

Public Health

Step Out Your First Step for the New Year Utilizing Physical Activities for Your Health

Editorial Office of *Science Insights**

Editorial Office of *Science Insights*, The BASE, Chapel Hill, NC 27510, USA

*: All correspondence should be sent to: Editorial Office of *Science Insights*.

Author's Contact: Editorial Office, E-mail: editorial.office@bonoi.com

DOI: <https://doi.org/10.15354/si.25.ed501>

Funding: No funding source declared.

COI: The author declares no competing interest.

AI Declaration: The author affirms that artificial intelligence did not contribute to the process of preparing the work.

With so many health benefits, physical activity is a great gift to give to yourself or others in the new year. Regular exercise helps lower the risk of developing chronic conditions including cancer, diabetes, and heart disease. Additionally, it helps maintain a healthy weight, strengthens bones and muscles, and enhances mental health by lowering symptoms of anxiety and despair. People of all ages can benefit from physical activity in terms of their quality of life and cognitive performance. Creating a regular fitness regimen that incorporates a range of exercises, including strength training, cardio, and flexibility training, can have a significant impact on general health. Physical activity continues to be a crucial element in improving longevity and vitality in people, as healthcare professionals support preventive measures to combat disease.

Keywords: Physical Activities; Fitness Regimen; Quality of Life; Cognition; Long-term Well-being

Science Insights, January 31, 2025; Vol. 46, No. 1, pp.1697 -1700.

© 2025 Insights Publisher. All rights reserved.



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the [Creative Commons Attribution-NonCommercial 4.0 License](https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed by the Insights Publisher.

REGULAR physical activity is crucial for the preservation of overall health and well-being (Bushman, 2019). There are numerous advantages to participating in consistent physical, mental, and emotional exercise (Silva et al., 2022). For adults, it is advised that they engage in at least 150 minutes of moderate-intensity aerobic activity per week, in addition to muscle-strengthening activities on two or more days of the week (Gebel & Ding, 2018; O'Donovan et al., 2010). Physical activity should be prioritized for children and adolescents, with a minimum of 60 minutes per day (Armstrong et al., 2018). By integrating physical activity into our daily routines, we can

enhance our cardiovascular health, strengthen our immune system, and decrease our susceptibility to chronic diseases like diabetes, obesity, and heart disease (Kohl et al., 2013).

Cardiovascular health is enhanced by consistent physical activity. Exercise enhances circulation, strengthens the cardiac muscle, and reduces cholesterol and blood pressure (Das, 2004). It also enhances the efficiency of our heart and lungs, enabling us to conduct daily activities with less effort (Lavie et al., 2015). The risk of heart attack, stroke, and other cardiovascular diseases can be mitigated by preserving a robust cardiovascular system (Alibhai & Li, 2024). Furthermore, physical activity can con-

tribute to the enhancement of our mental health by alleviating stress, anxiety, and depression (Thompson et al., 2003). Endorphins, which are referred to as "feel-good" compounds, are released during exercise (Blake, 2012). They are responsible for enhancing our mood and alleviating feelings of pain and discomfort.

In addition, physical activity enhances our immune system, thereby reducing our susceptibility to infection and illness (Portugal et al., 2013). The body's initial line of defense against invading microorganisms is the production of white blood cells, which is enhanced by exercise (Rad Ąk et al., 2007). In addition, it enhances the circulation of lymphatic fluid, which transports immune cells throughout the body (Fitzgerald, 1988). By engaging in consistent physical activity, we can fortify our immune system and mitigate our susceptibility to the transmission of infectious diseases such as the flu, colds, and others (Jee, 2021; Zheng et al., 2015). Furthermore, physical activity can assist in the preservation of a healthy weight and the mitigation of the risk of obesity. Excessive weight gain can be prevented and our body composition can be enhanced by expending calories through exercise (Bouchard et al., 1993; Kohl et al., 2013).

Physical activity is also advantageous for the health of our musculoskeletal system (Hill & Peters, 1998). Exercise enhances our mobility and flexibility, reduces the likelihood of injury, and fortifies our bones, muscles, and joints (Melzer et al., 2004; Rad Ąk et al., 2007). Strength-training exercises can be incorporated into our routine to enhance our balance and coordination, increase bone density, and develop muscle mass (Micheo et al., 2012). Additionally, this is particularly critical as we age, as consistent physical activity can mitigate age-related muscle atrophy and preserve functional independence (Distefano & Goodpaster, 2017). Furthermore, exercise can mitigate the likelihood of falls and fractures, which are prevalent among older individuals (Bullo et al., 2015; Wall et al., 2014).

Regular physical activity is also crucial for the preservation of a sound metabolism (Langhammer et al., 2018). Our metabolic rate is elevated by exercise, which enables us to expend an increased number of calories throughout the day. Our body's capacity to process and utilize nutrients from food can be enhanced by participating in activities that increase our pulse rate and necessitate energy expenditure (Secor, 2008; Segal & Pi - Sunyer, 1986). This can be particularly beneficial when paired

with a nutritious diet, as it can prevent weight gain and encourage weight loss. Furthermore, physical activity can enhance insulin sensitivity and mitigate the likelihood of developing type 2 diabetes (Lewis et al., 2002). In order to prevent and manage diabetes, it is crucial to regulate blood sugar levels, enhance glucose tolerance, and reduce insulin resistance through exercise (Klein et al., 2004; Silva et al., 2024).

Additionally, our cognitive function and mental clarity can be enhanced by incorporating physical activity into our daily regimens. Research has demonstrated that exercise can enhance memory, concentration, and problem-solving abilities, as well as decrease the likelihood of cognitive decline and dementia (Gök ğe et al., 2021; Silva et al., 2024). Exercise promotes the development of new neural connections and nourishes brain cells by increasing blood flow to the brain (Erickson et al., 2011; Vecchio et al., 2018). This has the potential to improve cognitive function and safeguard against cognitive decline associated with aging. Furthermore, physical activity has the potential to alleviate symptoms of ADHD, anxiety, and depression in children, adolescents, and adults (Caponnetto et al., 2021; Erickson et al., 2019; Cass, 2017; Nazlieva et al., 2019; Sanaeifar et al., 2024). Exercise can enhance overall well-being, reduce tension, and improve mood by releasing endorphins and other neurotransmitters.

Physical activity is crucial for our emotional and social well-being, in addition to our physical health (Kita, 2012; Sharma et al., 2006). By releasing endorphins and fostering relaxation, exercise can assist in the reduction of tension, anxiety, and depression (Blake, 2012; Mahindru et al., 2023). It can also enhance our self-esteem and confidence as we accomplish objectives and surmount obstacles through physical activity. Additionally, we can fortify our social connections and establish supportive relationships with others by engaging in team sports and group exercise classes (Adeoya et al., 2021; Pretty et al., 2003; Street et al., 2007). This sense of solidarity and community can enhance our mental and emotional well-being, as well as offer a sense of purpose and belonging.

Therefore, physical activity is indispensable for the preservation of overall health and well-being. Regular exercise can enhance our cardiovascular health, strengthen our immune system, and decrease our susceptibility to chronic diseases, including diabetes, obesity, and heart disease. ■

Received: December 20, 2024 | Revised: December 28, 2024 | Accepted: January 01, 2025

References

- Adeoya, A. A., Adeleye, A. O., & Egawa, S. (2021). Psychological Factors as Predictor of Sport Participation among Japanese and Foreign Students in Sendai, Japan. In IntechOpen eBooks. DOI: <https://doi.org/10.5772/intechopen.99244>
- Alibhai, F. J., & Li, R. (2024). Rejuvenation of the aging heart: molecular determinants and applications. *Canadian Journal of Cardiology*, 40(8), 1394–1411. DOI: <https://doi.org/10.1016/j.cjca.2024.03.004>
- Armstrong, S., Wong, C. A., Perrin, E., Page, S., Sibley, L., & Skinner, A. (2018). Association of physical activity with income, Race/Ethnicity, and sex among adolescents and young adults in the United States. *JAMA Pediatrics*, 172(8), 732. DOI: <https://doi.org/10.1001/jamapediatrics.2018.1273>
- Blake, H. (2012). Physical activity and exercise in the treatment of depression. *Frontiers in Psychiatry*, 3. DOI: <https://doi.org/10.3389/fpsy.2012.00106>
- Bouchard, C., Depres, J., & Tremblay, A. (1993). Exercise and obesity. *Obesity Research*, 1(2), 133–147. DOI: <https://doi.org/10.1002/j.1550-8528.1993.tb00603.x>
- Bullo, V., Bergamin, M., Gobbo, S., Sieverdes, J., Zaccaria, M., Neunhaeuserer, D., & Ermolao, A. (2015). The effects of Pilates exercise training on physical fitness and wellbeing in the elderly: A systematic review for future exercise prescription. *Preventive Medicine*, 75, 1–11. DOI: <https://doi.org/10.1016/j.ypmed.2015.03.002>
- Bushman, B. A. (2019). Physical activity guidelines for Americans. *ACSM's Health & Fitness Journal*, 23(3), 5–9. DOI: <https://doi.org/10.1249/fit.0000000000000472>
- Caponnetto, P., Casu, M., Amato, M., Cocuzza, D., Galofaro, V., La Morella, A., Paladino, S., Pulino, K., Raia, N., Recupero, F., Resina, C., Russo, S., Terranova, L. M., Tiralongo, J., & Vella, M. C. (2021). The effects of physical exercise on mental health: From cognitive improvements to risk of addiction. *International Journal of Environmental Research and Public Health*, 18(24), 13384. DOI: <https://doi.org/10.3390/ijerph182413384>
- Cass, S. P. (2017). Alzheimer's Disease and Exercise: a literature review. *Current Sports Medicine Reports*, 16(1), 19–22. DOI: <https://doi.org/10.1249/jsr.0000000000000332>
- Das, U. N. (2004). Anti-inflammatory nature of exercise. *Nutrition*, 20(3), 323–326. DOI: <https://doi.org/10.1016/j.nut.2003.11.017>
- Distefano, G., & Goodpaster, B. H. (2017). Effects of exercise and aging on skeletal muscle. *Cold Spring Harbor Perspectives in Medicine*, 8(3), a029785. DOI: <https://doi.org/10.1101/cshperspect.a029785>
- Erickson, K. I., Hillman, C., Stillman, C. M., Ballard, R. M., Bloodgood, B., Conroy, D. E., Macko, R., Marquez, D. X., Petruzzello, S. J., & Powell, K. E. (2019). Physical activity, Cognition, and Brain Outcomes: A review of the 2018 Physical Activity Guidelines. *Medicine & Science in Sports & Exercise*, 51(6), 1242–1251. DOI: <https://doi.org/10.1249/mss.0000000000001936>
- Erickson, K. I., Voss, M. W., Prakash, R. S., Basak, C., Szabo, A., Chaddock, L., Kim, J. S., Heo, S., Alves, H., White, S. M., Wojcicki, T. R., Mailey, E., Vieira, V. J., Martin, S. A., Pence, B. D., Woods, J. A., McAuley, E., & Kramer, A. F. (2011). Exercise training increases size of hippocampus and improves memory. *Proceedings of the National Academy of Sciences*, 108(7), 3017–3022. DOI: <https://doi.org/10.1073/pnas.1015950108>
- Fitzgerald, L. (1988). Exercise and the immune system. *Immunology Today*, 9(11), 337–339. DOI: [https://doi.org/10.1016/0167-5699\(88\)91332-1](https://doi.org/10.1016/0167-5699(88)91332-1)
- Gebel, K., & Ding, D. (2018). Walking lowers mortality risk in older US adults. *BMJ Evidence-based Medicine*, 23(5), 187–188. DOI: <https://doi.org/10.1136/bmjebm-2018-110902>
- Gökçe, E., Güneş, E., Arı, F., Hayme, S., & Nalçacı, E. (2021). Comparison of the effects of open- and closed-skill exercise on cognition and peripheral proteins: A cross-sectional study. *PLoS ONE*, 16(6), e0251907. DOI: <https://doi.org/10.1371/journal.pone.0251907>
- Hill, J. O., & Peters, J. C. (1998). Environmental contributions to the obesity epidemic. *Science*, 280(5368), 1371–1374. DOI: <https://doi.org/10.1126/science.280.5368.1371>
- Jee, Y. (2021). Acquired immunity and moderate physical exercise: 5th series of scientific evidence. *Journal of Exercise Rehabilitation*, 17(1), 2–3. DOI: <https://doi.org/10.12965/jer.2142042.021>
- Kita, I. (2012). Behavioral neuroscience of emotion and exercise. *The Journal of Physical Fitness and Sports Medicine*, 1(3), 363–367. DOI: <https://doi.org/10.7600/jpfsm.1.363>
- Klein, S., Sheard, N. F., Pi-Sunyer, X., Daly, A., Wylie-Rosett, J., Kulkarni, K., & Clark, N. G. (2004). Weight Management through Lifestyle Modification for the prevention and Management of Type 2 Diabetes: Rationale and Strategies. *Diabetes Care*, 27(8), 2067–2073. DOI: <https://doi.org/10.2337/diacare.27.8.2067>
- Kohl, H. W., III, Cook, H. D., Environment, C. O. P. a. P. E. I. T. S., & Board, F. a. N. (2013, October 30). Physical activity and physical education: relationship to growth, development, and health. *Educating the Student Body* - NCBI Bookshelf. <https://www.ncbi.nlm.nih.gov/books/NBK201497/>
- Langhammer, B., Bergland, A., & Rydwick, E. (2018). The Importance of Physical Activity Exercise among Older People. *BioMed Research International*, 2018, 1–3. DOI: <https://doi.org/10.1155/2018/7856823>
- Lavie, C. J., Arena, R., Swift, D. L., Johannsen, N. M., Sui, X., Lee, D., Earnest, C. P., Church, T. S., O'Keefe, J. H., Milani, R. V., & Blair, S. N. (2015). Exercise and the cardiovascular system. *Circulation Research*, 117(2), 207–219. DOI: <https://doi.org/10.1161/circresaha.117.305205>
- Lewis, G. F., Carpentier, A., Adeli, K., & Giacca, A. (2002). Disordered fat storage and mobilization in the

- pathogenesis of insulin resistance and type 2 diabetes. *Endocrine Reviews*, 23(2), 201–229. DOI: <https://doi.org/10.1210/edrv.23.2.0461>
- Mahindru, A., Patil, P., & Agrawal, V. (2023). Role of Physical Activity on Mental Health and Well-Being: A review. *Cureus*. DOI: <https://doi.org/10.7759/cureus.33475>
- Melzer, K., Kayser, B., & Pichard, C. (2004). Physical activity: the health benefits outweigh the risks. *Current Opinion in Clinical Nutrition & Metabolic Care*, 7(6), 641–647. DOI: <https://doi.org/10.1097/00075197-200411000-00009>
- Micheo, W., Baerga, L., & Miranda, G. (2012). Basic principles regarding strength, flexibility, and stability exercises. *PM&R*, 4(11), 805–811. DOI: <https://doi.org/10.1016/j.pmrj.2012.09.583>
- Nazlieva, N., Mavilidi, M., Baars, M., & Paas, F. (2019). Establishing a scientific consensus on the cognitive benefits of physical activity. *International Journal of Environmental Research and Public Health*, 17(1), 29. DOI: <https://doi.org/10.3390/ijerph17010029>
- O'Donovan, G., Blazeovich, A. J., Boreham, C., Cooper, A. R., Crank, H., Ekelund, U., Fox, K. R., Gately, P., Giles-Corti, B., Gill, J. M. R., Hamer, M., McDermott, I., Murphy, M., Mutrie, N., Reilly, J. J., Saxton, J. M., & Stamatakis, E. (2010). The ABC of Physical Activity for Health: A consensus statement from the British Association of Sport and Exercise Sciences. *Journal of Sports Sciences*, 28(6), 573–591. DOI: <https://doi.org/10.1080/02640411003671212>
- Portugal, E. M. M., Cevada, T., Monteiro-Junior, R. S., Guimarães, T. T., Da Cruz Rubini, E., Lattari, E., Blois, C., & Deslandes, A. C. (2013). Neuroscience of exercise: From neurobiology mechanisms to Mental health. *Neuropsychobiology*, 68(1), 1–14. DOI: <https://doi.org/10.1159/000350946>
- Pretty, J., Griffin, M., Sellens, M., Pretty, C., Centre for Environment and Society, Centre for Sports and Exercise Science, & Suffolk College, Ipswich. (2003). Green Exercise: Complementary Roles of nature, Exercise and Diet in Physical and Emotional Well-Being and implications for Public Health policy. In CES Occasional Paper 2003-1, University of Essex. http://www.ernaehrungsdenkwerkstatt.de/fileadmin/user_upload/EDWText/TextElemente/PHN-Texte/Lang_Ti_m_Green-ExerciseUni_Essec_2003.pdf
- Radak, Z., Chung, H. Y., Koltai, E., Taylor, A. W., & Goto, S. (2007). Exercise, oxidative stress and hormesis. *Ageing Research Reviews*, 7(1), 34–42. DOI: <https://doi.org/10.1016/j.arr.2007.04.004>
- Sanaeifar, F., Pourranjbar, S., Pourranjbar, M., Ramezani, S., Mehr, S. R., Wadan, A. S., & Khazeifard, F. (2024). Beneficial effects of physical exercise on cognitive-behavioral impairments and brain-derived neurotrophic factor alteration in the limbic system induced by neurodegeneration. *Experimental Gerontology*, 195, 112539. DOI: <https://doi.org/10.1016/j.exger.2024.112539>
- Secor, S. M. (2008). Specific dynamic action: a review of the postprandial metabolic response. *Journal of Comparative Physiology B*, 179(1), 1–56. DOI: <https://doi.org/10.1007/s00360-008-0283-7>
- Segal, K. R., & Pi-Sunyer, F. X. (1986). Exercise, resting metabolic rate, and thermogenesis. *Diabetes/Metabolism Reviews*, 2(1-2), 19-34. DOI: <https://doi.org/10.1002/dmr.5610020102>
- Sharma, A., Madaan, V., & Petty, F. D. (2006). Exercise for mental health. *The Primary Care Companion for CNS Disorders*, 8(2). DOI: <https://doi.org/10.4088/pcc.v08n0208a>
- Silva, F. M., Duarte-Mendes, P., Teixeira, A. M., Soares, C. M., & Ferreira, J. P. (2024). The effects of combined exercise training on glucose metabolism and inflammatory markers in sedentary adults: a systematic review and meta-analysis. *Scientific Reports*, 14(1). DOI: <https://doi.org/10.1038/s41598-024-51832-y>
- Silva, N. C. B. S., Barha, C. K., Erickson, K. I., Kramer, A. F., & Liu-Ambrose, T. (2024). Physical exercise, cognition, and brain health in aging. *Trends in Neurosciences*. DOI: <https://doi.org/10.1016/j.tins.2024.04.004>
- Silva, R. M. F., Mendonça, C. R., Azevedo, V. D., Memon, A. R., Noll, P. R. E. S., & Noll, M. (2022). Barriers to high school and university students' physical activity: A systematic review. *PLoS ONE*, 17(4), e0265913. DOI: <https://doi.org/10.1371/journal.pone.0265913>
- Street, G., James, R., & Cutt, H. (2007). The relationship between organised physical recreation and mental health. *Health Promotion Journal of Australia*, 18(3), 236–239. DOI: <https://doi.org/10.1071/he07236>
- Thompson, P. D., Buchner, D., PiñA, I. L., Balady, G. J., Williams, M. A., Marcus, B. H., Berra, K., Blair, S. N., Costa, F., Franklin, B., Fletcher, G. F., Gordon, N. F., Pate, R. R., Rodriguez, B. L., Yancey, A. K., & Wenger, N. K. (2003). Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease. *Circulation*, 107(24), 3109–3116. DOI: <https://doi.org/10.1161/01.cir.0000075572.40158.77>
- Vecchio, L. M., Meng, Y., Xhima, K., Lipsman, N., Hamani, C., & Aubert, I. (2018). The neuroprotective effects of exercise: Maintaining a healthy brain throughout aging. *Brain Plasticity*, 4(1), 17–52. DOI: <https://doi.org/10.3233/bpl-180069>
- Wall, B. T., Cermak, N. M., & Van Loon, L. J. C. (2014). Dietary protein considerations to support active aging. *Sports Medicine*, 44(S2), 185–194. DOI: <https://doi.org/10.1007/s40279-014-0258-7>
- Zheng, Q., Cui, G., Chen, J., Gao, H., Wei, Y., Uede, T., Chen, Z., & Diao, H. (2015). Regular exercise enhances the immune response against microbial antigens through Up-Regulation of toll-like receptor signaling pathways. *Cellular Physiology and Biochemistry*, 37(2), 735–746. DOI: <https://doi.org/10.1159/000430391>