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2. By: T.J. Balkin, V.M. O'Donnell, G.H. Kamimori, D.P. Redmond, and G.L. Belenky
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SLEEP INERTIA FOLLOWING TRIAZOLAM-INDUCED SLEEP

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ABSTRACT REPRODUCTION FORM

Sleep Inertia Following Triazolam-Induced Sleep

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At hypnotic doses triazolam, a short-acting benzodiazepine, produces performance decrements on a variety of psychomotor tasks. It is typically reported that these performance decrements are reversed after 6 or more hours of triazolam-induced sleep. However, sleep itself also interferes with subsequent performance when testing occurs within 15 min of awakening (sleep inertia effects). The purpose of the present study was to determine whether sleep inertia effects are altered following triazolam-induced sleep.

Subjects were 45 healthy males, age 18-39. They reported to the laboratory at 0800 on Day 1 at which time electrodes were attached for continuous monitoring of EEG, EMG, EOG, and EKG; and training on various performance measures was administered. Subjects were given 3-min addition tests at 1400, 1405, 1410, 1415, 1420, and 1425. After each test, a Stanford Sleepiness Scale (SSS) was given to assess self-rated sleepiness. Subjects were then kept awake until 0800 on Day 2, when they were administered 0.5, 0.25, 0.125 mg triazolam or placebo, using a double blind random assignment procedure. They were allowed to try to sleep from 0800-1400 under non-sleep-conducive conditions (sitting up in a well-lit chamber, with frequent interruptions for blood sampling). Subjects were awakened (if asleep) at 1400 and again administered the addition tests and SSSs. Of the 45 subjects, 24 were asleep within 5 min of testing, and only these were included in the analyses. Speed of calculations (number of problems attempted) was affected by the procedure more than accuracy of calculations. A main effect of Day indicated overall deficits in addition speed on Day 2, $F(1,20) = 10.54$, $p = .004$. A significant Day X Test interaction indicated the presence of sleep inertia effects on addition speed, $F(5,100) = 6.18$, $p = .0001$, and post hoc analyses revealed that performance levels returned to baseline by 20 min post-awakening. Differential Drug effects were indicated by a significant Day X Drug interaction, $F(3,20) = 3.19$, $p = .046$, and post hoc analyses revealed that the number of problems attempted was significantly lower on Day 2 only for the 0.5 mg triazolam group. Analyses of SSS ratings revealed only a main effect of Day, $F(1,19) = 32.16$, $p = .0001$, indicating that subjects rated themselves as sleepier on Day 2. It was concluded that 0.5 mg triazolam exacerbates sleep inertia effects.

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