Contrary to the traditional view that progressive, irreversible cognitive decline occurs with age, recent research shows that it is neither universal nor inevitable. While aging is inevitable, cognitive decline is not. Indeed, recent evidence shows that the human brain retains a substantial amount of plasticity, or ability to change in response to experience. One basic component of cognition that changes the most with aging is working memory (WM). To account for age-related changes in WM processing, the Compensation-Related Utilization of Neural Circuits Hypothesis (CRUNCH) model proposes that older adults recruit more neural resources at lower task loads than younger adults to maintain performance proficiency, leaving no resources for higher task loads, and thus leading to decrements in behavioral performance. The present report quantitatively supported the CRUNCH predictions in behavioral performance and the effect of training. Forty-two older adults, ranging in age from 55 to 89, participated in 3 sessions of a Sternberg WM task (in which the task load was systematically manipulated) while brain activity was recorded. Behavioral results supported the CRUNCH model in the oldest adults for the first two sessions, but the age by load interaction disappeared after three sessions. Further analysis showed significant improvement across sessions for the oldest adults at the higher loads. This suggested that with only three sessions of training, the oldest adults improved their cognitive performance. The present findings have implications for simple lifestyle changes in older adults to lead cognitively enriched lives.