

National Cancer Institute

At The National Institutes Of Health

This method also stops working after about 3 days as the subjects lose their will to avoid the water. Another method involves computer monitoring of brain waves, complete with automatic mechanized shaking of the cage when the test animal drifts into REM sleep. It has been suggested that acute REM sleep deprivation can improve certain types of depression when depression appears to be related to an imbalance of certain neurotransmitters. Although sleep deprivation in general annoys most of the population, it has repeatedly been shown to alleviate depression, albeit temporarily. More than half the individuals who experience this relief report it to be rendered ineffective after sleeping the following night. Thus, researchers have devised methods such as altering the sleep schedule for a span of days following a REM deprivation period and combining sleep-schedule alterations with pharmacotherapy to prolong this effect.

REM sleep prevails most after birth, and diminishes with age. According to the "ontogenetic hypothesis", REM aids the developing brain by providing the neural stimulation that newborns need to form mature neural connections. Sleep deprivation studies have shown that deprivation early in life can result in behavioral problems, permanent sleep disruption, and decreased brain mass. The strongest evidence for the ontogenetic hypothesis comes from experiments on REM deprivation and the development of the visual system in the lateral geniculate nucleus and primary visual cortex.





Sleep researcher Jerome Siegel has observed that extreme REM deprivation does not significantly interfere with memory. In a study, the dream sleep of an individual who had little or no REM sleep due to a shrapnel injury to the brainstem did not find the individual's memory to be impaired.

Antidepressants, which suppress REM sleep, show no evidence of impairing memory and may improve it. Sleep deprivation experiments on non-human animals can be set up differently than those on humans. The "flower pot" method involves placing a laboratory animal above water on a platform so small that it falls off upon losing muscle tone. The naturally rude awakening which results may elicit changes in the organism which necessarily exceed the simple absence of a sleep phase.