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The Benefits of a More Physically Active Workforce in the Corporate World

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By

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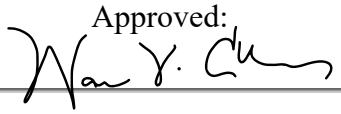

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THESIS SUMMARY

It should be widely known that physical activity has several positive impacts on our overall health. Other primary determinants of good health include eating well, getting adequate sleep, and building and maintaining good mental health. Unfortunately, corporate culture can oftentimes reduce or inhibit good health. With the right strategies in place, however, companies and employees can both benefit through health. This thesis paper aims to explore the topics of physical activity and general health, corporate culture, and different health and wellness strategies companies can utilize to encourage healthier employees and save money at the same time.

The significance of the topics this thesis explores stems from the fact that our world is experiencing an extreme problem with physical inactivity. Most of us know the importance of physical health and have some level of knowledge on the positive impacts it can have on various aspects of life. Yet activity levels, especially in the United States and other high-income countries, is decreasing drastically. This research will hopefully provide a small step in the right direction for companies to see that there are positive financial impacts on having physically active employees. While companies are not typically the first entity when it comes to health innovators, they are a key player in supporting a physically active lifestyle for a couple of reasons. First, a large portion of the population spends roughly eight hours a day working for one. Second, one of the biggest reasons that people do not work out or go to the gym is the lack of time. For these reasons, companies have a unique opportunity for redirecting the health of our world. Companies and similar institutions such as Universities are microcosms of society, which is why we believe the research that supports general population health also applies directly to companies. There is a lot of evidence that supports both the macro and micro scale of population health, and companies are no different.

ABSTRACT

With the ever-expanding knowledge of the benefits of physical activity and good general health for all aspects of our lives, it should be quite surprising that activity levels are declining at accelerating rates. After taking a deeper look into the probable cause for this phenomenon, it becomes clearer that the increasing pressures of workplace culture are leading to more sedentary lifestyles.

In this paper, we look at the benefits of physical activity on people *and* on corporations, specifically workplace disease prevention and wellness programs, to see if there exists a mutualistic relationship between the two. For people, physical activity was consistently found to benefit our sleep quality, risk of disease, mood, productivity, and much more. Within the context of companies, physically active employees were proven to reduce absenteeism, productivity loss, and health care costs. After thorough review of several case studies and academic journals, we found that there is a strong connection between physically active employees and beneficial cost-saving opportunities for corporations. In fact, the average ROI of wellness programs ranges between 5.5 and 6.1 to 1, meaning a company can receive/save $5.5 to $6.1 for every $1 invested into the health of their employees through these programs. More specifically, when investing adequately into wellness programs, absenteeism and disease management programs were found to save companies an average of $1,432 and $1,632 respectively per employee per year.

With these findings in mind, we recommend that all companies implement some form of wellness programs. Companies can realize tremendous cost-savings and employees become healthier at the same time. While there is increasing evidence supporting the implementation of wellness programs, more research on this topic is also recommended as the contexts and environments are ever evolving.

INTRODUCTION

An international analysis done in 2019 by RAND Europe, a not-for-profit research organization that helps improve policy and decision making through research and analysis, concluded that improving adult population physical activity levels could surmount in international GDP gain of roughly US$14.4 trillion by 2050, equivalent to the present-day GDP of China.[1] The research supporting the many benefits to physical health is staggering, from helping lower the risk of almost every major disease from thirteen types of cancers[2], heart disease such as high cholesterol, coronary artery disease, heart attacks, and other diseases such as hypertension, and type 2 diabetes.[3]

Along with disease prevention, physical activity has been shown to have a positive impact on mental health, possibly reducing the onset risk of developing dementia, having a positive impact on anxiety, depression, mood, sleep, and overall confidence[4]. The amount of evidence supporting the positive impacts that physical health can have on human life is tremendous, yet physical activity, on average, is slowing. According to the World Health Organization, more than a quarter of the world's adult population (1.4 billion adults) are insufficiently active, levels of inactivity are

[1] Hafner, Marco, Erez Yerushalmi, William D. Phillips, Jack Pollard, Advait Deshpande, Michael Whitmore, Francois Millard, Shaun Subel, and Christian Van Stolk, The economic benefits of a more physically active population: An international analysis. Santa Monica, CA: RAND Corporation, 2019. https://www.rand.org/pubs/research_reports/RR4291.html.

[2] Cristol, Hope. "Exercise Linked with Lower Risk of 13 Types of Cancer." *American Cancer Society*, American Cancer Society, 17 May 2016, www.cancer.org/latest-news/exercise-linked-with-lower-risk-of-13-types-of-cancer.html.

[3] "Lack of Physical Activity." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 25 Sept. 2019, www.cdc.gov/chronicdisease/resources/publications/factsheets/physical-activity.htm.

[4] "Benefits of Physical Activity." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 5 Apr. 2021, www.cdc.gov/physicalactivity/basics/pa-health/index.htm.

twice as high in high-income countries compared to low-income countries, and there have been no improvements in global levels of physical activity since 2001.[5]

The central question of this thesis, then, is should employers be focusing more on the physical health of their employees? This question is multifaceted and requires a subset of more direct questions such as:

- What is physical health and why is it important?
- Are there legitimate cost savings to healthier employees?
- And, if so, what can be done to increase levels of physical health in corporations?

To answer these questions, there are a few goals that need to be met. First, an analysis of the positive effects of physical activity will be performed by researching previous scientific literature and academic studies. The reason for this analysis is simple, one must understand the overall positive impacts that physical activity has before realizing whether there are economic benefits to a more physically active workforce, which is the second goal of this research paper. After analyzing the overall impacts of physical health, an analysis into the possible cost-savings for a business with healthier and more physically active employees will be studied. Finally, the third goal relies on the answer to the second and that is, if there are legitimate cost savings for the employer, then the creation of useful suggestions to increase employee physical health must be in place.

This paper will be broken down into three main sections. The first will focus on the general idea of physical health, what that specifically looks like, who should take part in physical activity

[5] "Physical Activity." *World Health Organization*, World Health Organization, Nov. 2020, www.who.int/news-room/fact-sheets/detail/physical-activity.

and for how long, and then both the physiological and psychological impacts of physical health on the human body. The second section will focus more specifically on the financial impact that physically healthy employees can have on a corporation to support or refute the importance of physical health on a corporation. The focus will be on a cost-benefit analysis of implementing policies and programs that promote physical activity inside and outside the corporation. For this research to be valuable to corporations, there must be a positive ROI (return on investment) for employers to even consider implementing new polices. And lastly, the third section will be a tangible list of ways employers can enact change in their organizations through a case study analysis of brands that are leading the charge for physical health.

The main approach to answering the proposed question will be a detailed analysis of scientific journals for the first two sections listed above as well as previous knowledge on the impacts of physical health. To answer what physical health is and why it is important, a review of a compilation of scientific journals and academic studies on the physiological and psychological impacts of physical health will be performed. This will prove to be the most scientifically significant way to either support or refute the notion that corporations should implement policies that promote physically healthier employees rather than anecdotal observations such as surveys or questionnaires.

Second, there has been a great number of studies done on the cost-savings for corporations with more physically healthy employees. Many of these studies have used metrics such as workplace performance or productivity which are measured or examined using levels of absenteeism or presenteeism. Absenteeism refers to productivity losses when individuals do not show up at work due to ill health. Presenteeism refers to productivity losses when they do come to work but function at a sub-optimal level only. Additionally, there was an international analysis

done in 2019 by the RAND Corporation which analyzed the potential economic impact of physical activity. They examined the potential gains in economic output and healthcare expenditure savings under three different physical activity scenarios. While the focus of the study was to support government policy changes, the research also includes possible ways for companies to use the research in their own environments. This report will prove extremely useful in answering the central question proposed in this thesis and provides the bulk of the information for the basis of this paper. In addition, a survey may be of use for understanding the physical activity levels of the incoming workforce. For many, college is the final stop before entering the workforce and provides an ideal candidate pool for a survey. Understanding the current physical health of students will provide a good idea of the future physical health of the workforce. This will help to provide some additional context for the studies analyzed and presented, specifically regarding a decreasing active workforce. Finally, to provide thoughtful recommendations on how employers can improve the physical health of employees, a case study analysis will be conducted on institutions that have enacted some type of support of physical health.

PART I: PHYSICAL HEALTH AND ITS IMPORTANCE

Adults who exhibit greater levels of physical activity will more than likely experience less issues with physical health, such as heart disease, type 2 diabetes, and several cancers that more sedentary adults may experience.[6] Additionally, active adults will also have less issues with mental health, such as dealing with anxiety, depression, and poor sleep quality. Even single, infrequent moments of physical activity can provide temporary benefits and improvements to cognitive

[6] Warburton, D. E.R. "Health Benefits of Physical Activity: the Evidence." *Canadian Medical Association Journal*, vol. 174, no. 6, 2006, pp. 801–809., doi:10.1503/cmaj.051351.

function while lessening feelings of anxiety[7] (See graph 1 in appendix for a graphical representation of the return on activity levels expressed in MET-hours). This section aims to outline what physical health is and the general guidelines for achieving adequate physical activity levels, and then the importance of physical activity on our bodies and minds. Outside of the corporate setting, we have a lot more control over our physical activity levels than we may believe, and the benefits are tremendously rewarding, making your physical health more than a worthwhile investment. Therefore, the information below should provide a foundational knowledge as to what good levels of physical activity are and why you should aim to foster a more active and healthier lifestyle.

WHAT IS PHYSICAL HEALTH?

The World Health Organization (WHO) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity refers to all movement including during leisure time, for transport to get to and from places, or as part of a person's work. Both moderate- and vigorous-intensity physical activity improve health. There have been numerous studies on the amount of physical activity that all humans need in order to maintain good health.[8]

The WHO recommends a variety of guidelines for adults regarding physical activity. Adults aged 18-64 years should:

[7] Moore SC, Patel AV, Matthews CE. "Leisure time physical activity of moderate to vigorous intensity and mortality: a large pooled cohort analysis." *PLoS Med.* 2012;9(11):e1001335. doi:10.1371/journal.pmed.1001335.

[8] "Physical Activity." *World Health Organization*, World Health Organization, 26 Nov. 2020, www.who.int/news-room/fact-sheets/detail/physical-activity.

- Do at least 150-300 minutes of moderate-intensity aerobic (requiring oxygen) physical activity per week,
- *Or* at least 75-150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week.
- Do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.
- Increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.
- Limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.

Through adequate amount of physical activity, one should be able to achieve and maintain a good level of *physical fitness*. Physical fitness is the body's ability to carry out daily tasks with ample effort and ability without sustaining undue fatigue, with enough energy to enjoy leisurely activities.[9] Primary components of physical fitness include cardiorespiratory fitness (endurance and aerobic power), musculoskeletal fitness, flexibility, balance, and speed of movement. These areas of fitness will be outlined in more detail. Ideally, these activities are spread out relatively evenly throughout the week to minimize immediate fatigue in a single day and to enhance the perceived benefits of the physical activity itself. As we outline the different components of physical fitness, it will be made clear why spreading out physical activity is more optimal.

[9] Bouchard, Claude, et al. *Physical Activity and Health*. Human Kinetics, 2012.

Components of Physical Activity/Fitness

Aerobic activity is arguably one of the most important components of physical fitness because this relates largely to heart health, which is one of the most important muscles in our body. Aerobic activity, also known as cardio and endurance activity, oftentimes will involve full-body movement for a sustained period of time. The most common examples include running, briskly walking, biking, swimming, or other sports activities. Aerobic activities can also include activities that elevate your heart rate for a sustained period, such as weightlifting and resistance training. These types of activities should increase blood flow throughout the body and increase our breathing and heart rate. Consistent effort towards aerobic activities will help you achieve a stronger cardiorespiratory system as well as overall fitness. Aerobic activity is recommended to be spread out throughout the week for a few reasons. The first is that research shows that spreading out an activity over at least three days of a week will result in substantial health benefits. The benefits of working out are often seen through a boost in metabolic activity, more regular and increased production of healthy hormones, and better sleep.[10] By spreading out the activity throughout the week, you develop a more consistent boost in health throughout the week which maximizes the benefits received from working out. The second reason is that spreading it out will vastly reduce the likelihood of injury and fatigue. By reducing this likelihood, you can increase the overall effectiveness of your physical activity due to less time being tired or injured.

Muscle-strengthening activity is going to be the next most important type of physical activity you should perform. Examples of this include weighted exercises and resistance training

[10] Kredlow, M.A., Capozzoli, M.C., Hearon, B.A. *et al.* The effects of physical activity on sleep: a meta-analytic review. *J Behav Med* **38,** 427–449 (2015). https://doi.org/10.1007/s10865-015-9617-6

using weights, commonly known as weightlifting and weight training. The primary benefits of muscle-strengthening activity not found with aerobic activity include increased bone strength and muscle strength.[11] In order to see the fullest results from this activity, it is important to exercise each body part twice a week and to perform each exercise with sets of 8-12 repetitions.[12] These main body parts include your legs, hips, back, chest, abdomen, shoulders, and arms. The primary purpose of this type of activity is to increase the body's ability to handle heavier loads than it is primarily accustomed to. This can help prevent bodily injuries resulting from incidents such falling down sets of stairs, car wrecks, or other sudden bodily impact events.

Flexibility, balance, and speed of movement activities may fall under similar umbrellas of activity, as they both relate to the functionality of our bodies at key joint and tendon areas. By increasing flexibility, we also increase our body's ability to perform exercises requiring balance and sudden speed/quickness. When we experience pain, such as a pulled hamstring, achy knees, or low back pain, these often are the result of random events that can be avoided through proper exercise. For example, increased flexibility and mobility can help prevent muscle tightness. Balance can help us reduce impact and potential injury on joints like the knees, ankles, and hips. Lastly, we can tune our body more towards quick motions and speed by training flexibility and balance, thereby further reducing potential injury from speed of movement. The most beneficial activities that improve these functionalities are yoga, ballet, stretching, and physical therapy exercises (even if not for post-surgery rehab).

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[11] Kohrt, Wendy M., et al. "Physical Activity and Bone Health." *Medicine & Science in Sports & Exercise*, vol. 36, no. 11, 2004, pp. 1985–1996., doi:10.1249/01.mss.0000142662.21767.58.

[12] Berger, Richard A. "Optimum Repetitions for the Development of Strength." *Research Quarterly. American Association for Health, Physical Education and Recreation*, vol. 33, no. 3, 1962, pp. 334–338., doi:10.1080/10671188.1962.10616460.

IMPACTS OF PHYSICAL ACTIVITY ON OUR BODIES

A study published in PubMed Central® (PMC) at the U.S. National Institute of Health's National Library of Medicine (NOH/NLM) concluded that "there is irrefutable evidence of the effectiveness of regular physical activity in the primary and secondary prevention of several chronic diseases (e.g., cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, and osteoporosis) and premature death."[13] Some of the prominent examples of the benefits of physical activity have already been highlighted, specifically the physical *and* mental benefits received from even one episode of physical activity. Here we will go into further detail on the bodily benefits of increasing your physical activity levels. According to MedlinePlus, an online medicine information provider produced by the U.S. National Library of Medicine, the benefits of regular exercise and physical activity may include:

- **Weight control**- When done in tandem with a proper and healthy diet, exercise plays an important role in controlling your weight and preventing obesity. To maintain your weight, the calories you consume must equal the calories you burn. To lose weight, you must burn more calories than you consume. Gaining weight is a result of excess caloric intake, but people may often intentionally pursue this based upon certain fitness goals.
- **Less risk of heart disease**- Physical activity works your heart and improves your circulation. The increased blood flow raises the oxygen levels in your body which helps lower your risk of heart diseases such as high cholesterol, coronary artery disease, and heart attack. Regular exercise can also lower your blood pressure levels.

[13] Warburton, D. E.R. "Health Benefits of Physical Activity: The Evidence." *Canadian Medical Association Journal*, vol. 174, no. 6, 2006, pp. 801–809., doi:10.1503/cmaj.051351.

- **Blood sugar and insulin level maintenance**- Exercise can lower your blood sugar level and help the regulation of your insulin output. This can reduce your risk for metabolic syndrome and type 2 diabetes. Additionally, if you already have one of those health issues, physical activity can help to reduce and mitigate its impacts.
- **Stronger bones and muscles**- Regular exercise helps kids and teens build strong bones. Later in life, it can also slow the loss of bone density that comes with age. Doing muscle-strengthening activities can help you increase or maintain your muscle mass and strength, reducing the risk of breaking fragile bones.
- **Less risk of certain cancers**- These include colon, breast, uterine, and lung cancer.
- **Less risk from bodily impacts**- For older adults, research shows that doing balance and muscle-strengthening activities in addition to moderate-intensity aerobic activity can help reduce several injuries associated with falling.
- **Improved sleep**- Exercise can help you to fall asleep faster and stay asleep longer. Sleep is an essential recovery method for our body, as the majority of our growth and recovery hormones are produced in our sleep.
- **Improved sexual health**- Regular exercise may lower the risk of erectile dysfunction (ED) in men. For those who already have ED, exercise may help improve their sexual function. In women, exercise may increase sexual arousal.
- **Increased longevity**- Studies show that physical activity can reduce your risk of dying early from the leading causes of death, such heart disease and certain cancers. Additionally, having a healthier lifestyle will stave off potentially life-threatening injuries and improve your immune system.

IMPORTANCE OF PHYSICAL ACTIVITY FOR MENTAL HEALTH

The U.S., and many other countries, have seen a rise in the levels of sedentary behavior.[14] This can be attributed to many things; however, the primary reason is most likely the greater use and time spent on mobile devices and the ease of working from home for many adults. The global health pandemic has shown the effectiveness of "WFH" (Work from Home) for many companies. Companies are able to save money and time in different areas of the business when all employees are remote. But these levels of sedentary behavior, where employees are no longer walking to their jobs, or walking around the office, will have negative impacts on employee health. Additionally, these negative health consequences on employees will also have an impact on companies. Further research in this report shows how higher levels of physical activity increase motivation, feelings of personal achievement, worker productivity[15], and many more impacts while also decreasing mental stress and other mental and physical health concerns. This means that the converse is also true. Lower levels of physical activity may prove to lower productivity and increase mental and physical-related concerns. To help reduce the detrimental effects of high levels of sedentary behavior on health, all adults and older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

The fact that there exist several mental health benefits from physical activity should then be quite clear. That is why mental health in the context of corporate setting is very important to consider, as working jobs can make physical activity less accessible and sedentariness more

[14] Shields, Tremblay. "Sedentary Behaviour and Obesity." *Health Reports*, U.S. National Library of Medicine, 2008, pubmed.ncbi.nlm.nih.gov/18642516/.
[15] McAuley, E., Blissmer, B., Katula, J. *et al.* Physical activity, self-esteem, and self-efficacy relationships in older adults: A randomized controlled trial. *ann. behav. med.* **22,** 131 (2000).

common. Therefore, understanding the benefits of physical activity should motivate individuals to incorporate it into their lives. More specifically, though, the main benefits are:

- **Improved mood**- During exercise, your body releases chemicals that can improve your mood and make you feel more relaxed. These hormones can help to regulate your mood as well, equipping you with the ability to better manage stresses and anxieties. This can have long-term impacts on reducing likelihood of depression.[16]
- **Improved brain health and functionality-** Exercise stimulates your body to release proteins and other chemicals that improve the structure and function of your brain. The chemicals that are released can help with sharpness and "brain fog," offering increased mental clarity and ability to process and think. This provides positive impacts on long-term mental health.
- **Better sleep**- This is mentioned as a physical benefit of exercise, which it is, but it is also a major benefit to our mental health. The hormones produced in our sleep help us to recover from mental exertion throughout the day. Better sleep quality can have impacts on our sleepiness and brain function the next day.
- **Increased confidence and self-esteem**- Physical activity will often result in a healthier feeling and can also physically transform your body. By being intentional and cognizant of your progress and goals, meeting those goals and seeing concrete changes can provide a major boost to confidence and self-image.

[16] Guszkowska M. Effects of exercise on anxiety, depression, and mood [in Polish] *Psychiatry Pol.* 2004;38:611–620.

- **Reduced risk of dementia**- Exercising can help with improving key brain functions, reducing the likelihood of developing dementia, including Alzheimer's disease.

PART II: COST SAVINGS & CASE STUDY ANALYSES OF HEALTHY EMPLOYEES

For many, work is a key component of life and influences one's self-worth, esteem, identity, and social status within a community. Additionally, work is heavily influenced by the monetary gain and a means of professional progress and fulfillment in life. A number of factors have shown how physical health can impact the overall quality of one's life. When physical inactivity is at play, several negative consequences can follow which includes, but is not limited to, decrease in working productivity and overall achievement in the workforce.[17] As previously stated, work is crucial for the fulfilment and recognition of ones worth. So, for something as significant as work, it is important to address ways in which employee health can be improved, and thus increase savings for the employer through greater productivity and employee fulfillment.

Until recently, many of the measures taken by employers to improve workplace health have been categorized as "perks" or benefits for employees. This has been the predominant perspective for a while, but employee health is becoming more important for employers to understand and address; especially as more research continues to show the importance of physical health. Some companies, and even some economists, are arguing that programs centered around workplace health may be as important as research and development (R&D), and that companies should look to invest in technology and tools that can improve worker health.

COST-SAVINGS ANALYSIS

One key consideration for employers to consider is the amount being spent on health care for employees. The United States itself spends a considerable amount of money on health care

[17] Grimani, A., Aboagye, E. & Kwak, L. The effectiveness of workplace nutrition and physical activity interventions in improving productivity, work performance and workability: a systematic review. *BMC Public Health* **19,** 1676 (2019). https://doi.org/10.1186/s12889-019-8033-1

every year. Specifically, in 2010, the U.S. spent $2.6 trillion on health care[18] and roughly $3.8 trillion in 2019[19]. Additionally, over the past 10 years, average insurance premiums have also increased by 114% with increases in employee portion of the premium increasing 147%.[20] This number is estimated to continue increasing over time.

Health care is therefore one of the primary means by which companies can seek to save money and cut preventable costs. One of the best ways to do this is generally through different wellness programs. Wellness programs have previously been viewed as additional marginal perks that employees can receive, but new tax incentives and grants available under recent federal health care legislation may offer companies ways to reduce health care costs. The wellness programs themselves pose a few essential ideas that have been tested in various studies. These key ideas pose that the more employees adopt healthy habits, the less likely they are to develop health risks and complications. A reduction in these risks across a population will likely mean that there are less insurance claims filed for preventable conditions. The less claims that are filed, the lower the expected future claims costs will be and the lower the benefit renewal costs will be, which is also because of less employee turnover. Additionally, the wellness programs are more effective if they are structured such that the stronger the company culture, the higher the employee engagement is.[21] The higher the employee engagement, the more connected employees are to the company's

[18] Hellander, I. (2011). The deepening crisis in U.S. health care: A review of data. International Journal of Health Services, 41, 575-586

[19] Person. "CMS: US Health Care Spending Will Reach $4T in 2020." *Advisory Board*, Advisory Board, 3 Apr. 2020, www.advisory.com/en/daily-briefing/2020/04/03/health-spending#:~:text=Spending%20growth%20details%20for%202020,to%20%244.01%20trillion%20in%202020.

[20] McCaskill, Sherrie P., et al. "Effectiveness of an on-Site Health Clinic at a Self-Insured University." *Workplace Health & Safety*, vol. 62, no. 4, 2014, pp. 162–169., doi:10.1177/216507991406200405.

[21] Stokes, George C., et al. "Creating a Culture of Wellness in Workplaces." *North Carolina Medical Journal*, vol. 67, no. 6, 2006, pp. 445–448., doi:10.18043/ncm.67.6.445.

vision and values. This increased engagement will lead to a greater number of healthy employees and therefore higher presenteeism and productivity.

To test the supposed claims of the above ideas, several quantitative research studies have been conducted. Here is what some major studies have to say about investment in wellness programs. In 2010, a comprehensive study was conducted to review literature on the effectiveness of wellness programs at several companies.[22] After thorough meta-analysis, it was found that medical costs fell by about $3.27 for every dollar spent on wellness programs and that absenteeism costs fell by about $2.73 for every dollar spent. This indicates an average return of $6.10 for every $1 invested into wellness programs.

Similarly, another 2010 study reviewed the impact of worksite wellness interventions on cardiac risk factors and one-year health care costs.[23] A random sample of 185 employees and their spouses were selected as part of the study, and even though none of the participants were heart patients, they received cardiac rehabilitation and exercise training from experts. High-risk participants were identified in the beginning, based upon body fat, blood pressure, anxiety, and other metrics. Of these high-risk participants, 57% of them were converted to low-risk status by the end of the 6-month programs. Additionally, medical claims costs fell by $1,421 per participant when compared to the costs of the previous year. The control group showed no significant improvements that the study group did. It was shown that for every $1 invested in intervention, there was $6 in health care savings for the company.

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[22] Baicker, K., Cutler, D., & Song, Z. (2010). Workplace wellness programs can generate savings. *Health Affairs, 29*(2), 304-311. doi:10.1377/hlthaff.2009.0626

[23] Milani, R. V., & Lavie, C. J. (2009). Impact of worksite wellness intervention on cardiac risk factors and one-year health care costs. *The American Journal of Cardiology, 104*(10), 1389-1392. doi:10.1016/j.amjcard.2009.07.007

Later in 2014, RAND conducted research in the specific sub-categories of company wellness programs.[24] This study incorporated almost 600,000 employees across 7 different employers. The general findings confirmed that wellness programs can lead to health care cost savings, more specifically in the disease management programs as opposed to lifestyle management programs. 13% of employees participated in the lifestyle management programs while 87% of them participated in the disease management programs. The savings seen by the companies are inverse to these proportions, as the disease management programs accounted for 87% of health care costs savings and lifestyle management programs accounted for 13% of health care cost savings. When broken down, the disease management programs yielded a return of $3.80, and the lifestyle management program yielded $0.50 for every $1 invested in the programs respectively. This shows a high ROI for the disease management programs, but a low ROI for lifestyle management. It is suggested that further research is needed to see the long-term benefits of the lifestyle management programs (see figure 1 in the appendix.), although these programs *do* already show reduction in absenteeism.

The above examples are all relatively consistent with each other as more and more evidence comes in to suggest to positive cost savings of investments in wellness programs. According to the International Foundation of Employee Benefit Plan, as of 2014, employers save up to $3 in health care cost savings and sometimes more if the program is effective and values driven. This does not factor in the other savings such as decrease in absenteeism and long-term health care cost savings

[24] Mattke, S., Liu, H., Caloyeras, J., Huang, C., Van Busum, K., Khodyakov, D., . . . Broderick, M. (2014). Do workplace wellness programs save employers money? *Do Workplace Wellness Programs Save Employers Money? doi:10.7249/rb9744*

that the other studies do, but at the very least, wellness programs directly save health care cost in the short-term by around $3 per $1 invested.

The last and most prominent study is a 2019 RAND study on the economic benefits of a more physically active population.[25] As mentioned in the introduction, improving adult population physical activity levels could amount to international GDP gain by as much as US$14.4 trillion by 2050, equivalent to the present-day GDP of China. See table 1 in appendix. Additionally, RAND's findings suggest that "billions of dollars in global healthcare expenditure could be saved by improving physical activity rates." Based upon different scenarios, their models estimate that by 2050, between US$8.7 and US$11.2 billion, and as much as between US$16 billion and US$20.6 billion, in present global health care expenses could be saved by simply encouraging more physically active employees. Regarding wellness programs, the major factors affecting their effectiveness are the employee awareness of and engagement with the programs. The programs, as mentioned, are more effective if employees are aware of the available resources and are actively engaged – hence, the more values-driven a program is the more engaging and successful it is. The benefits of health care savings are highlighted extensively, but absenteeism is another indirect metric that was looked at. It was found that, on average, between 0.44 and 0.86 days are lost per employee who is not physically active versus those who are. Assuming an average of 230 working days per year, this corresponds to between .70 and 1.36 working days lost per year per individual who is not sufficiently physically active. This range is significant when spanning across companies with large amounts of employees.

[25] Hafner, Marco, Erez Yerushalmi, William D. Phillips, Jack Pollard, Advait Deshpande, Michael Whitmore, Francois Millard, Shaun Subel, and Christian Van Stolk, The economic benefits of a more physically active population: An international analysis. Santa Monica, CA: *RAND Corporation*, 2019. https://www.rand.org/pubs/research_reports/RR4291.html.

To put meaning to the numbers mentioned in the studies included, we will illustrate the effects of investing in different variables for companies of different sizes. The two categories that affect cost savings the most are reduction in absenteeism and health care costs. Here are some base assumptions used to determine the net effect:

- **ROI for wellness programs is about 5.5 to 6.1 per $1 invested, and e*ffective* wellness programs typically require about $400 of investment per employee per year.[26]**
- **According to the CDC, absenteeism costs U.S. employers about $1,685 per employee per year.[27] Research suggests that employees engaged in wellness programs can reduce productivity loss by 85% which amounts to $119.35 per employee per month.[28]**
- **Absenteeism can be reduced by 0.7-1.37 per employee per year (assuming a 230-day work year) if they are engaged in regular physical activity.[29]**
- **Hospital admissions decline by about 30% due to disease management programs. Disease management programs and lifestyle management programs yield *immediate term* health care cost savings of $136 and $6 per employee per month, respectively.[30]**

[26] Goetzel, Ron, director of Cornell University Institute for Health & Productivity Studies. The Cost of Wellness [Interview] *WELCOA*.
[27] Workplace Health Promotion, *CDC*, *cdc.gov*, February 2, 2017, cdc.gov/chronicdisease/resources/publications/aag/workplace-health.htm.
[28] Jim Harter and Amy Adkins, "Engaged Employees Less Likely to Have Health Problems," *Gallup.com*, December 18, 2015, news.gallup.com/poll/187865/engaged-employees-less-likely-health-problems.aspx.
[29] Hafner, Marco, 2019
[30] Mattke, S, 2014

Here are how the finalized variables are used in computation of the numbers in the table that follows. These are the rough estimates for the net effect of each variable per employee per year **(PEPY)**:

VARIABLE	NET EFFECT (PEPY)
WELLNESS PROGRAMS	$1800-2040 in savings
ABSENTEEISM ($)	$1,432.2 in savings
DISEASE MANAGEMENT	$1,632 in savings
LIFESTYLE MANAGEMENT	$72 in savings
ABSENTEEISM (DAYS)	0.7-1.37 saved days

The numbers of employees included on the top of the table are based off the average number of employees at all U.S. businesses (16.1), the average number of employees at Fortune 500 companies (~60,000), and the number of employees at some of the largest firms (~280,000), such as Berkshire Hathaway, PepsiCo, Bank of America, GE, etc. With these ranges and assumptions in place, here are the savings/benefits companies of different sizes would realize each year if *all* their employees were to be engaged with their companies' wellness programs:

VARIABLE	16.1	60,000	280,000
WELLNESS PROGRAMS*	$30,912	$115,200,000	$537,600,000
ABSENTEEISM ($)	$23,058	$85,932,000	$401,016,000
DISEASE MANAGEMENT	$26,275	$97,920,000	$456,960,000
LIFESTYLE MANAGEMENT	$1,159	$4,320,000	$201,600,000
ABSENTEEISM (DAYS)*	16.66 saved days	62,100 days	289,800 days

*Numbers taken from the average of 1,800 and 2,040 (1,920).
*Numbers taken from the average of 0.7 and 1.37 (1.035).

CASE STUDY EXAMPLES

Understanding the decision-making process for companies who engage in health promotion programs and for those who do not is a crucial step in understanding the value these programs bring to both employees and employers. We have already identified the detrimental effects that inactivity can cause on the human body and have also addressed the many benefits to such activity.

Overall, poor health behaviors, regardless of their cause, can result in substantial setbacks for worker productivity and increases in health-related costs for businesses. Many of the previously mentioned studies have analyzed levels of absenteeism and presenteeism for workers who engage in regular physical activity compared with their counterparts who do not. It is also important to realize that many employed adults do not meet the recommended health behaviors set forth by the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC). For example, 77% do not meet fruit and vegetable consumption recommendations; 49% engage in insufficient levels of physical activity; 74% are not receiving influenza vaccination; and 49% are not receiving age-appropriate colon cancer screening.[31] The lack of these preventative measures, along with many others including an overall decrease in physical activity, leave U.S. workers vulnerable to developing a variety of diseases and incurring high health care costs for employers and losses of productivity in the workplace.

That being said, employers are beginning to understand the importance of worker's health. Workplace conditions and safety measures have long been a point of scrutiny and become

[31] Hughes, M. C., Hannon, P. A., Harris, J. R., & Patrick, D. L. (in press). Health behaviors of employed and insured adults in the United States, 2004-05. American Journal of Health Promotion

increasingly important on the global scale. Most people are familiar with the Nike case, where Nike was using sweatshops in Indonesia with low wages and poor working conditions. Or the Rana Plaza factory fire in Bangladesh that killed over 1,000 people and was due, largely, to improper health and safety protocols.[32]

However, a more recent phenomenon in the workplace is the increasing need to promote health programs for individual employees that aim to improve health behaviors, increase physical activity, and lower costs for employers through less absenteeism and lower health costs. As previously mentioned, the workplace is a microcosm of society and, according to the U.S. Department of Health and Human Services (DHHS), "the workplace is an important setting for health promotions."[33] Yet, even with the readily available knowledge on the benefit of promoting physical activity among the employees of a workplace, many companies do not offer such programs.

Specifically, it is less likely for small to midsized business to introduce these types of programs for several reasons. The first, and arguably the most important, is that these programs are often seen as costly or time-consuming.[34] It can be difficult for small to midsized businesses to introduce these types of plans, as the focus of these businesses is more likely on survival, efficiency, and growth rather than improving the health conditions of employees, unless, of course, you work at Gold's Gym or Lifetime Fitness.

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[32] *The Rana Plaza Accident and Its Aftermath*, 21 Dec. 2017, www.ilo.org/global/topics/geip/WCMS_614394/lang--en/index.htm.

[33] United States Department of Health and Human Services. (2000). Healthy People 2010: Understanding and improving health and objectives for improving health. Available from http://www .healthypeople.gov

[34] Stokols, McMahan, & Phillips, 2002) (Stokols, D., McMahan, S., & Phillips, K. (2002). Workplace health promotion in small businesses. In M. P. O'Donnell (Ed.), Health promotion in the workplace (3rd ed., pp. 493-518). Albany, NY: Thomson Delmar Learning.

A study done in 2011, published in the journal *Health Promotion Practice,* analyzed 24 companies ranging in size and type to understand the factors that kept most businesses from incorporating a health-related program into their workplace. The companies that participated included manufacturing, car sales, rehabilitative care, and legal assistance, among others and ranged in size from 75-800 employees. The results were surprising:

- more than one third of the 24 employers surveyed said they had no health promotion programs;
- only 2 of the 24 employers indicated having a comprehensive program;
- 14 stated that they depend entirely on their insurance plan for health promotion in the workplace;
- yet 19 of the 24 respondents showed interest in implementing or expanding programs related to increasing employee physical health.

Finally, and not surprisingly, almost all the companies desired more information on actual program costs and program cost-benefits.[35] Hopefully, with the aforementioned sections and cost-benefit analysis, companies will understand the importance of worker's physical health and realize the positive impacts it can have on a company's ROI and overall net savings. The next part will show 3 case studies of companies with some sort of health promotion plan in affect to gain an understanding of real-life application of these programs. The case studies reflect true cost-savings for companies and increased rates of disease prevention among the employees.

[35] Hughes, M. Courtney, et al. "Understanding the Decision-Making Process for Health Promotion Programming at Small to Midsized Businesses." *Health Promotion Practice*, vol. 12, no. 4, 2009, pp. 512–521., doi:10.1177/1524839909349162.

Johnson & Johnson, Health Promotion Programs Since 1979

A study published in the *HealthAffairs* journal in March of 2011 evaluated the effectiveness of health promotion programs at the Johnson & Johnson Family Company. A large portion of this analysis was taken from the study titled, *Recent Experience In Health Promotion At Johnson & Johnson: Lower Health Spending, Strong Return On Investment* by Rachel M. Henke, Ron Z. Goetzel, Janice McHugh, and Fik Isaac. The study analyzed medical cost savings, studied the per-employee savings, and looked at the health benefits received by the employees through the help of the programs. Johnson & Johnson has been a long-standing leader when it comes to worksite health promotion programs.

The company's Live for Life program was introduced in 1979 by then chairman James Burke, with the stated purpose of making Johnson & Johnson workers the "healthiest in the world."[36] The program continued and, today, every employee has access to the health and wellness program that promotes and supports a healthy lifestyle. A majority of the program emphasizes physical health, through things such as on-site fitness center and seasonal fitness challenges; and the company also promotes nutrition, which includes healthy café choices and on-line weight management tools. The study that was done evaluated the effect of Johnson & Johnson's health promotion programs by focusing on employee health risks and company savings as compared to 16, other large companies which also had health and wellness programs in place. The study concluded multiple findings:

- J&J experienced a 3.7% lower annual growth in medical costs; as a result, the average annual savings per employee per year was $535 as compared to the other companies,

[36] Isaac F. Leaders of a new frontier. *Am J Health Promot*. 2001;15:365–7.

- Johnson & Johnson employees had a lower average predicted probability of being at high risk for six of the nine health risks examined: high blood pressure, high cholesterol, poor nutrition, obesity, physical inactivity, and tobacco use (figure) and
- A positive return on investment estimated at $1.88–$3.92 for every dollar spent on the program. [37]

Overall, the program implemented in 1979 at Johnson & Johnson remained largely successful over the last 3 decades. The research supports the positive effects of health programs in the corporate world, not only for employee health but also for overall cost savings for companies. The program had positive impacts on disease prevention in terms of mitigating high blood pressure, cholesterol, obesity, and tobacco use through physical health support and nutrition guidance. There was also a positive ROI on implementing these programs for Johnson & Johnson while also lowering the annual growth rate in medical costs for the company. The research is further evident of positive effects that a physical health program can have on a company and should be a serious consideration for all employers, no matter the size or industry. Further case studies will highlight other ways in which similar programs have been beneficial.

Washoe Country District, Worksite Health Program

There are several ways for employees to decrease health care costs. One potential way is through the implementation of worksite health promotion programs. These programs can promote general employee health, greater employee productivity, increased work satisfaction, and generate a sense of community within the company. Several studies have identified a link between worksite

[37] Henke, Rachel M., et al. "Recent Experience In Health Promotion At Johnson & Johnson: Lower Health Spending, Strong Return On Investment." *Health Affairs*, vol. 30, no. 3, 2011, pp. 490–499., doi:10.1377/hlthaff.2010.0806.

health promotion programs and the many benefits. For example, a 2005 study done in Washoe County School District in Reno, Nevada, showed a large reduction in employee absenteeism which translated to savings of $15.60 for every $1.00 spent on implementing this new program.[38] In this study, money was saved due to less employees taking days off and more employees remaining focused throughout the day. There are several other studies that show the link between improving physical health of employees and increasing cost savings for employers. This is often due to direct measures such as decreases in absent days and an increase in productivity. However, there are also indirect measures such as the potential for less illnesses (chronic and acute), as well as improved mood and self-esteem which can have an impact on personal work performance and the performance on peers.

Self-Insured University, On-Site Health Clinic

Another unique way of lowering health insurance costs is by offering an on-site health clinic. A cost-benefit analysis was done on the effectiveness of an "On-site Health Clinic" at a self-insured university. The results of the analysis point to a significantly positive ROI from investing in an on-site clinic rather than having students and faculty go off-site for their medical needs. In the study, a cost of $4,020.08 was incurred by the University for providing health care services to employees for the specified diagnoses during the 1-year study period. In comparison, if the same number and type of services were provided off-site, the University would have spent $26,909.52, which is $22,889.44 more than the actual expenditure. Another way of analyzing the data showed the ROI to be 6.69 to 1 meaning the cost savings heavily outweighed the cost of operating the clinic.

[38] Aldana SG, Merrill RM, Price K, Hardy A, Hager R. Financial impact of a comprehensive multisite workplace health promotion program. *Prev Med*. 2005;40(2):131-137

PART III: HOW TO INCREASE ACTIVITY LEVELS AND OVERALL HEALTH

WHAT COMPANIES CAN DO TO PROMOTE HEALTHIER EMPLOYEES

Companies can evidently play a huge role in determining a part of the health of the workforce and therefore a large sum of the population. This mean they can arguably be one of the biggest facilitators in encouraging and maintaining physically active employees. In this section, we will outline some key considerations companies need to be mindful of in order promote healthier employees, specifically through the use of the wellness programs mentioned.

First, there needs to be a multilevel leadership emphasis on leading a healthier lifestyle. If the company, especially its key managers, buys into a program and initiative, the engagement from the employees should follow suit. Next, programs and initiatives should be designed such that they are cohesive and in align with the companies' current values. If a new initiative requires a large overhaul or contrasts with current ones, it is likely that it will not be as effective in the long run.

After leadership positions and the alignment of values of been considered, well executed wellness program needs to have a defined scope, relevance, and quality. Without concrete plans or measures in place, a program cannot be fully effective. The program needs to be well defined if it is going to be robust enough to be effective for all employees. Think too narrowly, and an initiative will only benefit a few employees. Think too broadly, and the initiative will lack purpose and direction and will not achieve the necessary quality of an effective program.

Accessibility is the next key factor. As is somewhat touched on, the more employees can access a program's resources, the more effective it will be overall. Creating a more accessible program may include creating more on-site integrations (as mentioned in the university case study), mobile accessibility and software, and other features that make a program easier to utilize.

Companies can also take advantage of partnership opportunities to create more credibility for their wellness programs. Internal partnerships might look like sharing resources with the finance department to determine cost-effectiveness of programs to optimize their use and increase its legitimacy. An external partnership might include the company working with a gym, such as the YMCA, to give membership discounts to employees.

The last consideration needed for an effective program is the use of effective communication from the top down. All departments, management levels and their teams, employees, and relevant stakeholders should utilize communication to get the most out of a wellness program, health wise and financially. One essential part of this means constant feedback on the programs to continuously better the program and its offerings. Through thorough communication, the resources available at a company can be more accessible, thereby increasing the benefits of such programs. Below is a summarized list of the primary points made above:

Key Considerations:

- Broad outreach and clear messaging from organizational leaders.
- Making wellness activities convenient and accessible for all employees.
- Making wellness an organizational priority among senior leaders.
- Leveraging existing resources and building relationships with health plans to expand offerings at little to no cost.
- Approaching wellness with a continuous quality improvement attitude and solicit feedback from employees to improve programs.

SCHEDULES AND LIFESTYLES TAKING OUR TIME

Thus far, we have outlined the importance of physical activity on your personal and workplace productivity, as well as the importance of physical activity for your overall health in general. But it is unreasonable to assume that all companies currently have robust wellness programs that employees can utilize. Additionally, it is unreasonable to think there is a one-size-fits-all solution for how to incorporate physical activity into individual routines. This section therefore aims to provide reasonable suggestions and solutions that everyone can realistically adopt in their own time.

Everyone operates on different schedules, more than likely due to different levels of demanding jobs, lifestyles, family matters, life changes, or the many other mundane day-to-day tasks. To illustrate how busy working adults really are, here is a general outline of the hours per week spent on various tasks, not even including broader lifestyle and job differences between different adults. Some of the information was taken from external sources and other is from personal experience.

- **Working a Job**- Most adults are arguably holding a job for several reasons, primarily to work towards financial independence and to pay bills. This will inherently take a good portion out of anyone's week, especially in the U.S. where there is a high level of expectation for employees. The average work hours per week may depend on several factors, but we will assume this is between 40-60 hours per week.[39]

[39] Doerrmann, Caitlin, et al. "The Association Between Hours Spent at Work and Obesity Status: Results from NHANES 2015 to 2016." *American Journal of Health Promotion*, vol. 34, no. 4, 2020, pp. 359–365., doi:10.1177/0890117119897189.

- **Cooking**- This may not be one of the first things that comes to our mind when we think of what makes us busy. However, time quickly adds up when you are cooking the majority of your meals. Time spent on eating also adds up. Assuming cooking takes an average of 30 minutes per meal, and you are making/eating three meals a day for seven days a week, this adds up to 10.5 hours per week.
- **Sleeping**- This another thing you simply cannot go without. A healthy range of sleep for the average adult may vary between about 7-9 hours per night, but the more the better. According to CDC data, the average American adult sleeps just under 7 hours per week (which is another issue itself). Assuming an average of ~7 hours of sleep per night, though, this can add an automatic 50 hours per week.
- **Laundry/Cleaning**- These are some of the basic and mindless tasks and chores we do not typically factor in, but they do take time. Different people will have different levels of cleanliness or different amounts of space to clean, but these tasks can take the average person about 2-3 hours per week.
- **Shopping-** This includes more than just grocery shopping. People spend time buying things for entertainment, clothes, furnishing, or many other things we do not always think about having to do. Assuming several runs to different stores each week, shopping can require roughly 3-4 hours per week.
- **Bills and Finances-** Paying bills, tracking finances, budgeting, and other money-related tasks are a necessity for anyone who has money and wants to manage it properly. Trying to create and maintain a budget takes time. Then you must consider time spent paying bills, monitoring your accounts, calling your bank, or doing taxes. This can take up to 4 hours per week.

- **Transportation-** Transportation is a necessary evil that we *all* must face to some capacity. Any time spent in the car, public transit, etc. is time not spent doing something else. You must get to the grocery store somehow, and you probably need to commute to work. According to the Daily Ride Index, the average American adult spends 10 hours and 50 minutes in their car as of March 2019. This is probably more time spent in a car than one would realize because it is something we all must do, and it can often feel mindless. Public transportation can offer a quicker alternative for transportation in cities, though, so factoring that in, transportation alone can take around 8-10 hours per week.[40]
- **Other-** Speaking of cars, people spend time taking care of their cars or other large personal items. You may have to go get your driver's license renewed, car inspected, buy/look for a house or apartment, buy a car, move, etc. Being sick is another thing to consider. This can set you back in several ways and will take time to recover from. These are all usually infrequent occurrences but will average an additional 1 hour per week.
- **Personal Care/Hygiene-** This includes anything from showering, getting haircuts, to getting dressed in the mornings. We all likely have to put some level of effort into our appearances, either for work or for oneself. After adding time spent on morning/nighttime routines, showering, and everything else, this can add up to 5 hours per week.

All the above tend to be things we should more than likely do to properly stay on top of everything. Beyond this is the layer where the rest of your available time becomes a personal choice. For many, this will include time spent with friends, family, or relaxing by not doing

[40] Matz, Carlyn J., et al. "Evaluation of Daily Time Spent in Transportation and Traffic-Influenced Microenvironments by Urban Canadians." *Air Quality, Atmosphere & Health*, vol. 11, no. 2, 2017, pp. 209–220., doi:10.1007/s11869-017-0532-6.

anything considered productive. Others will also try to allocate this extra time for physical or other activity. This will largely depend on personal preference and an individual's *priorities*.

Let us add up the hours per week spent on those primary or necessary tasks. If you are on the lower end of all the time ranges given above, this would put you at around 123.5 hours per week. If you are on the upper end of the time ranges given above, this would put you at about 143.5 hours per week. Given 24 hours a day, for 7 days of the week, this gives us 168 hours per week to spend on different things. Looking at those number would make you think that on the lower end, that gives you plenty of available time at 44.5 hours per week – which is very adequate available time. Even if you are on the upper end, that still leaves you with 24.5 hours per week. Both of those should give any person enough time to maintain healthy habits while also having reasonable downtime.

The caveat, however, is that we have not factored in one of the most considerable time-consuming activities that most every American does each day: Spend time on our phones. According to a ZDnet.com study of 2,000 American individuals, the average American spends about 5.4 hours a *day* using their phones. The study shows that some of those hours are spent on passive activities like listening to podcasts or music, but this still put it at around 4.5 hours of active phone use – primarily via social media, texting, calls, and internet surfing. At that rate, phone time suddenly adds roughly 32 hours per week. If you were on that upper end of the time range spent on other activities, that suddenly puts you at a deficit of about 7 hours per week. This can be a concerning metric because this means individuals may instead have to sacrifice time spent on other things and thereby reduce productivity and time available for friends or activity. To add onto this concern, it is reasonable to assume that the younger population is putting in more hours at work to pursue promotion or increase performance and productivity metrics.

This is where prioritization truly starts to make an immense difference in our lives. Each day we have a set of decisions to make regarding what we will accomplish for that day. These decisions add up over time and begin to form major lifestyle habits, and if you fall into the wrong habits, your health could legitimately begin to suffer and, therefore, reduce your effectiveness at work. After the numerous amounts of necessary tasks taking up our time, we have one big decision to make: How do we spend the rest of our available time? If physical health is a priority, there *should* realistically be a way to sufficiently fit some form of exercise into your routine, no matter your schedule or lifestyle.

RECOMMENDATIONS & PLANS FOR DIFFERENT SCHEDULES & LIFETYLES

This section considers the fact that not all companies will have robust programs in place to facilitate some lifestyle changes that are immensely beneficial, and therefore we are making recommendation for those wanting to prioritize their health but are unsure how. To do this, we will outline some key understandings and methods to take on physical activity as a new habit outside of the facilitation from company wellness programs.

Oftentimes, a barrier to entry for working out can be the fear of judgement and the overwhelming nature of planning and fitting in workouts. That is why it is important to consider the various ways one can reduce these factors preventing us from initiating a workout routine. Before getting into specific individual plans, there are a few housekeeping items that can make working out a much more accessible and convenient activity. The two main ways working out can be made more feasible, no matter your schedule, are by:

1. Understanding and outlining your general fitness goals and
2. Taking small measures to make it more realistic and convenient to achieve those goals

Understanding and Outlining Your Fitness Goals

Starting with outlining your goals, there are specific methods you can undertake to make this much clearer, thereby helping to reduce the overwhelming feeling of creating a routine. Some of these methods include thinking about what your overarching goal is. Think about what it is you want to achieve in a broader sense and then think specifically about what you can do to work towards that. According to the American Counsel of Exercise (ACE), the five health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition.[41] Cardiorespiratory endurance training involves improving your circulatory and respiratory systems and supply of oxygen through intense cardio training involving an elevated heart rate. Muscular strength training involves improving the ability of your muscles to exert maximal force – this also may incorporate nervous system training. Muscular endurance training involves improving the muscles' ability to sustain performance with minimal fatigue over time. Flexibility training involves improving the body's ability to achieve greater ranges of motion at different joints. Lastly, muscular composition training involves the intentional manipulation of the body's fat and muscular masses in the body – this can sometimes be referred to as bodybuilding, where the goal is to grow your muscle size and/or reduce body fat. In general, the average person with fitness goals will fall under at least one of these five categories.

If you want to improve your cardio/heart health, you can try to incorporate exercises like running, swimming, playing sports, or other high-intensity activities. If you want to get stronger,

[41] Author American Council on Exercise Contributor Read More Less. "Youth Fitness: Integrative Fitness Training." *ACE*, www.acefitness.org/education-and-resources/lifestyle/blog/5061/youth-fitness-integrative-fitness-training/#:~:text=Health%2Drelated%20fitness%20involves%20a,endurance%2C%20flexibility%20and%20body%20composition.

you can utilize heavy resistance training and increase the weights over time. If you want to improve muscle endurance, you can utilize lighter resistance training for more repetitions and increase the number of reps over time. If you want to become more flexible, you can incorporate stretching, yoga, or Tai Chi. If you want to grow your muscles, you can incorporate resistance training and workout specific body parts and utilize a specific diet to control body fat levels.

Outlining your primary goals will help you then determine the best ways to go about achieving that goal. Without a specific goal, it is hard to create a workout plan that you want to stick to. As a result, it is very easy to lose focus and determination because there is no defined goal at all. Therefore, it is crucial to understand what it is you want from your fitness journey so that you can have concrete measurables, milestones, or goals set to stick to and abide by. This will also make fitness a much more rewarding process, thereby increasing the likelihood that you will have a desire to continue this habit.

How to Make Your Fitness Goals More Attainable

After you have outlined your general fitness goals, you have already taken a very crucial step towards building a routine. However, there are many factors that will make is "inconvenient" or difficult to outline, develop, and stick with a workout routine. New Year's resolutions are a great example of this phenomenon. In fact, some of the top reasons that resolutions fail is that the resolution is not specific enough, they are not framed positively, and they are not about/for the individual. In other words, it is important to outline your goal and determine ways to meet that goal, as is just mentioned. Additionally, the goal itself needs to be framed in a positive light. For example, if your goal is to lose weight and become more fit through the gym, instead of thinking about the junk foods, snacks, and other things you have to avoid, you must think of the positive outcomes of becoming healthy and how it will make you feel in the end. Lastly, making the

resolution for yourself instead of for someone else will make it a much more rewarding and long-term sustainable resolution.

Resolutions tie in well to habits and routines because resolutions are basically an attempt to form some sort of new habit or lifestyle change. The biggest reasons individuals fail at maintaining new habits are that they take on multiple habits at once, the habit itself is too hard so it is easy to make excuses, they go in without a plan, and there is no time. We will address each of these potential fail points. First, trying to develop multiple habits at once makes it more difficult to focus enough time and energy on one. In other words, you cannot fully devote yourself to developing a new habit if you are also focusing on one or more additional goals. This is significant because the formation of new habits often takes consistent effort for at least 21 days, and 66 days for the habit to become habitual,[42] making the addition of another goal less likely for this consistency to occur. Next, it is important to understand yourself and your limits so that you can develop a reasonable and manageable goal. All too often, people want to set and achieve new health goals, but they will go into the process with unreasonable expectations. A good example of this is when someone says, "I want to lose at least ten pounds." This statement sets a general health goal but may not entail any realistic timeline or expectation. It also lacks specificity and a means by which to achieve that goal. This is one way ruin your motivation to pursue a goal, as unreasonable expectations can set us up for quick failure when we do not see the results, we laid out for ourselves. Therefore, it is important to be realistic, include upper limits, and set certain parameters to adhere to. The additional specificity and limitations will make a goal much more feasible. Instead of generally saying you want to lose X amount of weight, try saying, "I want to

[42] Lally P, van Jaarsveld CHM, Potts HWW, Wardle J. How are habits formed: modelling habit formation in the real world. *Euro J Soc Psychol*. 2010; 40:998–1009.

lose 1 pound a week, and no more than that, by exercising and paying attention to my diet." This more specific statements make the overarching goal of losing weight a lot less difficult and more management, making excuses less likely to be a factor.

Many people set goals to develop new habits without creating an actionable plan, automatically reducing any accountability to work towards that goal. The purpose of creating concrete and actionable items is that you are far more likely to follow through and execute your plan. In a study from the *British Journal of Health Psychology*, it was found that the most effective method of sticking to a habit was by outlining and writing down actionable statements.[43] One such statement might look like: "During the next week, I will partake in at least 20 minutes of vigorous exercise on [DAY] at [TIME] in [PLACE]." Concrete goal setting like this was found to be 2 to 3 times more effective compared to a control group. More specifically, of three groups – group 1 (control), group 2 (motivational material), and group 3 (intentional goal writing) – 91% of the group that wrote down their goals worked out at least once per week, whereas only 38% and 35% of the control group and the group who watched motivational material worked out at least once per week, respectively. This highlights a key difference between telling yourself a vague *motivation* statements like "I will work out more" versus descriptive and intention-based statements as previously described. To compound these effects even further, "goal stacking" is a method that works well.[44] This looks like: "After/Before [CURRENT HABIT], I will [NEW HABIT]." For example, "After work, I will go to the gym for an hour," or "After my morning

[43] Sarah Milne, Sheina Orbell, and Paschal Sheeran, "Combining Motivational and Volitional Interventions to Promote Exercise Participation: Protection Motivation Theory and Implementation Intentions," *British Journal of Health Psychology* 7 (May 2002): 163–184.
[44] Peter Gollwitzer and Paschal Sheeran, "Implementation Intentions and Goal Achievement: A Meta-Analysis of Effects and Processes," *Advances in Experimental Social Psychology* 38 (2006): 69–119.

coffee, I will meditate for ten minutes." By stacking the new habit, you are trying to develop on a habit/routine that you already have, you are more likely to follow through on it.

The last an arguably most common issue with failed habits is the lack of time. Incorporating physical activity into your schedule can be very time consuming and therefore many people will justify not doing it at all. With the right tools and methods in place, however, even a particularly busy individual can make working out more convenient in several way. For example, make your commute to work itself exercise, whether that is by riding a bike or walking there if you are within reasonable distance. Always keep your workout clothes and gear handy – pack a bag with your gym clothes and bring them to work so that you can head straight to the gym after work, cutting out unnecessary back -and-forth commute time. Schedule your workout times like you schedule everything else – if you make a conscious effort to put a specific time for the gym in your calendar, you are likely to stick to it. Try out a new sleeping schedule to optimize your time during the day – if you wake up earlier, you can try and get into the gym before work. Join the most convenient gym possible – this will cut additional commute time that cuts out time from your day. Create a positive mindset towards working out. This last step sounds broad, however taking steps to frame the gym in a positive light will make it a fun experience that you will look forward to instead of as something that is a *waste* of your time. By instituting these small steps for your routine, these will also help to build consistency over time, adding onto the likelihood that these habits will stick.

Sleep as a Primary Health Element

In this paper, we have discussed the importance of good physical health, and we have touched extensively on the health benefits of physical activity. However, there are other essential elements that should be incorporated into building good health. The three primary pillars include

physical activity, *nutrition,* and *sleep*. Given the detailed overview of physical activity and some information on dieting, the focus here is the importance of quality sleep.

As is mentioned, sleep is very crucial for physical *and* mental health due to the hormone production that occurs during sleep. In fact, we produce up to 95% of our growth hormones during our sleep. This means that growth and recovery from exercising is *primarily* achieved through effective sleep. More specifically, slow-wave sleep (SWS) is where approximately 70% of our growth hormones are released.[45] This is the stage of sleep that is typically in the earliest stages of your sleep for the night, typically starting within 30 minutes of falling asleep. This is your deepest form of sleep.

There are several stages of sleep, which can be broken down into REM and non-REM, REM meaning rapid eye movement. You typically begin with stage 1 non-REM, where your body switches from daytime wakefulness to sleep. Your heartbeat, breathing, and eye movements slow, and your muscles begin to relax. Not much else occurs in this stage. Beginning stage 2 non-REM sleep means your bodily functions slow down even further, and your eye movements and body temperature drop. Stages 1 and 2 are known as "light sleep." Stages 3 and 4 of non-REM sleep are where the SWS (deep) occurs, and this is referred to as your healing stage where tissue growth and repair takes place along with the release of hormones. REM sleep, often referred to as stage 5, begins after this at about 90 minutes after the sleep cycle begins. This is when dreams occur, and your body becomes temporarily paralyzed to prevent you from acting out dreams. Your eyes literally move rapidly from side-to-side while your brain activity approaches that of when you are

[45] Van Cauter E., Kerkhofs M., Caufriez A., Van Onderbergen A., Thorner M. O., Copinschi G. 1992b. A quantitative estimation of growth hormone secretion in normal man: reproducibility and relation to sleep and time of day. *J. Clin. Endocrinol. Metab*.; 74:1441-1450.

awake. The importance of sleep ultimately lies within both REM and non-REM sleep. In deep non-REM sleep, our body can:

- Restore its energy
- Regenerate cells
- Increase blood supply to muscles
- Promote growth and repair of tissues and bone, and
- Strengthen our immune system.

Without adequate amounts of deep sleep, our chances of developing risks for Alzheimer's, heart disease, diabetes, and stroke all increase.[46] Regarding the REM sleep stage, the primary benefits/functions include[47]:

- **Storing information from the day**- this is found to be an essential process is developing long-term memories.
- **Enhancing your learning**- the storing of memories and information throughout the day helps to solidify important information that you come across during the day.
- **Increased cognitive functions**- the mind will be able to function much better the next day after proper REM sleep is achieved. Without enough sleep, you have to work harder to adequately digest similar amounts of information.

[46] Peter-Derex, Laure, et al. "Sleep and Alzheimer's Disease." *Sleep Medicine Reviews*, vol. 19, 2015, pp. 29–38., doi:10.1016/j.smrv.2014.03.007.
[47] Ackermann, Sandra, and Björn Rasch. "Differential Effects of Non-REM and REM Sleep on Memory Consolidation?" *Current Neurology and Neuroscience Reports*, vol. 14, no. 2, 2014, doi:10.1007/s11910-013-0430-8.

After all this information, good sleep is clearly an essential element of good physical health. So, what are the ways you can improve your sleep quality? Follow some of these steps to better your sleep:

- **Develop a routine**- your body will be much more fit for good sleep if you give it a consistent bedtime routine and sleep schedule. This will optimize the benefits of your sleep and help to maintain consistent sleep stages. (See figure 2 in appendix for ideal ranges of time spent in each sleep stage).
- **Sleep in a dark room**- Light can negatively influence our sleep, so the darker the room, the better. You can also invest in a sleeping mask to block excess light.
- **Set your room temperature to about 68 degrees**- You will fall asleep quicker if you are in a cooler room. This may vary, though, based upon preference.
- **Reduce screen time before bed**- the blue light from devices confuses our brain into thinking it is still daytime. The overall effects are minimal, but the stimulus from devices themselves can keep our brain awake as well.
- **Cut out alcohol**- Unfortunately, alcohol has been proven to have negative impacts on our sleep because it disturbs and alters our sleep cycles and can inhibit our body's ability to enter deep sleep – which is essential for recovery.

By taking some of the above advice, you will put yourself in a much more prime position to have better sleep quality. The key takeaway from this section should be that sleep quantity itself is not the only important factor, though we should always try and shoot for at least 7 hours, but sleep *quality* is what truly enhances your recovery.

CONCLUSION

The findings presented in this Thesis point to considerable amounts of data that supports the implementation of physical health programs into the corporate world. Through the analysis in this paper along with external resources, it is evident that programs that emphasize the importance of physical health among employees leads to mutually beneficial results for both workers and corporations. For employees, increasing physical health was shown to improve an array of health-related concerns such as, but not limited to decrease risk of heart disease, type 2 diabetes, several cancers, cardiovascular disease, hypertension, obesity, depression, osteoporosis, and premature death. Additionally, improved physical health also impacts mental health such as improving mood, brain health functionality, sleep, and overall self-confidence while simultaneously lowering chances of depression and anxiety. For employers and corporations, using physical health programs has been shown to lower health care costs, decrease levels of employee absenteeism and presenteeism, increasing worker productivity, and an overall net positive return on investment.

With such findings, it is reasonable to recommend that all companies utilize a form of wellness programs to encourage healthier employees. With adequate funding, these programs can be highly effective in improving the health of employees while also saving the company millions, even billions, in avoidable costs. More specifically, companies should develop such programs with these pillars in mind: Multilevel leadership involvement, alignment of values, scope and relevance, accessibility, partnerships, and communication. If these can all be involved in the creation process, as well as the continuous maintenance, of wellness programs, then companies and employees can mutually benefit in the short- and long-term future.

APPENDIX

EXHIBIT 4

Johnson & Johnson And Comparison-Group Adjusted Health Risk Trends, 2005–08

	At risk each year (%)				
Health risk/sample	**2005**	**2006**	**2007**	**2008**	**Average difference[a]**
ALCOHOL USE					
Johnson & Johnson	2.0***	3.0	3.3**	3.1***	0.0
Comparison	3.1	3.2	2.9	2.4	
BLOOD PRESSURE					
Johnson & Johnson	11.1	6.5***	6.7***	7.0***	−4.1
Comparison	11.6	12.7	12.3	11.1	
CHOLESTEROL					
Johnson & Johnson	8.3	6.8***	6.8	7.6**	−0.3
Comparison	8.8	7.9	7.3	6.8	
DEPRESSION					
Johnson & Johnson	5.9***	7.4***	7.3***	6.3***	3.8
Comparison	3.5	3.1	2.6	2.4	
NUTRITION					
Johnson & Johnson	73.2***	67.5***	66.5***	65.1***	−6.7
Comparison	77.2	75.6	73.9	72.6	
OBESITY					
Johnson & Johnson	21.1***	19.0***	20.8***	21.5***	−6.6
Comparison	26.0	27.2	27.6	27.8	
PHYSICAL ACTIVITY					
Johnson & Johnson	37.2***	31.4***	31.8**	29.8***	−0.7
Comparison	31.9	35.9	33.0	32.2	
STRESS					
Johnson & Johnson	6.9***	12.6***	12.4***	10.9***	6.7
Comparison	4.7	4.0	3.9	3.5	
TOBACCO USE					
Johnson & Johnson	7.5***	4.4***	4.1***	3.8***	−10.6
Comparison	14.7	19.2	16.5	11.9	

SOURCE Authors' analysis of data from Johnson & Johnson health assessment vendors and data from six comparison companies in the Thomson Reuters MarketScan Health Risk Assessment database. **NOTES** Percentages shown are the predicted probabilities that the average employee at Johnson & Johnson and the comparison companies are at high risk for the stated health risk. Predicted probabilities were calculated from logistic regression models for each health risk and each year controlling for age, sex, and region. Sample included all Johnson & Johnson employees and comparison-company employees who met eligibility criteria and had completed at least one health assessment between 2005 and 2008. [a]Average difference is the difference between Johnson & Johnson and the comparison companies in 2005–08. **$p < 0.05$ ***$p < 0.01$

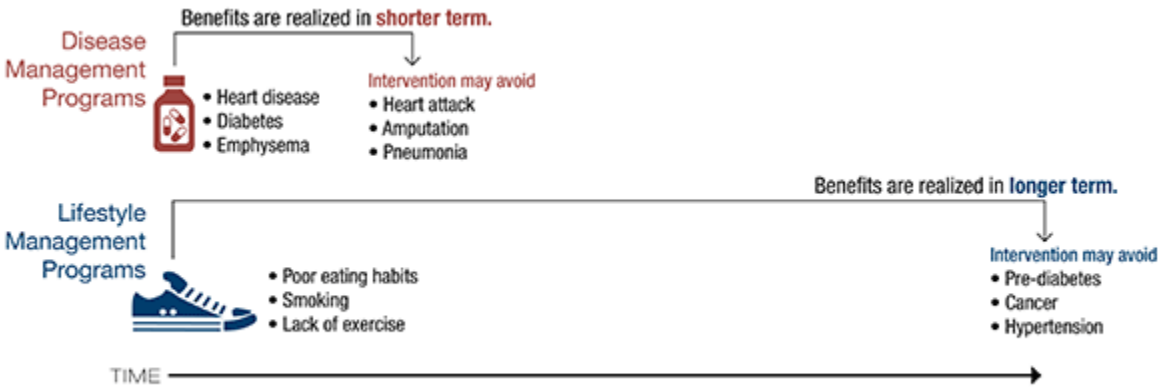


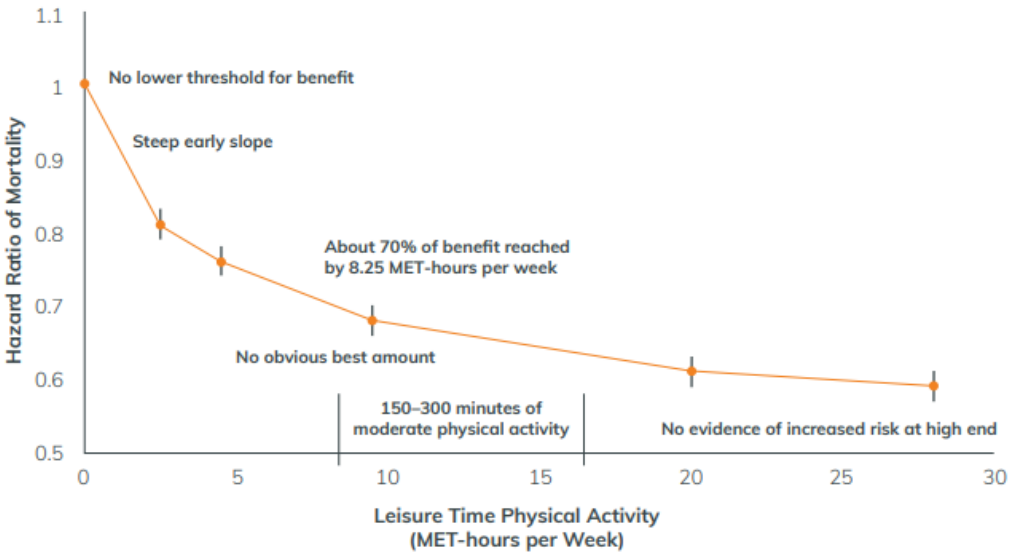
Figure 1, source: RAND Corporation

Estimated global cumulative GDP gain over 30 years relative to baseline scenario with current physical activity levels

Panel A: Cumulative global GDP gain (US$ trillion present value 2019), by year						
	2025	2030	2035	2040	2045	2050
Scenario 1 (Low)	0.4	1.2	2.1	3.2	4.5	6.0
Scenario 1 (High)	0.6	1.7	3.1	4.7	6.5	8.6
Scenario 2 (Low)	0.3	0.8	1.4	2.2	3.0	4.0
Scenario 2 (High)	0.4	1.2	2.1	3.2	4.5	6.0
Scenario 3 (Low)	0.7	2.0	3.5	5.3	7.4	9.9
Scenario 3 (High)	1.0	2.9	5.1	7.8	10.8	14.4
Panel B: Cumulative global GDP gain (US$ present value 2019) per adult person, by year						
	2025	2030	2035	2040	2045	2050
Scenario 1 (Low)	70.4	185.6	305.1	430.1	561.8	704.9
Scenario 1 (High)	104.2	272.7	445.3	624.8	812.4	1,015.7
Scenario 2 (Low)	47.9	125.2	205.0	289.2	379.1	478.7
Scenario 2 (High)	71.3	186.5	305.3	430.6	564.4	712.6
Scenario 3 (Low)	116.8	306.8	503.2	709.3	927.5	1,166.5
Scenario 3 (High)	173.3	453.6	741.2	1,041.5	1,358.5	1,705.2

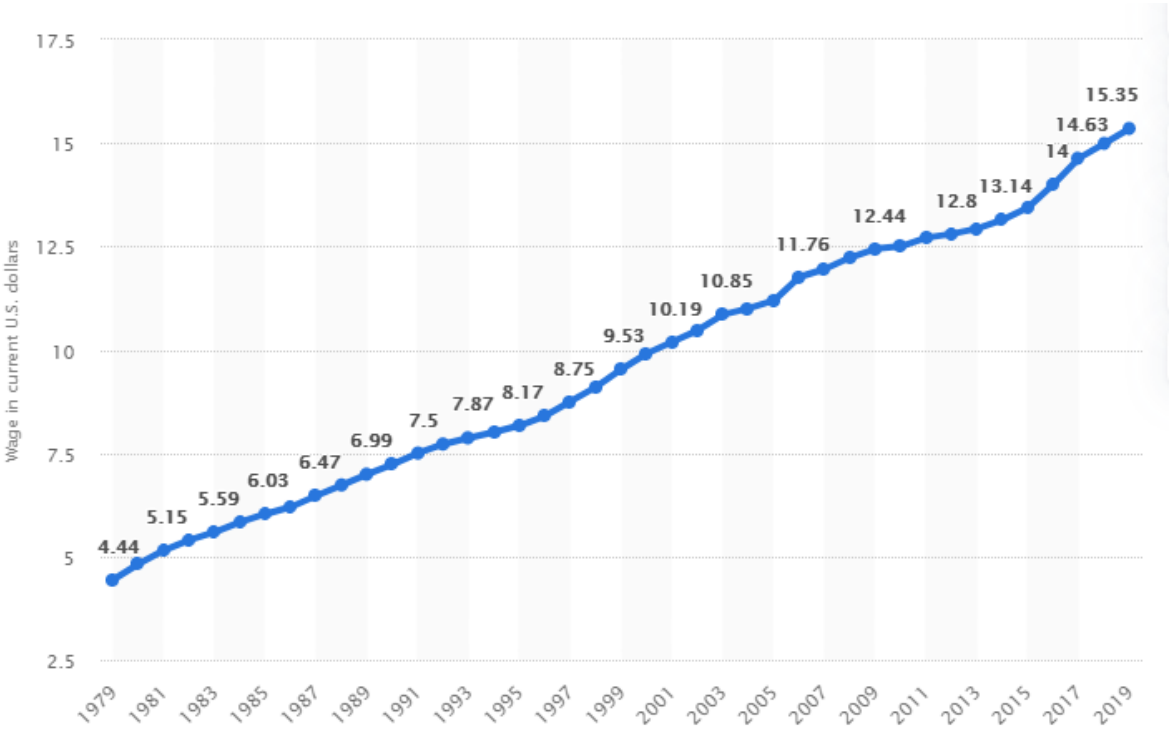
Notes: Table entries in Panel A represent cumulative changes in global GDP over 30 years for three physical activity improvement scenarios relative to a baseline scenario economic projection with no physical activity improvement (status quo). Estimates are shown for both variants of reductions in sickness absence and presenteeism levels ('Low' and 'High'). Entries in Panel B represent the cumulative GDP gain per adult person by year, where the cumulative GDP gain is divided by the adult population in a given year.

Table 1, source: RAND Europe



Source: Adapted from data found in Moore SC, Patel AV, Matthews CE. Leisure time physical activity of moderate to vigorous intensity and mortality: a large pooled cohort analysis. PLoS Med. 2012;9(11):e1001335. doi:10.1371/journal.pmed.1001335.

Graph 1, Source: PLoS Med



Graph 2, Source: Statista

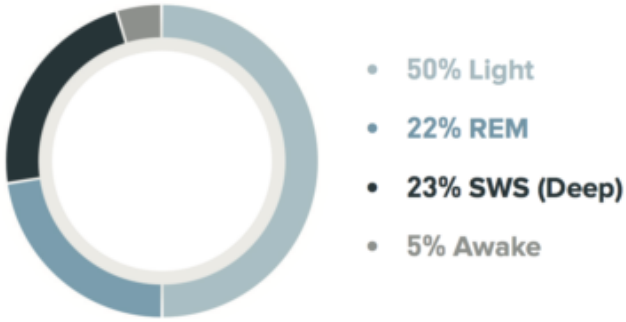


Figure 2, Source: Whoop

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