Increasing Functional Task Performance in Adults with Low Vision

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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.

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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?

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.

REFERENCES