

Ergonomics in Contemporary Office Furniture: A Research between Market Offerings and Theoretical Studies

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Abstract. In the context of the increasing prevalence of sedentary work, traditional office furniture no longer adequately meets users' ergonomic needs. The contemporary work environment involves a high level of sedentary behavior, which leads to the emergence of health problems and a decrease in productivity. This study analyzes office furniture currently available on the market, identifying ergonomic functions and mechanisms that can contribute to the integration of movement into users' daily routines. Based on a comparative analysis of ergonomic chairs, height-adjustable desks, and equipment supports, as well as a review of the relevant scientific literature, a new development direction is proposed for a unified workstation concept aimed at reducing the negative effects of sedentary behavior and improving users' physical and psychological health. The results of the study indicate that users' needs during office activities primarily involve adequate and dynamic body support, while physical activity remains a priority for both mental and physical health.

Keywords: movement at the office, ergonomic furniture, physical and mental health, design, innovation.

1. Introduction

Working styles directly influence employees' health, productivity, and overall well-being. Office work practices have evolved over time according to their specific characteristics and can be classified into three main styles: sedentary, semi-active, and active. These styles differ based on the level of movement integrated into daily routines. Each style is associated with specific defining characteristics, as well as certain risks or benefits, which depend both on individual experience and public perception.

Based on data and surveys conducted in 2024–2025 [1], a research study on the level of activity at a workstation was conducted and it is estimated that:

- **63%** of Romanian employees work exclusively from their company's office, using the employer-provided workspaces on a daily basis, chair and desk;
- **25–30%** operate in a hybrid work regime, alternating between working from home— where most have a dedicated workspace—and working from the office;
- **10%** work entirely from home.

Sedentary Work Style

The sedentary work style is the most widespread in fields where computer- or laptop-based tasks are predominant. It involves spending the majority of working hours in a seated position, with minimal

movement breaks; consequently, physical activity is almost nonexistent throughout the workday.

The characteristics of the sedentary work style [2] include continuous desk-based work, infrequent standing, short or rare breaks, and little to no movement between tasks.

Risks associated with the sedentary work style:

- Postural problems, back pain, and neck pain;
- Increased risk of cardiovascular and metabolic diseases;
- Increased fatigue and decreased concentration in the long term.

Semi-Active Work Style

The second work style is the semi-active work style. This represents an intermediate variant in which employees alternate seated periods with moments of movement, either through short walks, the use of equipment such as height-adjustable desks, or due to job requirements that necessitate alternation between seated and active postures.

The characteristics of the semi-active work style [3] include regular movement breaks (every 30–60 minutes), changes in working posture (sitting versus standing), and moderate physical activity during the day (e.g., stair climbing, walking during breaks). Risks associated with the semi-active work style:

- Fluctuations in energy levels;
- Headaches or blurred vision;
- Lumbar, cervical, and shoulder pain caused by prolonged static postures.

Active Work Style

The third work style is the active work style. This style involves the frequent integration of movement throughout the working day, either through the use of specialized equipment or by adopting healthy habits that promote regular physical activity.

The characteristics of the active work style [4] include continuous movement during working hours (e.g., short exercises, stretching), well-defined breaks dedicated to physical activity, and the conscious use of every opportunity for movement (such as walking to meetings or during phone calls).

Risks associated with the active work style:

- Lumbar and cervical pain caused by repeated incorrect postures;
- Accumulated fatigue and reduced energy levels at the end of the day;
- Knee and hip pain, especially when working on hard surfaces.

The project aims to investigate and analyze contemporary office furniture widely used by the general population, with an emphasis on furniture designed according to specific user-oriented requirements.

Table 1. Work styles and their definitions

Work Style	Definition
Sedentary work	The sedentary work style is characterized by prolonged sitting at the workstation, with little to no movement or standing throughout the working period.
Semi-active work	The semi-active work style is characterized by extended periods of sitting combined with frequent standing and short movement breaks.
Active work	The active work style is characterized by sitting during approximately half of the working time, with movement and physical activity integrated into the remaining half.

Following this study, solutions are being explored to innovate how the workstation itself motivates users to move, through elements of mechanics, mechatronics, design, and reliability

2. Market Offers

Following a market study based on sales volume and user feedback for each product, several pieces of office furniture with a body-support function and intended for office activities were selected, namely office chairs, desks, and computer supports. Based on these products, information regarding functionality and user-support features beneficial to users was extracted.

2.1 Office chairs

The 5000 Task Chair [5] enables movements suitable for a semi-active work style, offering a high degree of flexibility for prolonged working periods. These movements include: horizontal mobility of the entire chair in all directions via casters (1), 360-degree rotation of the chair through the central piston (2), vertical height adjustment of the seat (3), horizontal seat depth adjustment (4), backrest recline exceeding 45 degrees (5), vertical adjustment of the backrest (6), vertical adjustment of the armrests (7), horizontal forward-backward adjustment of the armrests (8), inward angular adjustment of the armrests up to 10 degrees (9), and diagonal adjustment of the armrests together with their supports (10). The unique features of the chair that can be transferred to the proposed future concept, supporting semi-active and active work styles, include:

- **4D armrest support**, allowing armrest position adjustment in four directions, enabling chair customization according to individual user needs;
- **Synchrone mechanism**, which allows simultaneous adjustment of the seat and backrest in response to changes in the user's posture.

Using the **Task Chair** by Kinnarps as a reference, an additional design with distinct functional properties was also examined in order to expand knowledge regarding applied mechanisms, namely the **Capella Nature Task Chair** [6]. This chair is also suitable for a semi-active work style. The additional movements it provides compared to the previously analyzed chair include vertical adjustment of the headrest (11) and headrest rotation at an angle ranging from 0 to 180 degrees (12).



Figure 1. Adjustable positions of the Capella Nature Task Chair. Positions (1), (2), (3), (5), and (7) represent common adjustments found in most office chairs, while positions (4), (6), (8), (9), (10), (11), and (12) correspond to features specific to ergonomically designed chairs.

The unique features of this chair, different from those mentioned previously and suitable for inclusion in a semi-active or active workstation concept, include:

- **5D armrest support**, allowing adjustment of the armrests in five different directions, enabling personalized customization for each user;
- **Adjustable headrest** with rotational mechanism, allowing the user to modify its vertical position as well as the angle of inclination according to individual needs.

The **Capisco Puls 8010** model [7] represents a modernized version of office chairs, retaining the innovative design inspired by a saddle and promoting an active, variable posture during work. It is ideal for modern offices and creative workspaces and is compatible with height-adjustable desks.

The chair supports both semi-active and active work styles, offering high flexibility for prolonged desk work. Its adjustable movements include: horizontal movement of the entire chair in all directions via casters (1), 360-degree rotation through the central piston (2), vertical seat adjustment (3), horizontal seat adjustment (forward and backward) (4), backrest recline exceeding 45 degrees (5), vertical backrest adjustment (6), synchronized tilting of the seat and backrest (7), horizontal headrest adjustment (forward and backward)(8), and vertical headrest adjustment (9).

The unique features that can be incorporated into a future workstation concept include:

- **Side openings for leg placement when using the backrest as chest support**, which allow the chair to be used in multiple positions, facilitating flexibility required for prolonged work at the desk.
- **Piston variants with different heights**, allowing the chair to be used for both semi- active and active work styles.



Figure 2. Adjustable positions of the Capisco Puls 8010 Chair. Positions (1), (2), (3), (5), and(7) represent common adjustments found in most office chairs, while positions (4), (6), (8), and (9) correspond to features specific to the ergonomic design of this chair.

The Sayl Chair [8] is designed to be both cost-effective and aesthetically appealing while incorporating key design aspects, namely: attractive design, premium ergonomics, elegant engineering, and environmental sustainability. Analysis of the chair, including its components and the movements it allows during use, indicates that it is suitable for a semi-active work style, offering moderate flexibility for prolonged periods of desk work. Compared to the previously analyzed chairs, its additional feature is movement (6), corresponding to vertical adjustment of the lumbar support.

The unique features of this chair that could be incorporated into a future workstation concept include:

- **Adjustable lumbar support**, which maintains the natural curve of the spine during use. It is important that the support is vertically adjustable so that each user can position it at the point of contact with their spine;
- **Multi-surface casters**, suitable for various types of flooring on which the office chair will move.



Figure 3. Adjustable positions of the Sayl Chair. Positions (1), (2), (3), (5), and (7) represent common adjustments found in most office chairs, while positions (4), (6), and (8) correspond to features specific to the ergonomic design, including the new lumbar support adjustment.

The **Pipersong Meditation Chair** [9] is designed to provide flexibility and comfort. This design promotes constant movement and body stimulation, helping to reduce discomfort associated with prolonged sitting in a single posture. It is suitable for a semi-active work style, offering high flexibility for extended periods of desk work, although with relatively lower seating comfort.



Figure 4. Pipersong Meditation Chair with leg support for a semi-active work style.

The unique feature of this chair that could be adapted for a future concept is the **rotating footrest**, which allows the user to remain highly active during desk work by enabling frequent positional changes forward, backward, and to the sides.

The Symbian Chair [10] introduces new mechanisms for seat flexibility, making it suitable for a semi-active work style, offering high flexibility and comfort for prolonged desk work. The unique feature that could be incorporated into a future concept is the flexible backrest fabric, which eliminates the need for a separate lumbar support due to its elasticity under spinal pressure. It is important that the backrest conforms to the shape of the user's spine.

The Newtral Magic Chair [11] represents an innovative design, adaptable for use with a workstation or independently with its own work surface. Analysis of its components and the movements it enables during use indicates that it is suitable for a semi-active work style, offering high flexibility and comfort for extended periods of desk work. The movements that the Newtral Magic Chair can perform are: horizontal movement of the entire chair in all directions via casters (1), 360-degree rotation of the entire chair through the central

piston (2), vertical seat adjustment (up and down) (3), extension of the footrest(4), backrest recline exceeding 45 degrees (5), forward–backward adjustment of the lumbar support (6), vertical adjustment of the armrests (7), horizontal forward–backward adjustment of the armrests (8), inward angular adjustment of the armrests by 10 degrees(9), attachment of a work surface and lifting of the laptop support (10), vertical adjustment of the headrest (11), headrest rotation exceeding 45 degrees (12).

The unique features of the chair that distinguish it from other concepts and could be used to encourage a semi-active or active work style include:

- **Auto-Following Lumbar Support**, which allows automatic adjustment of the lumbar support according to the user’s spine. This feature can also be implemented as a manual adjustment;
- **Retractable Leg Rest**, as a footrest is often requested for prolonged desk work, increasing the chair’s flexibility across a wider range of body positions during extended sitting periods.



Figure 5. Adjustable positions of the Newtral Magic Chair. Numbers (1), (2), (3), (5), and (7) represent common movements found in most office chairs, while numbers (6), (8), (9), (10), (11), and (12) correspond to movements specific to the ergonomic design, including a new feature, the lumbar support. Number (4) represents the leg rest, a feature not found on standard office chairs.

The Altwork Signature Station [12] is a multifunctional workstation that allows users to work in various positions: seated, standing, reclined, or even in a “zero-gravity” posture. The concept was inspired by a personal experience following a back injury and the search for a solution to work comfortably in alternative postures. This workstation provides high flexibility and comfort for prolonged periods of desk work.

Unlike other chairs with integrated footrests and work surfaces, the Signature Station is a unified piece of furniture that enables sedentary, semi-active, and active work styles. The movements that this workstation can perform are: horizontal movement of the entire chair in all directions via casters (1), extension of the footrest (2), tilting of the footrest (3), backrest recline up to 90 degrees (4), rotation of the first joint of the

robotic arm beyond 90 degrees (5), rotation of the second joint of the robotic arm beyond 90 degrees (6), rotation of the third joint of the robotic arm beyond 90 degrees (7), rotation of the first joint of the work surface beyond 45 degrees (8), rotation of the second joint of the work surface beyond 45 degrees (9), extension of the work surface (10), and forward-backward adjustment of the headrest (11).

The unique features of the station that are intended to be implemented in future office chair/workstation concepts include:

- **Robotic arm**, with joints that can be adjusted automatically or manually, allowing precise positioning and angling of each element contained within the unified workstation
- **Zero-gravity experience**, achieved by adding a footrest that fully supports the legs in a horizontal (0-degree) position. The same feature is also considered for the backrest.



Figure 6. Adjustable positions of the Altwork Signature Station. Number (1) represents a movement common to an office chair, while numbers (2), (3), (4) ... (10) correspond to electric movements specific to this powered workstation.

2.2 Support for laptop and computer

Because a workstation also requires support for a laptop or computer, two essential computer/laptop supports were selected for study in the development of a new office workstation concept. The movements they can perform are: rotation of the first joint of the computer arm by 180 degrees (1), rotation of the second joint of the computer arm by 120 degrees (2), rotation of the third joint of the computer arm by over 90 degrees (3), rotation of the first joint of the laptop arm by 180 degrees (4), rotation of the second joint of the laptop arm by 120 degrees (5), and rotation of the third joint of the laptop arm by over 90 degrees (6).

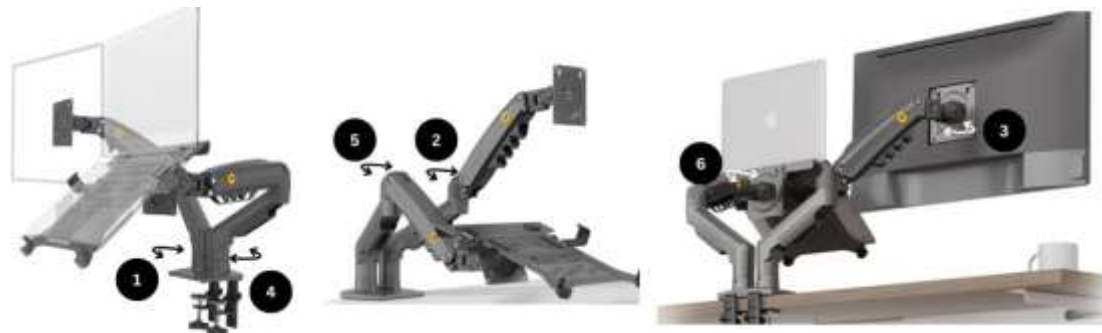


Figure 7. Adjustable positions of the Arm Office F160-FP [13], showing all six movements along the transitional axes for laptop and computer adjustments.

The concept includes features such as:

- **Laptop support**, which allows the attachment of a laptop to the dynamic mounting system;
- **Integrated cable management supports** for computer and laptop wires, enabling precise placement of cables and maintaining organization within the workstation.

2.3 Office Desk

Regarding office desks, **Ogi Drive** [14] is a collection of height-adjustable desks, available with both electric and manual mechanisms. These desks are designed to improve workspace ergonomics, offering functionalities such as anti-collision systems, quiet motors, and options for customization of dimensions and finishes.



Figure 8. Adjustable position of the Ogi Drive desk, showing the single movement that changes the height of the table along the Z-axis.

The only movement that this desk can perform is the vertical extension and retraction of the work surface (1), as indicated in Figure 8. It is observed that this desk is suitable for a semi-active work style, offering medium flexibility and comfort for prolonged desk work. It features a height-adjustment system that allows the user to modify the desk height as needed for both sedentary and semi-active work styles.

3. Theoretical studies

In order to place into perspective the information obtained from the market analysis, the range of movements that office furniture elements can perform, and the working styles they can support, it is important to review other studies conducted on furniture design. The selected studies also aim to innovate workplace furniture with the objective of improving users' physical and psychological health.

3.1 Articles on health issues associated with prolonged office work

A study conducted as part of student health research across several medical and health-related universities—such as the School of Human Movement Studies, The University of Queensland, Brisbane; the School of Population Health, The University of Queensland, Brisbane; the Cluster for Physical Activity and Health, Sydney School of Public Health, University of Sydney, Sydney; the Baker IDI Heart and Diabetes Institute, Melbourne, Australia; the Faculty of Medicine, Norwegian University of Science and Technology, Trondheim, Norway [15]—compiled and reviewed population-based research studies focusing on office work. The aim was to determine whether a relationship exists, and to what extent, between occupational sedentary behavior and the health status of those who engage in it.

A total of 22 studies indicated a positive association between a sedentary working style and an increased risk of illness. However, 20 studies reported no association with health conditions, and 5 studies found that sedentary behavior was associated with a reduced risk of developing various disorders.

3.2 Articles on office chair accessories

The design of workplace furniture can influence—and even accelerate—the development of health conditions. This concept was investigated by two researchers from the School of Kinesiology and Health Science, York University, Toronto, ON, Canada, and the Department of Kinesiology, McMaster University, Hamilton, ON, Canada [18]. Their study examined the effects of backrest configuration on sitting posture, backrest pressure distribution, as well as the influence of backrest design on spinal alignment and seated comfort.

The study begins by defining the role of the backrest in chairs, namely to reduce the mechanical load on the spine by promoting muscle relaxation. The additional backrest used in the study consisted of a polyurethane frame covered with a foam layer and was equipped with a detachable lumbar support, 6 cm thick, attached using Velcro. In addition to the standard lumbar pad, smaller pads with a thickness of 3 cm and larger pads with a thickness of 9 cm were designed, representing 50% and 150%, respectively, of the average thickness of the standard pad.

The positioning of the lumbar pad was standardized so that the most prominent part of the pad was aligned with the mid-lumbar region. The results of the study indicated that a chair equipped with an additional lumbar backrest helps redistribute pressure from the body's musculature onto the chair, providing both comfort and maintaining the spine in a correct posture.

For the development of an integrated workstation, it is also necessary to test the backrest to be designed. In this context, it is essential to identify the parameters that must be considered in order to accurately determine pressure distribution on the chair, ensuring both comfort and ergonomic performance—this being the specific focus of the present research.

A research study conducted by Roland Zemp from the Institute for Biomechanics, ETH Zürich, Zurich, Switzerland [19], aimed to develop a methodology for calibrating a pressure-sensing mat placed over the chair's backrest and seat in order to evaluate specific pressure parameters and identify the most significant ones.

The study was carried out by analyzing pressure distribution using a manikin loaded with different weights to realistically simulate varying real-life loading conditions. The applied weights were 4.40 kg, 6.41 kg, 9.30 kg, 14.20 kg, 24.30 kg, and 44.20 kg. The buttocks of the manikin were modified using modeling clay and foam material and were dressed in shorts to closely replicate the pressure response of human buttocks. Subsequently, the manikin and the pressure-sensing mat were placed on nine office chairs selected from six international manufacturers from different countries, featuring different movement mechanisms, upholstery materials and padding, foam thicknesses and geometries, as well as overall chair designs.

The measurements revealed that all backrest-related parameters could be significant in determining pressure distribution [20]. A workstation equipped with a chair that includes a lumbar cushion accessory is both comfortable and supportive of maintaining an ergonomic posture. The chair to which it is attached is dynamic, and such dynamism—even in the workplace—is essential, as it helps keep the body active despite being subjected to a sedentary work schedule.

A study conducted by a student from the Department of Kinesiology and Health Sciences, University of Waterloo, Waterloo, Ontario, Canada [21], designed a chair intended to facilitate frequent seated-to-

standing movements through auditory and tactile cues, with minimal or no adjustment of the work surface during transitions. This approach offered a new perspective on office work practices as well as on the overall design of workstations. The aim of the study was to compare the new active chair with traditional seated postures and standing work during a 2-hour period of sedentary office work. The findings suggest that the chair supports the adoption of an intermediate posture, enabling frequent transitions between sitting and standing without negatively affecting office task performance during the 2-hour sedentary exposure. The significant reduction in discomfort in the legs and back, compared to unsupported standing, indicates that this chair represents an effective option for promoting movement during office work, maintaining a healthy posture, and reducing pain associated with sedentary behavior.

The potential of unstable seating as a solution to prolonged sitting, while still allowing bodily movement during this period, has also been identified. Unstable sitting on a wobble chair, which allows adjustment of balance difficulty levels, can be used as an effective tool both in exercise settings and in the assessment and treatment phases of the rehabilitation process. A study by researchers A. Shahvarpour, A. Shirazi-Adl, and C. Larivière from the Division of Applied Mechanics, Department of Mechanical Engineering, École Polytechnique, Montreal, Quebec, Canada, and the Robert-Sauvé Occupational Health and Safety Research Institute, Montreal, Quebec, Canada [22], evaluated the safety and biomechanical demands of unstable sitting on a wobble chair used for therapeutic exercises and postural control analysis. Both healthy participants and individuals with chronic low back pain were included, and muscle forces and spinal loads were estimated using musculoskeletal models as well as kinematic and kinetic measurements. The results showed that muscle activity and spinal loading during unstable sitting were comparable to those observed in daily activities and did not differ significantly between healthy individuals and those with low back pain. Participants were able to maintain balance without significant increases in spinal loading.

The study concluded that the unstable wobble chair is safe and effective for improving trunk postural control and can be confidently used in rehabilitation programs; additionally, it represents a viable alternative for prolonged sitting at the workstation.

3.3 Articles on alternative solutions to office chairs

In addition to traditional office chairs, other types of objects that can serve as alternative forms of support for users during office work are also being studied, offering potential benefits for a healthier lifestyle. One such alternative was investigated by researchers from the Faculty of Nutritional Sciences, Nakamura Gakuen University—Hideaki Kumahara, Miyuki Hirayama, Naoko Goryozono, Rina Morimoto, and Makoto Ayabe [23]—who aimed to analyze the effects of different types of seating, including a stability ball, on energy metabolism, muscle activity, and subjective perceptions during seated rest. The study involved 16 adults (8 men and 8 women) with a mean age of 25–26 years, an average BMI of approximately 21 kg/m², and normal physiological parameters. Participants alternated between four types of seating—conventional office chairs with a backrest, conventional office chairs without a backrest, ergonomic office chairs, and a stability ball—for 10 minutes each, in a randomized order. During testing, participants placed their hands on a desk 73 cm in height, maintained a stable posture, and were instructed to remain still once the task had ended.

The results suggest that the stability ball can moderately stimulate trunk muscle activity and slightly increase energy expenditure compared to conventional office chairs, thereby contributing to a more active sitting posture and reducing the muscular passivity associated with prolonged sitting. However, the differences were not substantial, and comfort and fatigue perceptions indicate that the use of a stability ball may also influence perceived effort and stability.

In conclusion, the stability ball represents a potentially beneficial alternative for reducing the effects of sedentary office work; however, it is recommended to be used intermittently and in combination with other ergonomic and active movement strategies in order to maximize benefits for musculoskeletal health and energy expenditure.

Another study conducted by Andrew K. Cardenas, Michelle C. Léger, Cynthia Dion, and Michelle R. Cardoso from the Faculty of Kinesiology, University of New Brunswick, NB, Canada, and the École de kinésiologie et de loisir, Université de Moncton, NB, Canada [24], analyzed the biomechanical and physiological effects of active sitting using an active chair with a split seat, compared with a traditional office chair and a standing workstation. Twenty-four healthy participants performed computer-based tasks for 30

minutes in each configuration, while being monitored using advanced biomechanical and physiological methods. The results showed minimal biomechanical differences among the three workstation types; however, active sitting produced significant physiological benefits, particularly increased oxygenation of the calf muscles. Prolonged sitting or standing was associated with reduced blood flow and increased lower-limb discomfort due to decreased activation of the venous muscle pump.

The study concludes that active sitting, together with alternating between sitting and standing positions, represents an effective strategy for mitigating the negative effects of sedentary work by improving circulation and comfort without compromising biomechanical parameters.

4. Discussion

The analysis of the theoretical studies indicates that prolonged sitting at the workstation represents a potential health risk factor, being associated, under certain conditions, with obesity, cardiovascular diseases, diabetes mellitus, certain types of cancer, and even increased mortality.

However, these risks are not uniform and are significantly influenced by individual lifestyle factors, particularly the level of physical activity performed outside periods of sedentary behavior. The reviewed ergonomic studies highlight the importance of proper office furniture design, with particular emphasis on the chair. Key factors include the use of a backrest with adequate lumbar support, appropriately sized lumbar supports, accurate measurement and distribution of pressure on both the seat and backrest, and comprehensive ergonomic evaluation of office chairs.

Furthermore, research on dynamic chairs and solutions that facilitate frequent transitions between sitting and standing demonstrates that workplace dynamism is essential for maintaining muscle activity and reducing physical discomfort without compromising work performance. Consequently, a modern ergonomic workstation should not only provide static comfort but also actively encourage movement and postural variation.

In conclusion, preventing the negative effects of sedentary work does not rely solely on reducing sitting time, but rather on integrating intelligent ergonomic design, dynamic furniture solutions, and an active lifestyle. The development of a unified workstation that combines ergonomic support with opportunities for movement and posture transitions represents a key direction for improving health and quality of life in the context of modern office work.

The movements that the analyzed chairs can perform, together with the movements of office accessories, are taken into account, and the manner in which these features guide the user toward a sedentary, semi-active, or active working style is examined.

5. Results

The movements that the analyzed chairs can perform, together with the movements of office accessories, are taken into account. The study examines how these features guide the user toward a sedentary, semi-active, or active working style.

Table 2. Analysis of office workstations in relation to working styles, indicating the percentage influence of design, ergonomic features, and movement capabilities on work behavior.

	Sedentary work	Semi-active work	Active work
5000 Task Chair	20%	80%	0%
Capella Nature Chair	20%	80%	0%
Capisco Puls 8010	0%	80%	20%
Pipersonmag Meditation Chair	30%	70%	0%
Symbian Chair	100%	0%	0%

Newtral Magic	20%	70%	10%
Altwork Signature Station	20%	80%	0%
Arm Office F160-FP	40%	60%	0%
Ogi Drive Desk	40%	40%	20%

In the diagram below, the inclination ranges of each chair, support, and desk can be observed individually, according to the configurations and movements they are capable of performing.

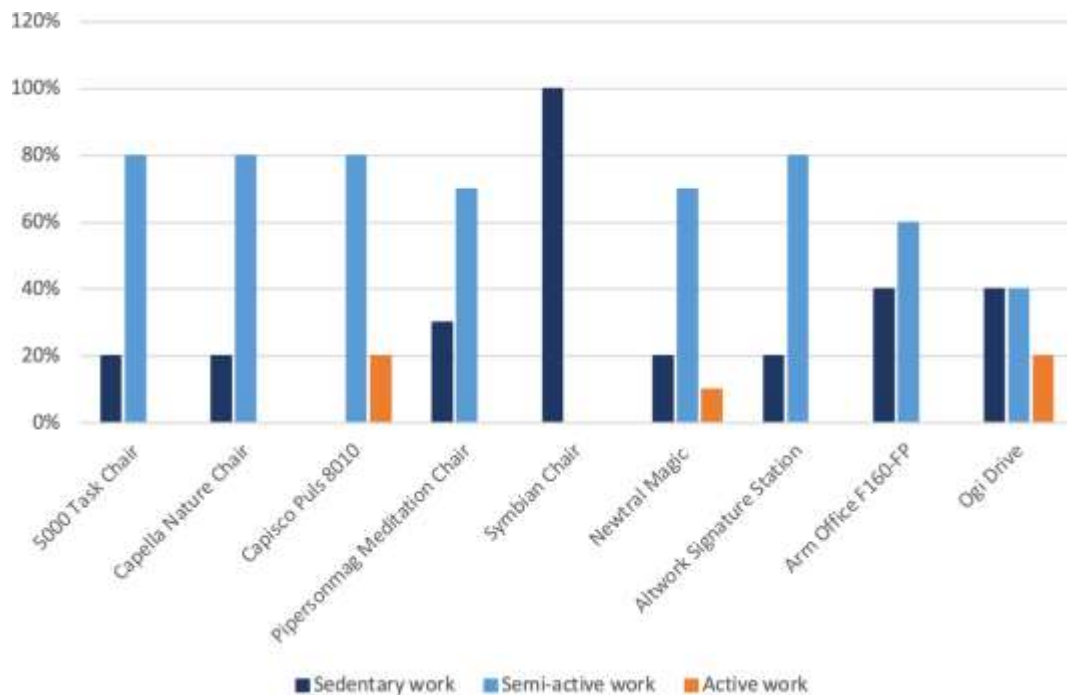


Figure 9. Diagram of analysis of office stations in relation to work styles

Current market chairs, office accessories, and desks offer a wide range of movements designed to support users with high comfort during office work. However, only a few of these features actively guide the user toward movement and a more active working style.

The goal is to identify a configuration of these components that encourages frequent standing, alternation between seated and standing work, and regular mobility, while still allowing the continuation of work tasks.

6. Conclusions

The project highlights the urgent need to rethink modern office furniture, considering the significant impact of work styles on user health. The analysis of chairs, desks, and computer supports available on the market shows that, although well-developed ergonomic solutions exist, they do not always effectively integrate movement into the daily work routine.

The study demonstrates that users require adequate bodily support, increased adaptability, and the ability to vary postures throughout office activities. Features derived from the analyzed products—such as multidirectional adjustable armrests, flexible headrests, dynamic lumbar support, synchronous mechanisms, adaptable backrests, foot support systems, and adjustable work surfaces—outline essential directions for innovating a new workstation.

Moreover, theoretical studies confirm that sedentary work contributes to musculoskeletal and metabolic

disorders, emphasizing that integrating movement into office activity must become a priority. Furniture should be capable of reducing body pressure, maintaining proper posture, and facilitating rapid transitions between sitting, standing, and light movement.

In conclusion, the project underlines that workstation innovation must combine mechanics, ergonomics, and design into a unified concept that: supports the body correctly in static work positions, encourages frequent movement through intuitive mechanisms and multiple adjustments, increases user comfort without compromising productivity, and directly contributes to the physical and psychological health of predominantly desk-based workers.

The ultimate goal is therefore the development of innovative, dynamic, and intelligent office furniture capable of transforming the workstation into an active and healthy environment, adapted to the real needs of users in contemporary professional contexts.

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