

Science searches for optimal mental performance

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The search for optimum mental performance may lead to a quiet peaceful spot, Yale neuroscientists say.

Researchers at Yale and colleagues have investigated the brain state that gives rise to optimal mental performance—the neurological sweet spot between sleep and counterproductive hyper-arousal. While much is known about brain activity during sleep, waking is marked by many different, but similar, brain states.

Work from the laboratories of neurobiologists Jessica Cardin and David McCormick suggests that increased release of key neurotransmitters acetylcholine and norepinephrine, in both the peripheral and central nervous systems, work to create the optimal state for mental and physical performance. Martin Vinck in the Cardin laboratory, has shown, for instance, that a quick poke to the ribs of a drowsy subject can jolt both the [brain](#) and body simultaneously into an alert phase. Matthew McGinley in the McCormick laboratory has shown that mice running strenuously perform worse on tasks than mice that are rested and relaxed. "For some goals, Tai chi may work better than sprinting," Cardin comments.

Along with colleagues at Baylor School of Medicine, McCormick and Cardin review the state of this field of research Sept. 23 in the journal *Neuron* and in two videos.

Provided by Yale University

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