

# COGNITIVE PERFORMANCE AFTER MENOPAUSE

The effects of hormone therapy and sleep deprivation

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## ABSTRACT

This study was conducted to evaluate the effect of postmenopausal hormone therapy (HT) on cognitive performance, especially considering the effects of the timing of initiation and treatment duration. Further aims were to examine whether HT modifies performance in a challenging situation caused by sleep deprivation (SD). Several different aspects of cognitive functions were assessed. Attentional functions included attentional preparation, concentration, sustenance, sharing, and suppression of attention, automatic visual processing, verbal attention, and auditory attention. Verbal tests covered conceptual knowledge and semantic memory, working memory, visuo-verbal object naming and memory, and verbal episodic memory. Visuomotor performance, visuoconstructive skill, and visual episodic memory were also examined.

The present study showed that short-term HT (six months) had neither positive nor negative effects on cognitive performance in pre- or postmenopausal women. Thus, the timing of initiation seems to have little effect. Long-term HT had a minor adverse effect on object naming and object memory, but not on any other cognitive functions. In general, however, performances were well maintained at the six-year follow-up in all groups (continuous users, irregular users, and nonusers).

The effect of HT on cognitive performance during prolonged wakefulness was also minor, but adverse. This finding was obtained in the 2-Choice Reaction Time task after only 20 hours of SD. In the simple reaction time and 10-Choice Reaction Time tasks, performance was impaired after 25 hours of continuous wakefulness. However, in more complex attentional tasks, as well as in a variety of other cognitive tests, HT did not modify performance. During SD, cognitive performance deteriorated in both postmenopausal and young women. Although in some simple reaction time measures, the young women were able to maintain their performance speed better than the postmenopausal women, they made more errors, especially in the test of sustaining attention.

According to this study, short-term HT offers neither advantages nor disadvantages for cognitive performance in pre- or postmenopausal women. A minor adverse effect is observed in long-term use and during SD. However, in a wide variety of the cognitive measures, long-term treatment has no effect. Instead, cognitive performance is well-preserved during the six-year follow-up, and thus HT is safe in terms of cognitive performance. HT use does not help to maintain cognitive performance during SD.

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