Movement in the classroom a game changer for students with ADHD: Q&A with education expert

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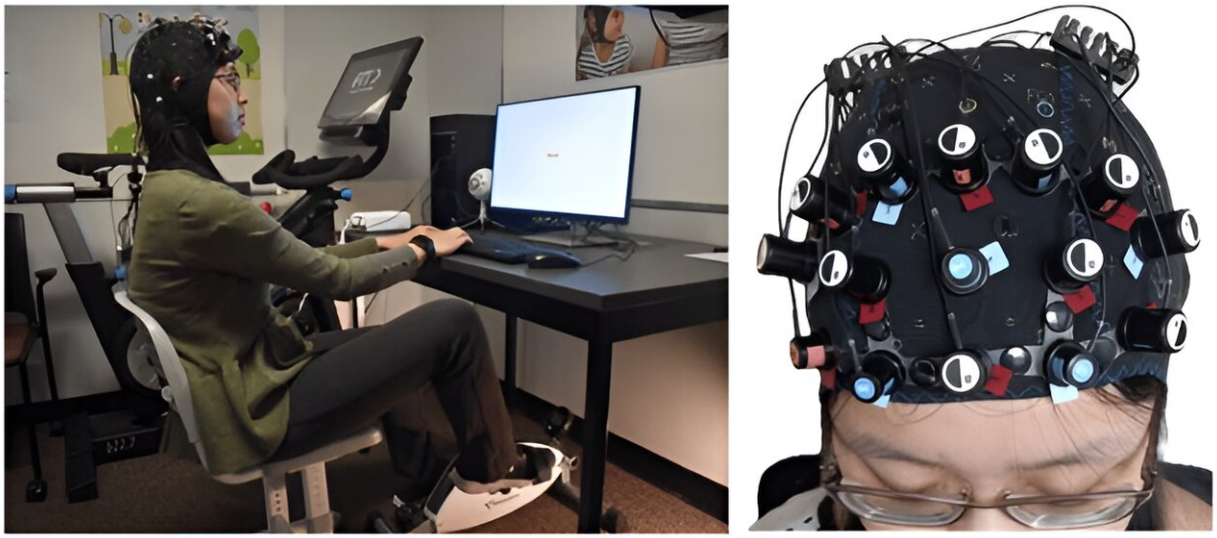

A depiction of the study's experimental set up. Credit: University of Western Ontario

A little bit of movement can go a long way in the classroom for children with attention-deficit hyperactivity disorder (ADHD).

That's according to research from Western's Faculty of Education, which explored whether children with ADHD would perform better on

classroom-related tasks while engaging in movement. The study is published in the journal *Brain Sciences*.

To test the theory, researchers had participants perform attention-demanding tasks while pedaling on a desk cycle—a modified stationary bike that allows users to pedal while working at a desk—or remaining stationary before comparing the results.

To see how it would impact their brain, participants wore specialized caps that use functional near-infrared spectroscopy (fNIRS), an optical brain monitoring technique that relies on near-infrared light to measure blood flow changes in the brain.

Not only did children with ADHD perform better when pedaling on the desk cycle, but they also reported an increase in self-efficacy. As for how movement impacted their brains, fNIRS results showed the pedaling group had more blood flow to their prefrontal cortex, the portion of the brain that's associated with focusing attention, problem solving and many academic-related skills.

To learn what the findings mean for families and teachers, Western News spoke to the study's senior author, Barbara Fenesi, an education professor, Western's Canada Research Chair in The Science of Learning and supervisor of The Working to Enhance Brain and Body Research (WEBB) Lab.

Western News: How did this study come together?

Barbara Fenesi: I came across research looking at the role of hyperactivity in ADHD, which encompasses excessive movement in your body, so something like fidgeting. For kids with ADHD, hyperactivity might be something helpful that they do, based on how their brain structures differ from kids without ADHD.

This research gave kids with ADHD attention-demanding tasks and found that if these kids were allowed to fidget while doing these tasks, they performed better than those who were asked to remain still.

When it came to our study, the underlying assumption was that hyperactivity might serve to enhance the blood flow going to the prefrontal cortex of a child with ADHD which could help them pay better attention. Prior research had only inferred this link due to improved performance on attention-demanding tasks, so we wanted to add some neuroimaging to provide a proof of concept.

Were you surprised by the results?

We weren't totally surprised given the previous research. Our results really confirm why children with ADHD benefit from engaging in movement during cognitive performance. We now see that movement helps promote blood flow within this area of the brain that is otherwise typically underaroused and underactive in those with ADHD.

This is something we see with ADHD medication. One of its effects is it promotes blood flow to parts of the brain. In turn, this reduces hyperactive behavior because children taking the medication no longer need it, as they have a medicinal source activating their brain.

Why use desk cycles to test out this theory?

The idea was to use equipment that can also be used in a classroom.

While having one at every desk might not be feasible, teachers could still benefit from having a few desk cycles available for their class. If a teacher notices a student with ADHD struggling to pay attention, then a desk cycle could be provided to help that student get their wiggles out.

This is an initial study. The next step is to take this information and see how it works in a real classroom. Lab-based studies are very controlled, and classrooms have a lot more going on. What we don't want is for a desk cycle to be an added distraction or drawback.

If it doesn't work, we'd also like to explore some alternatives. That could include a standing desk or something as simple as allowing students with ADHD to do the fidgeting that we've historically characterized as "bad."

What tips would you offer for families raising children with ADHD?

I wouldn't say desk cycles are necessary, but consider letting your kid run around for a little bit before starting their homework, let them do their homework standing up or maybe let them sit on a yoga ball they can bounce on.

The crux of my research is that children in general, but especially those with ADHD, need more access to physical activity. It can really function as a way to get them to pay attention, release the energy that they might have and to get the blood flowing up to parts of the brain that are essential for performing attention-demanding tasks.

What else would you want teachers or families to take away from this study?

The research shows that we need a cultural reframing of how we look at children and adults with ADHD.

We need to recognize some of the things they do are not inherently bad, but rather it's the context that has made those habits "bad." In classrooms, the context is that children have to be seated for six to eight

hours a day. Everybody's different, so some kids can handle that better than others.

It's important to instead view the symptoms of ADHD as functional. These kids are really smart, and their bodies are highly intelligent in making them do things that will help them pay attention better.

More information: Beverly-Ann Hoy et al, Hyperactivity in ADHD: Friend or Foe?, *Brain Sciences* (2024). DOI: 10.3390/brainsci14070719

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