of device training, and again at 3-month, 6-month, 9-month and 12-month time periods. After device training, participants were required to use the TDU for at least 300 minutes/month in their everyday environments.
- Without training, participants were not able to complete object identification or word identification tasks.
- After 12 months using the TDU, participants were able to successfully identify a range of 5-19 objects correctly in a span of 15-20 trials as early as one week after training. Participants were able to read an average of 1.5 of 10 words presented with a range of 0-10 correct.
- All participants improved in both object recognition and word identification tasks after device training.

Grant, Spencer, Arnoldussen, Hogle, Nau, Szlyk, Nussdorf, Fletcher, Gordon, & Seiple, 2016

- The purpose of the study was to assess the performance of functional tasks using a TDU.
- Participants included 57 adults with little to no light perception bilaterally.
- Functional task performance was measured for object recognition, orientation and mobility (O&M) tasks, and word identification tasks.
- Participants received 10 hours of device training with an experienced device trainer. All participants followed the same training protocol in the same controlled laboratory setting.
- Participants were tested at baseline, immediately after 10 hours of device training, and again at 3-month, 6-month, 9-month and 12-month time periods. After device training, participants were required to use the TDU for at least 300 minutes/month in their everyday environments.
- After 12 months, 91.2% of participants completed object recognition tasks above chance level and 57.9% of participants successfully completed O&M tasks above chance level, showing statistical significance for use of the TDU.
- 57.9% of participants performed the word identification task above chance level, but these results did not show statistical significance.

FOCUSSED CLINICAL QUESTION

Do tactile vision substitution systems, specifically tongue display units (TDUs) significantly improve functional task performance for adults with bilateral low vision of light perception or worse?



CONCLUSIONS

- At baseline without training, participants were unable to complete the three functional tasks selected within these studies.
- Results from both studies demonstrated that with training, use of the TDU improved task performance of object recognition, O&M tasks, and word identification.
- Functional task performance improved in all 3 outcome measures. Use of the TDU resulted in statistically significant improvements in functional task performance of both object recognition and O&M tasks.
- Performance improved immediately after training, demonstrating that with skilled training TDU skills can be learned within a 10-hour period.
- More practice was required to identify letters and words, especially for participants with congenital blindness as they had only been exposed to braille before the study.
- These studies are significant to occupational therapy as they highlight the need for skilled intervention to train participants how to successfully use a new assistive device to increase their occupational participation.
- Future studies should apply interventions to larger groups of participants from the greater low vision community in order to generalize results from the studies appraised in this CAT.

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CLINICAL BOTTOM LINE

There is sufficient evidence to state that TDUs can significantly improve occupational performance for adults with bilateral low vision with visual acuity of light perception or less after skilled training.