

Letting kids stand more in the classroom could help them learn

March 14, 2016 6:06am EDT



Stay standing. Texas A&M Health Science Center/Flickr, CC BY-ND

Author



Ranjana Mehta

Assistant Professor of Environmental and Occupational Health, Texas A&M University



Languages

- Français
- English

Study after study has connected inactivity with negative health outcomes, including heart disease, diabetes and hypertension. But most of this attention has been focused on adults in an office environment, and the negative impact of sitting on physical health. Hence, the growing popularity of standing desks in offices.

Moving more is good for our bodies. Over the past few years many researchers have begun evaluating the use of standing-height desks (allowing students to sit on a stool or stand at will) instead of the more traditional seated desks in school classrooms. Results have been promising, but until now, researchers have typically focused on utilizing standing desks as a way to combat sedentary behavior.

While studies shows that standing desks can burn calories, anecdotal evidence from teachers suggests that students also focus more and behave better while using standing desks.

But is there anything to these anecdotal observations? Our team at the Texas A&M Ergonomics Center decided to investigate whether standing desks had neurocognitive benefits for students. It turns out that letting kids move in the classroom helps boost attention and focus.



Standing desks let kids move more. Your Milbura/Flickr, CC BY

Standing desks in schools help kids burn calories

My colleague, Dr. Mark Benden, first looked at classroom movement as a way to deal with the growing number of obese children. In the past three decades, childhood obesity rates have quadrupled, particularly in adolescents aged 12-19 years.

Benden found that students assigned to classrooms equipped with standing desks that allow the students to have the option to stand or sit on a stool, burned 15 to 25 percent more calories than those assigned to traditional seated classrooms.

While burning calories is certainly important, the question at hand is whether standing desks improve learning.

Standing helps students stay engaged

In a study of nearly 300 children in second through fourth grade over the course of a school year, Benden and his team found that kids in classrooms with standing desks exhibited 12 percent greater “on task” engagement when compared to kids in classrooms with the traditional seated desks.

Engagement was measured both during fall and spring by looking at behaviors such as answering questions, raising a hand or participating in active discussion. However, we aren’t sure if standing height desks were behind the increase in classroom engagement. For instance, the way desks are arranged in a classroom and how well teachers engage the students can also influence classroom engagement.

Thus, Dr. Benden and I set out to explore the benefits of standing desks on basic cognitive tasks such as reaction time, response inhibition, attention, memory and cognitive flexibility.

Together, these abilities are lumped as executive function. Figuring out how well someone's executive function is working is a proxy for measuring goal-directed behavior that is integral cognitive development.



Maybe standing will help? Boy in class via www.shutterstock.com.

Freedom to sit or stand makes more attentive students

We studied 34 high school freshman who used standing desks at two points during the school year. Desks were installed in the classrooms during the fall so we could compare the same kids before they got the standing desks and after. We wanted to see whether continued use of standing desks affected executive functions.

Executive functions are cognitive skills we all use to analyze tasks, break them into steps and keep them in mind until we get them done. These skills are directly related to the development of many academic skills that allow students to manage their time effectively, memorize facts, understand what they read, solve multistep problems and organize their thoughts in writing.

We gave students a series of computerized tests to assess their executive function, which they took at standing desks in a computer lab. This allowed us to isolate the effects of the standing desk from classroom configuration and other classroom variables. Because executive functions are largely regulated in the frontal brain region, students wore biosensors on their foreheads while taking the tests. That way, our portable brain imaging device (functional near infrared spectroscopy) could track changes in frontal brain function.

Our test results indicated that continued use of standing desks was associated with significant performance improvements in executive function and working memory capabilities. Changes in

corresponding brain activation patterns were also observed.

This is the first study to objectively examine students' cognitive responses while using standing desks and provide a neuropsychological basis of the improvements observed. Moreover, by testing basic cognitive functions, we got to measure the impact of standing desks on the building blocks of child behavior in classrooms.

Interestingly, our research showed the use of standing desks improved neurocognitive function by seven percent to 14 percent, which is consistent with results from previous studies on school-based exercise programs.



Kindergarten students sing a song inside a classroom at Penjaringan district in Jakarta. Beawiharta/Reuters

We all need to move more

We now plan to expand this research to multiple schools and to study more children across different age groups, and over several years. Further research could encourage policymakers, public health professionals and school administrators to consider simple and sustainable changes in classrooms to increase physical activity and enhance cognitive development and educational outcomes.

Let's face it – society as a whole used to be more active. Standing desks allow for children to stand or sit at will and these transitions facilitate movement. If we can start slowly changing behaviors in children (and allow them to wiggle, fidget and move during the school day), movement could become the norm.

After all science says we think better when we move.