

# Auditory Exercises Improved Memory in Seniors

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SAN FRANCISCO — An auditory training program designed to improve brain plasticity bestowed the side benefit of improved memory in a randomized, controlled, double-blind trial in 468 adults older than 65 years with normal cognition.

The study is one of the first to show generalized benefits—beyond improvements in the skills trained directly—from

an intervention aiming to improve cognition or memory, Elizabeth M. Zelinski, Ph.D., and her associates reported in a poster presentation at the annual meeting of the Gerontological Society of America.

They asked the 232 participants in the intervention group to spend an hour a day, 5 days a week for 10 weeks doing six listening exercises meant to increase the speed and accuracy of aural information processing and the production of neuromodulators associated with learning and memory.

The 236 participants in the control group were asked to spend the same amount of time using a DVD-based educational training program on a computer and taking written quizzes that probed memory and content comprehension. The control activities were modeled on physicians' usual treatments for memory complaints and were matched for novelty level and intensity to the study intervention.

At the end of the study, people in the intervention group were significantly more

likely to say that they perceived improvements in their everyday cognitive function; objective measures supported their reports in intention-to-treat analyses of the results, said Dr. Zelinski of the University of Southern California, Los Angeles. She receives per diem honoraria from the company that markets the brain fitness program, Posit Science Corp., which also funded the study.

Providers who were blinded to randomization performed neuropsychological evaluations to measure the results. Scores in both groups improved on most measures, but they improved significantly more in the intervention group.

For the primary outcome, scores in the intervention group on the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) global auditory



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DR. ZELINSKI

memory score improved significantly from 95.4 to 99.2, compared with a change from 95.6 to 98.3 in the control group, Dr. Zelinski said. The RBANS global auditory memory score was derived from subtests on list learning, story memory, digit span forward, delayed free list recall, delayed list recognition, and delayed free story recall.

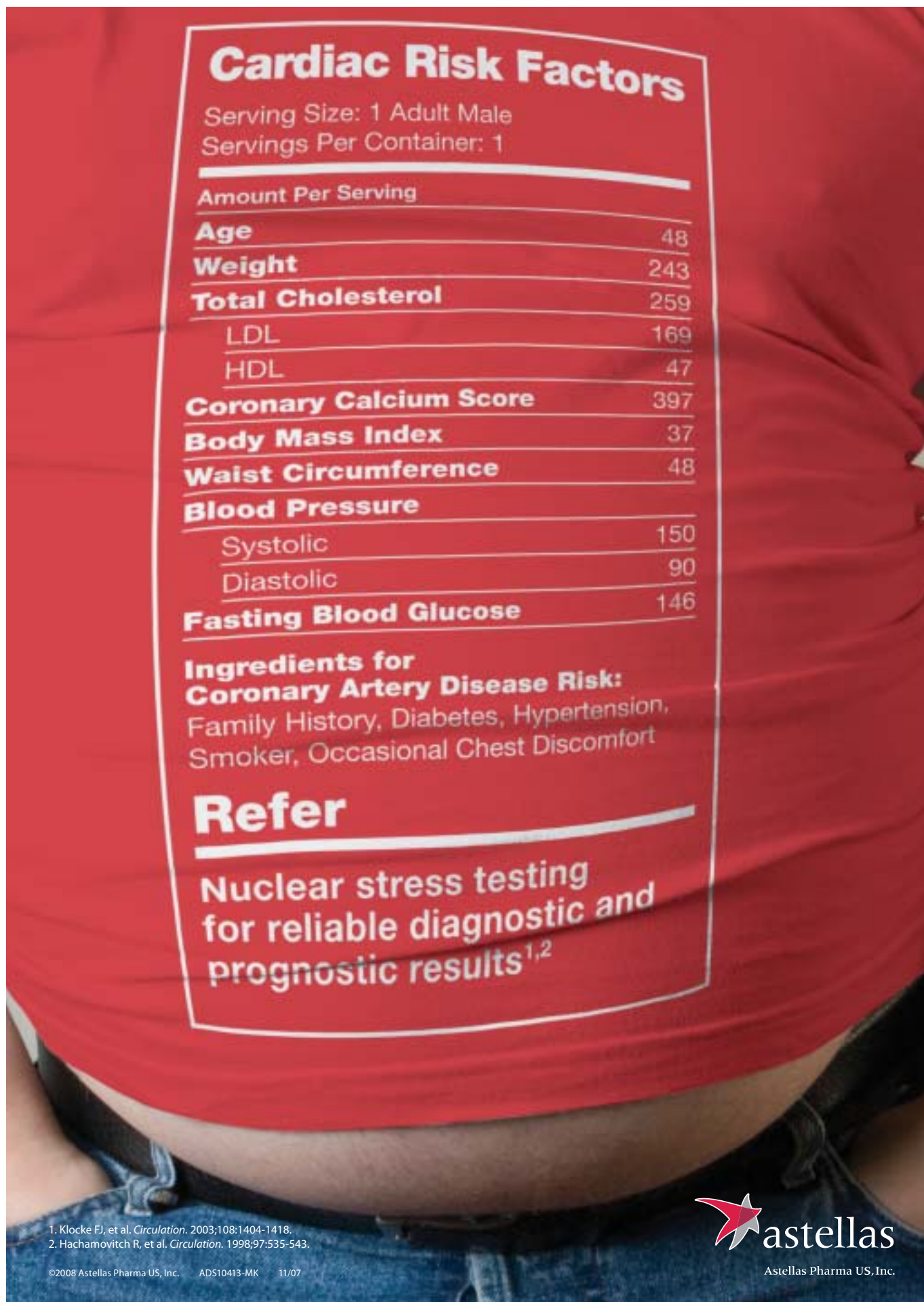
Secondary outcome measures included the Rey Auditory Verbal Learning Test (RAVLT), the Wechsler Memory Scale (WMS-III), and the Rivermead Behavioral Memory Test (RBMT). Significantly greater improvements were seen in the intervention group on RAVLT and WMS-III measures, but not on the RBMT. The overall memory composite score increased from 97.1 to 101.4 in the intervention group, which was significantly more than the control group's improvement from 96.9 to 97.9, she said.

Scores on the RAVLT for trials 1-5 increased from 39.3 to 40.6 in the intervention group and declined from 40.1 to 39.2 in the control group. Scores on the RAVLT delayed recall test improved from 6.3 to 6.9 in the intervention group and held steady at 6.6 in the control group.

On the WMS-III, scores on the digit span backward test increased from 7.3 to 7.9 in the intervention group and from 7.1 to 7.3 in the control group. Scores on the WMS-III letter-number sequencing test improved from 9.5 to 10.2 in the intervention group and from 9.4 to 9.5 in the control group.

Participants were older than 65 years, had Mini-Mental State Examination (MMSE) scores greater than 26, and could read 14-point type and hear adequately.

Although many available interventions claim to improve cognition and memory in people with normal age-related cognitive decline, there is little empiric evidence of the efficacy of such interventions. ■



1. Klocke FJ, et al. *Circulation*. 2003;108:1404-1418.  
2. Hachamovitch R, et al. *Circulation*. 1998;97:535-543.