

Researchers reveal climbing a tree can improve cognitive skills

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Climbing a tree and balancing on a beam can dramatically improve cognitive skills, according to a study recently conducted by researchers in the Department of Psychology at the University of North Florida.

The study, led by Drs. Ross Alloway, a research associate, and Tracy Alloway, an associate professor, is the first to show that proprioceptively dynamic activities, like climbing a tree, done over a short period of time have dramatic working memory benefits. Working Memory, the active processing of information, is linked to performance in a wide variety of contexts from grades to sports.

The results of this research, recently published in *Perceptual and Motor Skills*, suggest working memory improvements can be made in just a couple of hours of these physical exercises. "Improving working memory can have a beneficial effect on so many areas in our life, and it's exciting to see that proprioceptive activities can enhance it in such a short period of time," said Tracy Alloway.

The aim of this study was to see if proprioceptive activities completed over a short period of time can enhance working memory performance. Proprioception, the awareness of body positioning and orientation, is associated with working memory. It was also of interest whether an acute and highly intensive period of exercise would yield working memory gains.

The UNF researchers recruited adults ages 18 to 59 and tested their

working memory. Next, they undertook proprioceptively dynamic activities, designed by the company Movnat, which required proprioception and at least one other element, such as locomotion or route planning.

In the study, such activities included climbing trees, walking and crawling on a beam approximately 3 inches wide, moving while paying attention to posture, running barefoot, navigating over, under and around obstacles, as well as lifting and carrying awkwardly weighted objects. After two hours, participants were tested again, and researchers found that their working memory capacity had increased by 50 percent, a dramatic improvement.

The researchers also tested two control groups. The first was a college class learning new information in a lecture setting to see if learning new information improved working memory. The second was a yoga class to see if static proprioceptive activities were cognitively beneficial. However, neither control group experienced working memory benefits.

Proprioceptively dynamic training may place a greater demand on working memory than either control condition because as environment and terrain changes, the individual recruits working memory to update information to adapt appropriately. Though the yoga control group engaged in proprioceptive activities that required awareness of body position, it was relatively static as they performed the yoga postures in a small space, which didn't allow for locomotion or navigation.

"This research suggests that by doing activities that make us think, we can exercise our brains as well as our bodies," said Ross Alloway. "This research has wide-ranging implications for everyone from kids to adults. By taking a break to do activities that are unpredictable and require us to consciously adapt our movements, we can boost our [working memory](#) to perform better in the classroom and the boardroom."

More information: *Percept Mot Skills*. 2015 Jun;120(3):766-75. Epub 2015 Jun 1. www.ncbi.nlm.nih.gov/pubmed/26029969

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