How To Become a More Productive Programmer Using LLMs (Lots of Limb Movements)

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ABSTRACT

Programmers in recent years have sought increases in productivity in a variety of areas, from artificial intelligence and automation to new programming languages and methods. However, little attention has been paid to the actions a programmer themself could take outside working hours. It is estimated that 207,000 working days are lost in the UK every year due to insufficient sleep, while poor mental health amongst employees costs UK employers up to £45bn per year. Focusing on these areas of improvement could result in increased levels of productivity. Regular physical activity can increase duration and quality of sleep, while also improving overall mood. Furthermore, improved overall physical health can reduce risk of illness-related absence. In this paper, the link between physical activity and productivity will be explored, as well as how employers can reap the rewards of promoting employee health and fitness.

INTRODUCTION

Productivity is one of the general measures of success in many industries. We can measure productivity by assessing the amount of work an individual completes over a given period, or alternatively we can measure it based on the number of days or hours that an individual is at work over a given period. Improvement on productivity is sought after often by streamlining existing workflows or implementing new processes. However, an alternative path to improved individual productivity can be found by improving sleep quality and duration, exercising more, and making slight changes to diet. These changes can improve cognitive function, memory and creativity among other attributes that contribute to a productive workday, as well as decreasing sickness-related absences. Both employees and employers can take action to promote these changes.

THE CURRENT STATE OF PRODUCTIVITY

According to a survey conducted in the UK, the average employee is productive for almost 3 hours per day, despite working an average of 8 hours per day (Ward, 2018). As well as this, the average employee in the UK took 7.8 days of sick leave in 2023 – the most in over 10 years (Milliken, 2023). While these issues can be attributed to several varied reasons, physical wellbeing and sleep have proven to cost employers large sums. Obesity and other chronic health conditions are estimated to cost US employers $153 billion per year (Simpson, 2011), while insomnia costs another $63 billion (Kessler, et al., 2011).

DIRECT LINKS TO PRODUCTIVITY

EXERCISE

Taking part in regular exercise can have direct impacts on your productivity, performance, creativity, and focus. A study found that physical activity can provide workers with ‘resource caravans’ – a combination of improved focus, vigour and sleep quality (Li, Cheng, Yu, & Zhu, 2024). As well as this, a worker may also benefit from improved self-belief in their job, leading to

higher levels of motivation and consequently job performance. Problem solving capabilities are also linked to physical activity; a study found that everyday bodily movement was positively correlated with creative performance (Rominger, Fink, Weber, Papousek, & Schwerdtfeger, 2020). Introducing exercise could prove beneficial for many individuals, as the general population is known not to engage in a sufficient amount of physical activity; approximately 25% of adults in the UK exercise for less than 30 minutes per week (Sport England, 2023-2024).

While more intense activity can prove useful, individuals can see improvements in productivity even from small changes in their everyday movement. Research has shown that individuals that implement a sit-stand routine using a standing desk can improve self-reported work performance, physical health and engagement (Ma, Ma, Li, & Kim, 2021).

SLEEP

It is well known that a lack of sleep leads to feelings of drowsiness and irritability. As well as this, it has been known that our cognitive function can be impacted by insufficient sleep (Alhola & Polo-Kantola, 2007). Cognitive performance refers to our ability to maintain focus, memorise information and solve problems. People who are sleep deprived may experience microsleeps, which are episodes in which an individual will alternate between being awake and asleep over a period of less than 30 seconds (Poudel, Innes, Bones, Watts, & Jones, 2012). While these microsleeps are most concerning for those who work with large machinery, it is clear to see that an individual experiencing this issue would have lower levels of productivity. Although it is a lack of sleep that results in performance issues rather than surplus of sleep resulting in higher performance, YouGov surveys indicate that over 75% of Britons sleep less than 8 hours per night, and almost a quarter of those sleep less than 6 hours (Smith, 2020). In general, improving the amount and quality of sleep you get will likely result in improved performance.

EXERCISE LEADS TO SLEEP, SLEEP LEADS TO EXERCISE

While both physical activity and sufficient sleep can have direct impacts on an employee's performance, it is also important to highlight how these two items are linked to each other.

Physical activity increases the production of melatonin in the body, which is a hormone that regulates the sleep-wake cycle. As well as this, exercise can reduce stress and improve mood, which in turn can improve sleep. A study found that individuals that exercised for 30 minutes per day would sleep an average of 15 minutes longer than those who did not exercise, as well as improved quality of sleep (Alnawwar, et al., 2023). While exercise does have a positive impact on productivity, individuals who exercise are likely to also see the benefits that sufficient sleep provides.

Sufficient sleep may also prove to be important for individuals who exercise. Sleep deprivation has been shown to affect time to exhaustion and an individual's perceived effort (Van Helder & Radomski, 1989). While more difficult exercise may not seem concerning, overtraining can cause fatigue, poor mood, and injuries; a lack of sleep may mean that an employee may not be able to be physically active, making the inclusion of exercise for productivity more difficult.

Regular exercise and quality sleep have a cyclical relationship. An individual who engages in physical activity may see improvements in their sleep, while sufficient sleep may mean that an individual can exercise more regularly.

MENTAL HEALTH AND GENERAL PHYSICAL WELLBEING

IMPACT ON PRODUCTIVITY

In 2022 in the UK, poor mental health was the given reason for 7.9% of absences due to sickness, making it the fifth most common reason and causing an estimated 14 million workdays missed (Office for National Statistics, 2022). The issue of mental health may only grow worse as the younger individuals enter employment, as workers in the 16-34 age group are four times more likely to report a work-limiting mental health condition compared to a decade ago (Atwell, Vriend, Rocks, Finch, & Farrington-Douglas, 2023).

In a similar vein, the general physical well-being of workers has a significant impact on productivity. There is a correlation between the BMI of an individual and the number of days taken off work due to sickness. On average an individual of normal weight takes 6 days per year compared to 9.5 for an obese individual (Insight Workplace Health, 2025). It's likely that this is because obese individuals tend to have other health conditions; obesity is a risk factor for type 2 diabetes, heart disease and strokes among many other illnesses (National Institute of Diabetes and Digestive and Kidney Diseases, 2023).

HOW SLEEP AND EXERCISE CAN HELP

A study found that individuals have on average 3.4 days of poor mental health per month. It was also found that of these individuals, those that performed some form of physical activity had 40% less poor mental health days per month (Chekroud, et al., September 2018), though it must be acknowledged that poor mental health could make exercising more difficult. Exercise is said to improve the overall mood of individuals, as well as reduce stress levels. In terms of general well-being, regular exercise lowers the risk of many health conditions and can aid in the reduction of body fat percentage which in itself improves physical well-being.

Insufficient sleep is also correlated with poor mental health. An estimated 75% of depressed people also suffer from insomnia (Nutt, Wilson, & Paterson, 2008), though it's likely that insomnia is a consequence of depression in most cases. That being said, poor sleep can affect general mood and irritability. Similarly to exercise, poor sleep in an individual presents a higher risk of health conditions (Summer, 2025).

There are clear links between sleep, exercise, physical well-being, and mental health. All of these items have direct impacts on productivity at work and as such, improving in one area can improve other areas while also improving productivity.

A NOTE ON DIET

The topic of diet is less clear-cut than sleep and exercise; there generally is not a one-size-fits-all approach to diet, and less of a consensus on what a healthy diet is. Despite this, it has been shown that the inclusion and exclusion of certain foods can have positive impacts on cognitive function, general health, and sleep. One study found that higher intakes of vegetables and fruits was associated with better cognitive function, as well as slower cognitive decline (Huang, et al., 2024). As well as this, higher levels of cholesterol have been linked with higher risks of cardiovascular disease; it is recommended to eat less saturated fat to lower cholesterol levels. Caffeine and alcohol are sometimes referred to as sleep disruptors; caffeine has been found to disrupt an individual's sleep up to six hours post-consumption, while alcohol can lower the quality of an individual's sleep.

Supplements can also be a convenient approach to diet. The B vitamins contribute towards brain function and while they are readily available in a healthy diet, there is evidence to suggest that much of the population are deficient (Kennedy, 2016). Creatine is a compound that can be found in meat and dairy products, though generally it is supplemented in larger doses. Some studies have found that larger doses can be linked to improved memory as well as intelligence (Avgerinos, Spyrou, Bougioukas, & Kapogiannis, 2018).

ACTIONS THAT INDIVIDUALS CAN TAKE

There are many actions that we as programmers can take to improve our productivity through physical activity and sufficient sleep.

Physical activity:

- Find the right exercise for you. Not all individuals will enjoy or benefit from the same activity. Some forms of exercise can have physical or financial barriers that could prevent people from participating.
- Balancing the intensity of exercise correctly. Individuals new to exercise should ease into activity and try to keep levels of exertion lower.
- Exercise with others. A team or group can help with motivation, as others can keep us accountable whilst also making exercise more enjoyable.
- Introduce movement into more aspects of your day. There are many ways we can move more that do not involve rigorous exercise:
    - Trying to move more while working. This could involve standing or walking whilst in meetings or even while working. Lunch breaks can also be a great opportunity to go for a short walk.
    - Walking or cycling for shorter journeys.
    - Making walking a bigger part of our journeys. This can be achieved by parking further from our destination or by exiting public transport one or two stops earlier than needed.
    - Choosing to take the stairs more often.

Sleep:

- Take sleep-encouraging actions before going to bed:
    - Having a warm shower or bath
    - Reading
    - Avoiding screentime an hour before going to sleep
    - Blocking blue light from screens using filters or blue light glasses
    - Not consuming caffeine six hours before bed
    - Avoiding alcohol consumption
- If the above actions are taken regularly, this can help to set up a routine which will further encourage sleep.
- Creating better conditions for sleep by reducing light and noise. This can be achieved with ear plugs, eye masks and white noise or soothing sounds.
- Eating evening meals earlier. Having a large meal close to bedtime can disrupt sleep.
- Exercising earlier in the day. Rigorous exercise late in the evening can make falling asleep more difficult.

ACTIONS THAT ORGANISATIONS CAN TAKE

Organisations themselves can also take actions to help promote physical activity and better sleep for their employees. By doing this, both the employee and the employer can reap the benefits of increased productivity.

Physical activity:

- Provide facilities for employees to engage in exercise and movement:
    - Offering on-site gyms
    - Partnering with local gyms for discounted or subsidised memberships for employees
    - Creating ergonomic workstations with standing desks.
    - Providing treadmills or walking pads to promote walking meetings or calls
    - Removing barriers to exercising before or after work by providing on-site showering facilities, fully equipped changing facilities, bicycle parking, lockers. Organisations can also relax existing dress-codes which can help employees stay active throughout the day.
- Creating movement challenges with incentives. This can encourage competition and lead to more employees engaging in physical activity.
- Organising internal workout classes or groups, such as yoga or running clubs. These can take the form of in-person events or virtual classes or groups.
- Setting up wellbeing teams or consulting with experts to highlight the importance of physical activity. Blogs, podcasts, or meetings can be created.
- Allowing flexible working hours. This may give employees more opportunity and time to exercise.

Sleep:

- Stress and poor mental health can have a significant impact on sleep. Organisations should provide support for employees that are struggling, especially where work is a contributing factor. Training for line managers can be very beneficial here, as well as having mental health first-aiders.
- Flexible working hours can aid employee sleep. This can allow employees to fit their working hours around their sleeping schedule rather than the other way around.
- Employers can promote work-life balance by discouraging late-night working as well as out-of-hours emails and meetings. Employees can also be discouraged from accessing emails and messages outside of working hours. This can limit screen time and stress later in the evening.

Other actions:

- Providing free fruit, vegetables, and other nutritious food to promote healthier diets.
- Implementing nutrition programs. A vegan workplace nutrition program was found to improve general health, mental health, vitality and physical functioning in employees (Katcher, Ferdowsian, Hoover, Cohen, & Barnard, 2010).

CONCLUSION

Physical activity and both amount and duration of sleep can be linked to the productivity of an employee; improving these aspects of our lives can lead to becoming a more productive worker. These two items are also linked together; it can be shown that increasing our levels of physical activity can improve our sleep quality and duration. The converse is also true, getting insufficient and poor-quality sleep can make it more difficult to engage in physical activity. Exercise and sleep are also closely linked to mental and physical health. These attributes can also have an influence on an employee's productivity, and so improving one aspect of our lives can have a strong impact on our ability to work efficiently. There is not a specific diet that we can choose to improve our productivity. However, supplementing vitamins as well as increasing our fruit and vegetable intakes can positively affect our work both directly and indirectly. Employees can take many actions which can allow them to partake in exercise more easily, as well as achieve better sleep. Organisations can remove many barriers which can prevent employees from achieving these goals, whilst also highlighting the importance of sleep and exercise on our work.

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