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## 20 Things You Didn't Know About Exercise

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1. Exercise for your health is ancient history! Ancient physicians, including Hippocrates (460–370 BCE) and Galen (129–200 CE), prescribed exercise to promote health and cure disease.<sup>1</sup>
2. What's in a name? The President's Council on Fitness, Sports and Nutrition (2010), formerly the President's Council on Physical Fitness and Sports (1968), formerly the President's Council on Physical Fitness (1963), was first created in 1956 by Dwight D. Eisenhower as the President's Council on Youth Fitness in reaction to the poor state of youth fitness in the United States. This council began a pilot study of a national testing program with 8,500 children, known today as the President's Challenge.<sup>2</sup>
3. A way to stimulate your cellular appetite? Aerobic exercise promotes autophagy, which can lead to increased plasticity in the brain and removal of deranged proteins and other cellular debris implicated in neurodegenerative diseases, such as Alzheimer's.<sup>3,4</sup> (What was that last part again?)
4. Make them better swimmers! Exercise training in men has been shown to alter global and genome-wide DNA methylation of sperm, including increased methylation in disease-related genes such as schizophrenia and Parkinson's, leading to transcriptional silencing.<sup>5</sup>
5. While it is well known that aerobic exercise training reduces circulating levels of pro-inflammatory cytokines, such as TNF- $\alpha$ , studies have shown that regular practice of yoga also reduces inflammation.<sup>6</sup> A Namaste keeps the doctor away!
6. Muscle strengthening activities also help with disease risk, and have demonstrated effectiveness as an alternative exercise strategy in the prevention of multimorbid diseases.<sup>7</sup> So get out there and mix it up with walking, yoga, and resistance exercises!
7. Group-based physical exercise at work contributes to building social capital within nursing teams at the workplace. Increased social capital is indicative of trust and cooperation among the members of a team along with individual well-

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being and work efficiency.<sup>8</sup> Starting that kickball team is evidence-based practice!

8. Are you making the grade? Only 21% of American adults meet the CDC physical activity recommendations, while less than 30% of high school students engage in at least 60 minutes of physical activity per day.<sup>9</sup>
9. In the mood? Exercise can improve sexual arousal responses in women taking selective serotonin reuptake inhibitor (SSRI) antidepressants, likely via improved sympathetic nervous system activation.<sup>10</sup>
10. Better than a little blue pill. We know that exercise has a protective effect on the cardiovascular system, but did you know that this extends to ALL of the blood vessels? Studies have shown that exercise training not only prevents the development of erectile dysfunction, but is also associated with improvement in erectile dysfunction.<sup>11-14</sup>
11. The more you know... Acute changes after strenuous exercise can mimic cardiovascular biomarkers, such as troponin, BNP, and d-dimer. It is important to ask about previous exercise when assessing for cardiac emergencies, such as acute coronary syndrome, heart failure, or pulmonary embolism.<sup>15</sup>
12. You say tomato, I say tomato. There are those in the fitness industry who tout the benefits of interval training, while others firmly believe continuous (or endurance) training offers superior health benefits. While data on the subject is often conflicting, the general consensus is that there is no one size fits all approach to exercise.<sup>16</sup> Recent evidence shows that both approaches are equal in cardiac rehabilitation, allowing for more variety and potentially better adherence.<sup>17</sup>
13. “What you see before you, my friend, is the result of a lifetime of chocolate.” — Katharine Hepburn. Consumption of dark chocolate before exercising improves carbohydrate metabolism and plasma antioxidant capacity, while reducing changes in plasma glucose concentration.<sup>18,19</sup>
14. Olivia Newton John’s secret? Research and practical experience shows us that upbeat music can help with motivation, pacing, and perceived exertion during exercise.<sup>20,21</sup> But did you know that physical activity can also help us with music? Physically active musicians were found to have less performance anxiety than those who do not engage in regular physical activity.<sup>22</sup>
15. Stretching before exercise has long been recommended as a way to prevent injury. However, studies have shown that stretching before activity can inhibit the maximal strength of muscles.<sup>23-25</sup> So while stretching is still important before engaging in exercise training, you may want to weigh your options before entering the World’s Strongest Man/Woman contest.
16. There are ethnic differences in the cardiovascular responses to exercise. Athletes of African ancestry have more electrical changes, leading to repolarization abnormalities and other electrocardiogram alterations, and greater hypertrophy of

the left ventricle with exercise training.<sup>26</sup> These differences can lead to false-positive results during cardiovascular screening of competitive athletes, requiring changes in guidelines for evaluation that take into account an athlete's ethnicity and expected cardiovascular adaptations.

17. Attention speedwalkers - Did you ever wonder if swinging our arms when we walk is beneficial or burns more calories? A study showed that keeping the arms down by the side or bound during walking increased the effort of walking by 12%, equal to walking 20% faster or carrying a 22 pound backpack.<sup>27</sup>
18. l-Citrulline, found abundantly in watermelon, is apparently an excellent source for reducing muscle soreness and is more effective when consumed cold. The underlying mechanisms is nitric oxide synthesis and increasing glucose transport in skeletal muscle. In addition, watermelon juice continued to help muscle soreness and to reduce the recovery heart rate even after 24 hours.<sup>28,29</sup> Plus, believe it or not, a watermelon is a fruit AND a vegetable so you get two food groups in one!
19. You might be getting a shake down. Does a vibration platform perform better than traditional aerobic exercise on measures of aerobic capacity and weight loss? Vibration platforms have increasingly been acknowledged as an effective exercise regimen by stimulating muscular effort and elevating metabolic rate that could be a potential method for weight reduction. Vibration platforms have been advertised as quick and convenient with 10 minutes of vibration being equal to 1 hour of traditional aerobic exercise. Research has shown however, that muscle activation occurs but the energy demand in response to the vibration is low, where exhaustive vibration reported a metabolic demand of 23 mL/kg/min compared with 44 mL/kg/min from an maximal exercise test. Evidence suggests that while vibration platforms may have minor benefits on aerobic capacity and weight loss, it does not compare with the added beneficial effects of traditional aerobic exercise.<sup>30,31</sup>
20. The fountain of youth? After age 30, being physically inactive is costly; you can lose up to 3–5% of your muscle mass each decade. This loss leads to functional disability, falls and poor quality of life. Resistance exercise or working out with weights 2–3 times per week can help prevent this loss.

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