



Movement Break Research Articles

- [GoNoodle Movement Breaks in the Classroom](#)
- [Summary of 2015 research showing activity breaks increase students' classroom behavior.](#)
- [Article about brain and exercise. Recommends a total of 45-60 minutes per day at 55-65% of maximum heart rate.](#)
- [Overview article on the benefits of brain breaks.](#)
- [Shows on-task behavior declined as instructional duration increased from 10 to 30 min.](#)
- [10 minutes of classroom exercise breaks improved on-task behavior in 4th and 5th grade students.](#)
- [Article about 2016 research on off-task behavior in elementary school children. Shows decline after 10 minutes. Also mentions a study showing heavily decorated classrooms hinder learning.](#)
- [Article describing child's attention span from ages 3 to 5.](#)
- [Article about physical movement reducing symptoms of ADHD. Shows kids with ADHD learn better while moving.](#)



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- Research-based article about the science of attention.
- Article about the 1st grade brain and mentions attention span of 6-20 minutes.
- Lin, T., & Kuo, Y. (2013). Exercise benefits brain function: The monoamine connection. Brain Sciences, 3(1), 39-53.
- Lee, S., Lee, C., & Park, J. (2015). Effects of combined exercise on physical fitness and neurotransmitters in children with ADHD: A pilot randomized controlled study. Journal of Physical Therapy Science, 27(9), 2915-2919.
- Matta, M. P., Cevada, T., Sobral Monteiro-Junior, R., Teixeira Guimarães, T., da, C. R., Lattari, E., . . . Camaz Deslandes, A. (2013). Neuroscience of exercise: From neurobiology mechanisms to mental health. Neuropsychobiology, 68(1), 1-14.
- Leibowitz, Akiva & Klin, Yael & F Gruenbaum, Benjamin & Gruenbaum, Shaun & Kuts, Ruslan & Dubilet, Michael & Ohayon, Sharon & Boyko, Matthew & Sheiner, Eyal & Shapira, Yoram & Zlotnik, Alexander. (2012). Effects of strong physical exercise on blood glutamate and its metabolite 2-ketoglutarate levels in healthy volunteers. Acta neurobiologiae experimentalis. 72. 385-96.



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- Young, S. N. (2007). How to increase serotonin in the human brain without drugs. Journal of Psychiatry & Neuroscience: JPN, 32(6), 394–399.
- Reza Shahsavari, Ali & Javad Pourvaghari, Mohammad. (2011). Follow-Up Alterations of Catecholamine Hormones after an Intensive Physical Activity. Biosciences Biotechnology Research Asia. 8. 591-595. 10.13005/bbra/904.
- Anderson, E., & Shivakumar, G. (2013). Effects of Exercise and Physical Activity on Anxiety. Frontiers in Psychiatry, 4, 27.
- Zimmer, P., Stritt, C., Bloch, W., Schmidt, F., Hübner, S., Binnebösel, S., Schenk, A. and Oberste, M. (2016). The effects of different aerobic exercise intensities on serum serotonin concentrations and their association with Stroop task performance: a randomized controlled trial. European Journal of Applied Physiology, 116(10), pp.2025-2034.
- Schuster, Suann. (2011, September). Norepinephrine Vs. Epinephrine.
- How to Increase Dopamine Levels. (n.d.).
- Alban, Deane. (n.d.). How to Balance Norepinephrine Levels Naturally. Be Brain Fit.



Movement Break Research Articles

- [Bergland, Christopher. \(2016, February 28\). Neuroscience Pinpoints Unique Way Exercise Fights Depression. Psychology Today.](#)
- [Movement in the classroom.](#)
- [The impact of physical activity in the classroom.](#)
- [Movement in class isn't a break from learning, it is learning.](#)
- [Benefits of movement in the classroom.](#)
- [Movement breaks.](#)