**Supplemental Table.** Cognitive Training Exercises

***BrainHQ – Posit Science***

|  |  |  |
| --- | --- | --- |
| **Game** | **Description** | **Links** |
| Divided Attention | In short timeframe, users are quickly instructed to determine whether two shapes are similar in characteristics (e.g., color, shape). As the user improves, the shape images begin to flash more quickly, and decisions need to be made faster. Tests attention, processing speed | <https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/attention/divided-attention> |
| Double Decision | Using peripheral vision, users are instructed to simultaneously determine where road signs appear in relation to cars. As the game gets harder, decision time decreases, and cars begin to change in character and move further away from road signs. Tests attention, processing speed. | <https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/attention/double-decision> |
| Card Shark | Playing cards are presented one at a time, and users are asked if the present card matches the same card “n” steps back. As users improve, they will be asked if the current card matches a card further back in the sequence; akin to an “n-back” working memory test. | <https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/intelligence/card-shark> |
| Juggle Factor | Users are instructed to remember the sequence in which various circles are numbered. As the game gets harder, the circles move around sporadically, and the number of circles added to the game increases. Tests working memory. | <https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/intelligence/juggle-factor> |
| Eye for Detail | A series butterflies appear and quickly disappear on the computer screen, and users are instructed to remember their location. As the user improves, the speed with which butterflies appear and disappear increases. Tests processing speed. | <https://www.brainhq.com/why-brainhq/about-the-brainhq-exercises/brainspeed/eye-detail> |

The BrainHQ training platform has been successfully used across diverse patient populations, demonstrating improvements in cognition and functional outcomes to varying degrees in older participants,1 patients with Mild Cognitive Impairment,2 stroke patients,3 and heart failure patients.4 The level of difficulty of each test is automatically titrated or adjusted, depending on the individual participant’s performance, with test difficulty increasing as user performance improves. Participants accessed the training software platform via home internet connection, and unblinded study team members were able to login daily to confirm daily training completion and scoring.

**Supplemental References**

1. Rebok GW, Ball K, Guey LT, et al. Ten-year effects of the advanced cognitive training for independent and vital elderly cognitive training trial on cognition and everyday functioning in older adults. *J Am Geriatr Soc* 2014;62: 16-24.

2. Lin F, Heffner KL, Ren P, et al. Cognitive and neural effects of vision-based speed-of-processing training in older adults with amnestic mild cognitive impairment: a pilot study. *J Am Geriatr Soc* 2016;64: 1293-8.

3. Degutis JM, Van Vleet TM. Tonic and phasic alertness training: a novel behavioral therapy to improve spatial and non-spatial attention in patients with hemispatial neglect. *Front Hum Neurosci* 2010;4.

4. Athilingam P, Edwards JD, Valdes EG, et al. Computerized auditory cognitive training to improve cognition and functional outcomes in patients with heart failure: results of a pilot study. *Heart Lung* 2015;44: 120-8.