

Math + good posture = better scores

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Associate Professor of Health Education Richard Harvey leads SF State students in a math and posture experiment, Credit: San Francisco State University

If you've ever felt like a deer in the headlights before taking a math test or speaking before a large group of people, you could benefit from a simple change in posture. As part of a new study by researchers at San Francisco State University, 125 college students were tested to see how well they could perform simple math—subtracting 7 from 843 sequentially for 15 seconds—while either slumped over or sitting up straight with shoulders back and relaxed. Fifty-six percent of the students reported finding it easier to perform the math in the upright position.

"For people who are anxious about math, posture makes a giant difference," said Professor of Health Education Erik Peper. "The slumped-over position shuts them down and their brains do not work as well. They cannot think as clearly." Before the study began, students filled out an anonymous questionnaire asking them to rate their anxiety levels while taking exams and performing math; they also described any physical symptoms of stress they experienced during test taking.

According to co-author Associate Professor of Health Education Richard Harvey, slumping over is

a defensive posture that can trigger old negative memories in the body and brain. While the students without math anxiety did not report as great a benefit from better posture, they did find that doing math while slumped over was somewhat more difficult.

Peper and Harvey say these findings about body position can help people prepare for many different types of performance under stress, not just math tests. Athletes, musicians and public speakers can all benefit from better posture prior to and during their performance. "You have a choice," said Peper. "It's about using an empowered position to optimize your focus."

That empowerment could be particularly helpful to students facing the challenge called "stereotype threat," said Lauren Mason, one of the paper's authors and a recent SF State graduate. A first-generation college [student](#), Mason can identify with such students, who experience fear and insecurity because of a belief by others—which can become internalized—that they won't do as well at math. Mason said she has benefitted personally from using a more empowered posture before taking difficult tests, including math. She believes that adopting a more confident [posture](#) could help other first-generation students as well as women entering science and math, who often battle [stereotype threat](#), too.

"I always felt insecure about my math abilities even though I excelled at other subjects," said Mason, who helped design the experiment in the study. "You build a relationship with [\[math\]](#) so early—as early as elementary school. You can carry that negative self-talk throughout your life, impacting your perception of yourself."

Mason said the study results demonstrate a simple way to improve many aspects of life, especially when stress is involved: "The way we carry ourselves and interact in space influences not only how others perceive us but also how we perceive ourselves."

More information: Erik Peper et al, Do Better in Math: How Your Body Posture May Change Stereotype Threat Response, *NeuroRegulation* (2018). DOI: [10.15540/nr.5.2.67](https://doi.org/10.15540/nr.5.2.67)

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