

# EXERCISE AND LEARNING

## DID YOU KNOW:

Exercise improves brain power?

## Emotional Health

Endorphins are released when we exercise that elevate our mood and ward off stress, a common issue for medical students. Exercise can also boost self esteem!

## Focus

When we exercise, we increase the blood flow to the brain, sharpening our focus. Research shows that even a short brisk walk of 10 minutes can have a significant impact on our ability to focus.

## Productivity

The more we exercise, the more energized we feel, leading to higher production rates. Exercise has also been linked to greater creativity and faster learning.

## Physical Health

Regular exercise is linked to better weight control and lower incidence of negative health conditions and diseases such as diabetes, certain types of cancer, and arthritis. Staying physically healthy is important in medical school in order to perform your best and not fall behind.

## Brain derived neurotrophic factors

Brain-derived neurotrophic factors (BDNFs) are produced when we exercise. BDNFs help support the formation of memories and assist with learning complex topics.



DONALD AND BARBARA  
ZUCKER SCHOOL of MEDICINE  
AT HOFSTRA/NORTHWELL

## Easy ways to work exercise into your day:

- Participate in the Zucker SOM [running club](#)
- Take a stroll around campus during breaks
- Walk and talk with friends while teaching each other concepts

## Exercise aids in executive functioning including

- Concentration
- Impulse Control
- Foresight
- Problem Solving

## Interested in more tips?

Make an appointment with the Office of Academic Success:  
[SomAcademicSuccess@Hofstra.edu](mailto:SomAcademicSuccess@Hofstra.edu)

# RESEARCH THAT SUPPORTS THE BENEFITS OF EXERCISE AND LEARNING

Denham J, Marques FZ, O'Brien BJ, Charchar FJ. Exercise: putting action into our epigenome. Sports Med. 2014 Feb;44(2):189-209.

Griffin ÉW, Mullally S, Foley C, Warmington SA, O'Mara SM, Kelly AM. [Aerobic exercise improves hippocampal function and increases BDNF in the serum of young adult males.](#) Physiol Behav. 2011 Oct 24;104(5):934-41.

Gomez-Pinilla F, Hillman C. [The influence of exercise on cognitive abilities.](#) Compr Physiol. 2013 Jan;3(1):403-28.

Lees C, Hopkins J. [Effect of aerobic exercise on cognition, academic achievement, and psychosocial function in children: a systematic review of randomized control trials.](#) Prev Chronic Dis. 2013 Oct 24;10:E174.

Berchtold NC, Castello N, Cotman CW. [Exercise and time-dependent benefits to learning and memory.](#) Neuroscience. 2010 May 19;167(3):588-97.

Phillips C, Baktir MA, Srivatsan M, Salehi A. [Neuroprotective effects of physical activity on the brain: a closer look at trophic factor signaling.](#) Front Cell Neurosci. 2014 Jun 20;8:170.

Szuhany KL, Bugatti M, Otto MW. [A meta-analytic review of the effects of exercise on brain-derived neurotrophic factor.](#) J Psychiatr Res. 2015 Jan;60:56-64.

van Dongen EV, Kersten IHP, Wagner IC, Morris RGM, Fernández G. [Physical exercise performed four hours after learning improves memory retention and increases hippocampal pattern similarity during retrieval.](#) Curr Biol. 2016 Jul 11;26(13):1722-1727.

van Praag H, Shubert T, Zhao C, Gage FH. [Exercise enhances learning and hippocampal neurogenesis in aged mice.](#) J Neurosci. 2005 Sep 21;25(38):8680-5.