



### **Physical Activity May Strengthen Children’s Ability to Pay Attention**

Charles Hillman, a professor of kinesiology and community health and the director of the Neurocognitive Kinesiology Laboratory at Illinois, and Darla Castelli, professors of kinesiology and community health, have found that physical activity may increase students' cognitive control -- or ability to pay attention -- and also result in better performance on academic achievement tests.

“The goal of the study was to see if a single acute bout of moderate exercise was beneficial for cognitive function in a period of time afterward,” Hillman said. [i]

For each of three testing criteria, researchers noted a positive outcome linking physical activity, attention and academic achievement. Study participants were 9-year-olds (eight girls, 12 boys) who performed a series of stimulus-discrimination tests known as flanker tasks, to assess their inhibitory control.

“What we found is that following the acute bout of walking, children performed better on the flanker task,” Hillman said. “They had a higher rate of accuracy, especially when the task was more difficult. Along with that behavioral effect, we also found that there were changes in their event-related brain potentials (ERPs) – in these neuroelectric signals that are a covert measure of attentional resource allocation.”

In an effort to see how performance on such tests relates to actual classroom learning, researchers next administered an academic achievement test. The test measured performance in three areas: reading, spelling and math. The researchers noted better test results following exercise. The following should bring smiles to the ace of hard-working teachers concerned about reading achievement and scores.

“When we assessed it, the effect was largest in reading comprehension,” Hillman said. In fact, he said, “If you go by the guidelines set forth by the Wide Range Achievement Test, the increase in reading comprehension following exercise equated to approximately a full grade level.

Given the preliminary study’s positive outcomes on the flanker task, ERP data and academic testing, study co-author Darla Castelli believes these early findings could be used to inform useful curricular changes. We suggest ExerLearning, particularly the easy-to-implement FootPOWR computer peripheral for school personnel interested in integrating physical activity into the curriculum.

[i] Hillman, C., Castelli, D., Physical Activity May Strengthen Children's Ability To Pay Attention.

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