

# ERGONOMIC ARRANGEMENT OF THE OFFICE WORKPLACE

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**Abstract** The main aim of this paper is to introduce the importance of ergonomic design of the office workplace and its impact on employee health. The discussion is based on the knowledge that a properly ergonomically designed office has a positive impact on individual health. Ergonomics is the interdisciplinary study of workloads and the search for relief when the workload causes discomfort or even exceeds the permissible limit. An ergonomically incorrect office can cause a number of accidents and health problems for individuals. The aim of ergonomics is to adapt work to the potential and needs of people in the workplace, to ensure their safety and health. It is important to know the correct positioning of the elements in the office space, i.e. chair, desk, screen, mouse, keyboard. Proper regulation prevents health problems and increases employee satisfaction, productivity and engagement. This paper should also trigger questions about how to increase the knowledge and uptake of ergonomics in the workplace.

**Keywords:**  
ergonomics,  
health,  
productivity,  
workspace,  
employees

## 1 Introduction

Within the current economic working environment there is increasing talk about correct ergonomics and its impact on employees. In recent years, the subjects of ergonomics and working from home have become familiar to many. Working from home has become increasingly popular, especially during the COVID-19 pandemic. There are many advantages to working from home, however, there are also some disadvantages, one of which is the incorrect ergonomic design of the workspace at home.

Office workers are exposed to many health risks. Problems can be caused by: sedentary work, prolonged static posture and forced posture due to improper workstation layout, work with frequent and repetitive hand or wrist movements, high levels of concentration and data overload, demanding work, time pressure, low levels of control over the working day and inadequate support from managers and colleagues, working in unsuitable temperatures or in draughty conditions, inadequate lighting, noise, restricted access and barriers and many more (EU-OSHA, 2007).

Every worker faces at least some static load that affects them to some extent. They are usually unaware of the negative effects and consequences of being in the wrong, often at the time comfortable, static position for prolonged periods of time and activity. For these reasons, it is crucial to choose the right work equipment that meets the ergonomic and physiological requirements of the individual (Horváthová et al., 2019).

Introducing ergonomics into the company not only mean benefits for the employees but also has many benefits for the company itself. Managers usually associate ergonomics with occupational health and safety and related legislation rather than with business performance. Ergonomics can help organisations maximise the capabilities and productivity of their workforces, make wise capital expenditure, minimise the costs of manufacturing and employee benefits, and avoid lawsuits (Joyce & Marcotte, 1996).

This paper provides rules for a precise ergonomic design of the office, leading guidelines for using office equipment to ensure a safe working environment, and recommendations for improving ergonomics in the workplace.

The structure of the paper is as follows. First, a brief theoretical overview is provided of what ergonomics is, legislation in the field of ergonomics and the problems that arise from inadequate ergonomics in the workplace. Instructions are then given for how to design an office workstation in a precise ergonomic way. Finally, the effect that working from home and improper workplace ergonomics have on employees is discussed and recommendations are made to improve ergonomics at home and in the workplace. The paper concludes with suggestions for future research directions.

## **2 Theoretical background**

Ergonomics is the interdisciplinary study of workloads and the search for relief when the workload causes discomfort or even exceeds the permissible limit. The term means the technical or organisational adaptation of work to the worker's capabilities (Levovnik, 2014). The goal of ergonomics is to create safe, comfortable and productive workspaces (Negulescu & Doval, 2021).

In a broad sense, ergonomics can be divided into three major areas, which are physical ergonomics, cognitive ergonomics and organisational ergonomics (Levovnik, 2014).

Ergonomics deals with the three main elements of work. The first is the workers and their level of skill and effort. This is followed by the work, which is defined by the specific task or tasks to be performed and the level of physical and mental effort that is put into it, the number of movements or steps and the time taken to complete the work. The final element is the workplace, including the space, work surfaces, equipment, tools and materials needed to complete the task (Negulescu & Doval, 2021).

Ergonomics has some important benefits for both employers and employees, namely reducing costs, improving productivity and quality by reducing fatigue and frustration, and improving employee engagement as employees feel safer about their health. It also creates a better safety culture, as the company demonstrates a commitment to health and safety as a core value (Negulescu & Doval, 2021).

The legislative meaning of ergonomics was marked by the launching a programme by the Council of European Communities concerning ergonomics and health and safety at work, called the 'Framework Directive'. It defines minimum safety and health requirements for workers in their workplace. This Directive has been transposed into national legislation. It requires employers to conduct regular analyses of workstations, to draw up and adopt a safety statement, which also includes a risk assessment for computer workplaces, to inform and train workers on safe and harmless computer work, to plan daily work routines, to consult and participate with employees and take measures to protect worker's eyes and their eyesight.

As mentioned, work can carry various risks and dangers that could endanger a person's health. Health problems in the workplace can be a major barrier to a successful business. In this paper, the authors investigated which factors most influence the occurrence of various diseases in office workers (Chan, Ross, Clouthier, Fischer & Graham, 2022).

There are increasing links to the development of musculoskeletal disorders in experts with inadequate working conditions. Musculoskeletal disorders are injuries to components of the body, such as muscles, joints, nerves, ligaments, bones and the blood system. When they occur, the consequences often primarily present as damage to the work and the effects of the immediate environment in which the work is performed. The causes of musculoskeletal disorders can be physical and biomechanical, organisational, psychosocial and personal. They can work alone or in combination. Exposed factors are often the result of non-ergonomic working conditions. Many could be prevented by ergonomically designing the jobs and tools that are used in the workplace (Chan, Ross, Clouthier, Fischer & Graham, 2022).

The work environment can also be considered as one of the main factors that can affect workers' mental health. The work environment has positive effects when work provides both success for the company and contributes to personal satisfaction, however, it can also lead to negative effects caused by stressful situations, work abuse (mobbing), inappropriate work patterns and schedules, etc., which can result in changes in workers' mental health (Ahmed, Qamar & Soomro, 2022). It is crucial that organisations use strategies to promote mental health and prevent illness in the workplace, as work-related mental health problems place a heavy burden of disease on society and the economy (Hassard & Cox, 2022).

A well-ergonomically arranged workspace helps prevent health problems, improves worker productivity and, consequently, the company's operations, and also increases employee satisfaction (AGIL, 2016). Thus, it can be concluded that good ergonomic practice is beneficial for both the organisation and its employees (Rahman, Hossain & Khan, 2022).

Good ergonomic practice in the company means, among other things, a well-ergonomically arranged workspace. The choice of equipment and its installation is of paramount importance to achieve suitable working conditions. The positioning of certain items in the workplace should always be considered. One of the key elements in ensuring that people can work comfortably and efficiently is good posture. Correct posture is facilitated by the correct ergonomic design or layout of the workspace. It is important that the computer screen is placed directly in front of the worker, arm's length away and aligned with the torso, with the top of the screen at or slightly below eye level. The keyboard and mouse should be placed at or slightly above the elbows. They must be placed on a hard surface in close proximity to each other. The office chair should support the spine, as is important for it to be stable and adjustable. It should be placed at a height that allows the feet to be completely on the floor or on a footrest, with knees at a 90 degree angle. The work surface or table must not reflect or glare. It is also crucial that it is not positioned too low to ensure there is ample legroom. The size of the work surface depends on the tools needed during work. When choosing where to place a phone, it is important that it is within easy reach. When ergonomically arranging the workplace, providing adequate lighting and temperature must not be forgotten. The room should be ventilated and not too noisy. For ergonomics in the workplace to be successful, all employees need training in the best ergonomic practices for physical tasks and the use of equipment (EU-OSHA, 2007; MFMER, 2021).

Ergonomic arrangement of the workplace means that work is adapted to human physical and mental characteristics, thereby reducing the harmful effects on health. A safe and comfortably designed workplace facilitates work, reduces the likelihood of mistakes and injuries, and creates well-being. In order to enable workers to work efficiently and without excessive stress, it is necessary to provide a workplace that is tailored to the human body, mobility and, after implementation, designed so that workers can operate in a posture that is least stressful and is equipped with working means adapted to the psychological and physiological characteristics of the human

body. When designing a work system, it is necessary to anticipate future developments and design a work system accordingly (SOPS, 2014).

The COVID-19 pandemic had a profound impact on our daily lives. One of the biggest challenges in adapting to the pandemic was the transition to working from home (Okuyan & Begen, 2021). During this period, there was an increase in injuries and discomfort resulting from nationwide pressure to work from home, as millions of workers spent months working on couches, beds and kitchen counters. Laptops are a major culprit, since constantly looking down puts us in the incorrect head position, which burdens the discs and joints of the spine and causes muscle imbalance in the neck (Wilser, 2020). Several factors are important for success in the workplace, even when working from home. One of the best is the proper use of computers and keyboards (Qamar & Soomro, 2022). It is important to include different types of rests: frequent ‘micro-breaks’ that last only five seconds and change your posture, for example, if you are looking down at the screen, now look up at the ceiling for five seconds; then occasional ‘macro-breaks’ lasting three to five minutes, such as deep breathing or stretching the shoulders; and finally, a ‘big workout’ of at least 30 minutes, preferably in one workout (Wilser, 2020).

Some of the recommendations for improving ergonomics in the workplace include employee training, adapting the office environment, short breaks and self-observation.

### **3 Discussion and conclusions**

In today’s world of busy schedules and fast-paced lives, people often forget about the one thing that keeps us ‘on our feet’ and enables us to live life as we know it – our health. Although it would be logical to make taking care of our health and bodies our priority, it is too often neglected, whether due to fear, lack of time, energy, money or many other excuses. Often, we come to realise that there is a problem when it is already too late.

It is important that we take care of our health in all aspects of our lives, not only in our spare time through recreation and nutrition, but also at work. According to Eurostat (Eurostat, 2022), the average European spends 37 hours a week at work, while the average Slovenian spends between 38 and 40 hours a week. According to

these statistics, people spend almost a third of their lives at work. That is why we as individuals as well as management departments in companies should start making commitments to the well-being of our/employees' bodies, both at home and at work.

It is important to recognise that health is the most critical asset of a person and of a company. During our lifetime, people often find themselves working in different jobs, sometimes in different sectors or fields. Jobs can range from agricultural work, teaching, business management, working in beauty salons, administrative work, to professional athletes, construction workers, cleaners, media technicians, vloggers, etc. – the possibilities are endless. However, along with its benefits, every job also has risks and drawbacks that can have a negative impact on our bodies and well-being.

Additionally, considering the current economic circumstances caused by COVID-19, it is important to stress the fact that our lives have been turned upside down over the last few years. This includes changes with the timespan and environment set within our working hours. The meaning of work attire, a good office/work environment or even the job itself was almost been lost for a while. People were chained to their homes for 24 hours a day and the entire work process was moved to our computing devices in a virtual world. Consequently, this has pulled down many set scales relating to work, i.e. meetings became less formal, business dress code was lowered as a standard from business-professional to business-casual or even just casual dress code, people moved their workplaces from offices to home desks and laptops, tablets or phones, and somewhere, no doubt, to even armchairs and sofas. As time passed, comfort was becoming more-and-more important. However, there are many negative side effects to comfort, such as poor posture, suffering of the spine, shoulders and upper limbs, with additional psychological effects that should not be neglected.

In terms of the implications of this paper, the findings suggest that employees need to be encouraged to actively participate in the identification and recognition of ergonomic problems inside the company, using their observations and suggestions to help eliminate them. Managers should recognise the importance of employees' knowledge in relation to the job they are doing. Employees' experience must be used in planning, as well as in the implementation and improvement of various ergonomic

measures. To improve ergonomic efficiency in their companies, managers are advised to primarily listen to the needs of their employees, whether they are publicly expressed or just tacit wishes. It is the manager's role to know and care for their workers. With the integration of a company's workers into the process, it is possible to effectively reduce or even eliminate problems, difficulties, or shortcomings as quickly as possible. If the workers themselves are happy and healthy, their work will be much more efficient, harmonious and, of course, productive, which is a definite benefit for the company.

In summary, as previously mentioned, through the process of drafting this article, the authors identified one certain aspect – the company and its employees work seamlessly, interdependent of each other, as a complex, constantly changing and flexible system. The system is made up of several different elements that affect each other in diverse ways. Changing one element will undoubtedly have an impact on others. Therefore, problems and dangers resulting from poor ergonomics in the workplace can have negative consequences not only for people but also for the decline of the entire company. Companies need to be aware that in addition to rewards, salaries, benefits, staff trips, health and well-being also play a huge role in employee satisfaction process. Just like people and every being in this world, the company acts as a harmonious organism whose health must be nurtured in order to function well and efficiently.

Therefore, it can be concluded that the above cognitions call for deeper research about the role of ergonomics in companies. Ergonomic measures can often be relatively simple and direct. This is often enough to make workers aware of basic ergonomic principles. This means they will be able to identify many ergonomics dangers in the workplace on their own and avoid them accordingly. However, ergonomic measures may differ from each other. They aim to manage and change work tasks, improve workplace conditions, adjust work equipment, change the organisation of work, or try to influence the workers themselves. Of course, it would be best if jobs were originally planned with the worker and their capabilities in mind. It often turns out that eventually, bad planning could be much more expensive than good.



Of course, the original purpose of dealing with any ergonomic problems that may arise in a company is to improve life quality of people, but the fact is that eliminating these diseases also means better business.

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