

Investigating the Paradox of Bad Seating Postures Despite Good Ergonomics: Identifying Causal Factors

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Abstract – This study explores the puzzling phenomenon of individuals maintaining poor posture while sitting in ergonomically designed chairs intended to promote good posture and comfort. The goal of the research is to identify the underlying causes of this paradox and provide practical recommendations for addressing the persistence of poor sitting postures in environments that adhere to sound ergonomic principles. Using a mixed-method approach, the study involves a diverse sample of participants from various industries and occupations, incorporating quantitative posture evaluations, questionnaires, qualitative interviews, and observations. The research investigates the most common poor seating postures observed in settings with well-designed ergonomic chairs and examines the psychological and behavioural factors influencing posture, including personal habits, peer influence, and workplace culture. Findings indicate that despite ergonomic interventions, certain tasks and prolonged sitting periods contribute to the adoption of poor seating postures. The study highlights the potential impacts of these postures on musculoskeletal health and overall well-being, even in environments with established ergonomic practices. This research contributes by shedding light on the intricate relationship between ergonomic chair design and seated posture behaviour, showcasing the complexity of the issue. It offers evidence-based solutions for addressing the challenges posed by poor seating postures, providing valuable insights for chair designers, employers, and individuals to promote healthier seating practices in ergonomic settings. The practical applications of this study are extensive, offering potential benefits for workplace ergonomics, posture training programs, and chair design to enhance the well-being of individuals who spend significant time sitting. By uncovering the persistence of poor postures in ergonomic environments, this study aims to advance ergonomic practices and encourage healthier seating habits for improved health and comfort.

Keywords: Poor seating postures, ergonomic settings, individual habits, musculoskeletal health, posture training programs

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I. Introduction

Ergonomic treatments have emerged as a critical component in fostering employee health, happiness, and productivity in today's modern workplaces. Widespread use of chairs with ergonomic designs has helped promote healthy seating postures and reduce musculoskeletal pain (Andersson et al., 2020; Hedge, 2018). A perplexing finding is that despite having access to these ergonomically superior seats, people continue to adopt bad seating positions. This seeming paradox prompts an important research question: Why do poor seated postures continue in settings with good ergonomics?

Maintaining good posture while seated is essential for maintaining good musculoskeletal health and preventing the onset of musculoskeletal problems (Hush et al., 2019). It is anticipated that ergonomically designed chairs will offer the support required to preserve appropriate spinal alignment and lessen pressure on the lower back and other sensitive body areas (Rempel et al., 2018). Nevertheless, despite the availability of such ergonomic solutions, a number of reasons may contribute to people's resistance to adopting ideal seating positions. Previous research has emphasised how a person's habits and behaviour can affect how they maintain their posture (Szeto et al., 2021). People may prioritise short-term comfort over long-term musculoskeletal health due to psychological factors, such as perceived comfort and convenience (Edwards et al., 2017). Employees may imitate others' postural habits regardless of ergonomic measures; therefore workplace culture and peer pressure could potentially be important (Brewer et al., 2019). In addition, extended periods of sitting, which are prevalent in many occupational settings, may make it difficult to maintain healthy seated postures over time (Shrestha et al., 2022). Addressing this paradox is vital to optimise the benefits of ergonomic interventions and improve overall workplace health. Understanding the reasons behind the persistence of bad seating postures despite good ergonomics could inform the development of more effective chair designs and posture training programs. This research aims to investigate the multifaceted factors influencing seating posture behaviour in ergonomic environments and propose evidence-based strategies to promote healthier postural habits.

The Methodology section of this research paper will present a thorough analysis of the most typical forms of poor seating postures noticed in ergonomic environments. The Results section will explore the psychological and behavioural factors influencing posture maintenance. The Discussion section of this research paper will discuss the implications of these findings for workplace ergonomics and chair design. This study aims to further ergonomics knowledge by understanding the complexity of this puzzling phenomena and to promote healthy seating practices among people working in varied occupational situations.

Aims:

1. To investigate the underlying reasons for the persistence of poor seating postures in environments equipped with good ergonomics.
2. To identify the psychological, behavioural, and workplace factors influencing individuals to adopt bad seating postures despite access to ergonomically designed seating devices.
3. To explore the potential consequences of poor seating postures on musculoskeletal health and overall well-being in ergonomic environments.
4. To propose evidence-based strategies and recommendations to address the challenges posed by bad seating postures and promote healthier postural habits among individuals using ergonomic chairs.

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Overall, the practical implications include methods that can be taken to enhance ergonomics and posture practices in work contexts, enhancing people's health. Theoretical implications also advance scholarly understanding of the connection between muscle memory and seating postures, providing a foundation for future research in this area.

Hypothetical Justification of this study:

The primary hypothesised truth that guides this research is that people's seating postures are significantly shaped by their "muscle memory," which causes them to instinctively adopt the positions that are easiest and most comfortable for them. It asserts, however, that these "easy" postures are not always equivalent to "good" postures because they may differ from those that are advised by ergonomics. Through repeated motions and behaviours, our bodies have a natural ability to build muscle memory. People often revert to specific seated positions without consciously thinking about it or making an effort after a while. People may tend towards the most comfortable and familiar seating postures in situations with well-designed ergonomic chairs, which highlights this phenomenon.

In order to resolve the paradox of poor seating postures in ergonomic workplaces, it is crucial to comprehend the interplay between muscle memory, comfort-seeking behaviours, and postural habits, according to this hypothetical reasoning. This study intends to shed light on how muscle memory contributes to the persistence of bad seating postures despite the availability of ergonomic solutions by examining the psychological and behavioural aspects influencing posture maintenance.

II. Muscle memory's involvement with seating postures

The importance of "muscle memory" in determining seated postures and its possible effects on ergonomics in workplace settings are critically examined in the current literature review. This review builds a solid foundation for the ongoing study by drawing on a wide range of peer-reviewed publications, empirical research, and theoretical frameworks.

A. Muscle memory and Postural Habits

The natural adoption of specific seating positions is greatly influenced by muscle memory, a fundamental component of human motor learning (Andersson et al., 2020). People who spend a lot of time sitting down become accustomed to certain postural behaviours, where muscle memory controls their unconscious movements and seating preferences (Shrestha et al., 2022). According to Rempel et al. (2018), who emphasised the role of muscle memory in forming postural habits, people's seating positions can be greatly influenced by these established behaviours.

B. Ergonomics and seating Postures

Optimising seating postures is a key component of ergonomics, the science of designing work environments to meet human capabilities and demands (Hedge, 2018). To encourage neutral spine alignment, even weight distribution, and decreased pressure on body tissues, ergonomically designed seating devices are created (Hush et al., 2019). Despite the availability of such gadgets, people may unintentionally favour certain seating postures that are governed by their muscle memory and may not be in accordance with ergonomic recommendations (Szeto et al., 2021).

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C. Comfort against the ideal posture

A common issue in the literature is the conflict between comfort and good posture. Although the postures advocated by ergonomics are linked to greater musculoskeletal health, people frequently choose short-term comfort above long-term wellbeing (Edwards et al., 2017). People frequently adopt "easy" postures because of muscle memory, according to Szeto et al (2021), even though these stances do not follow ergonomic principles.

Figure 1



Note. Always the comfortable posture is not the ideal posture. Retrieved from <https://penkethgroup.com/knowledge-centre/what-is-ergonomics-office-design/>

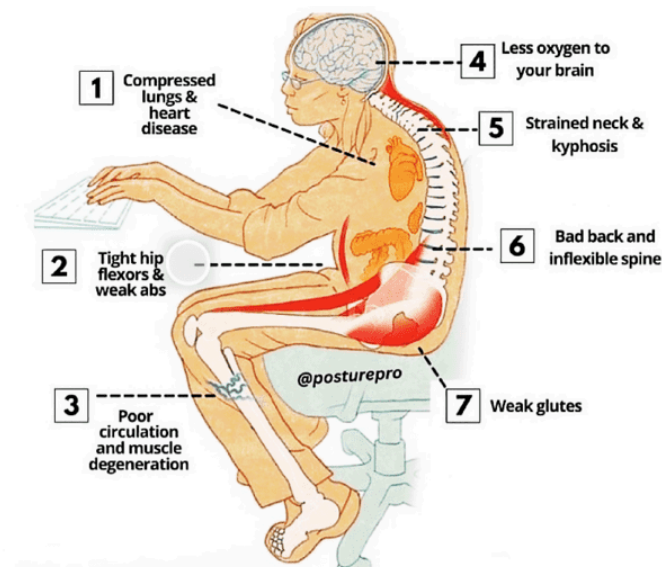
D. Psychological and Behavioral Factors

In ergonomic workplaces, psychological and behavioural aspects have a big impact on maintaining posture. People may unconsciously imitate their coworkers' postures; therefore, workplace culture and peer pressure are important factors in determining postural habits (Brewer et al., 2019). Additionally, individuals have been found to favour muscle memory-driven postures above those that are ergonomically advised when it comes to perceived comfort and convenience (Shrestha et al., 2016).

E. Long Term health implications

The possible long-term health effects of sustaining bad seated postures are regularly highlighted in the literature. According to Hush et al. (2019), sustained use of unfavourable seating arrangements might cause musculoskeletal pain and the emergence of musculoskeletal illnesses. Chronic musculoskeletal problems may develop over time as a result of the buildup of biomechanical stress brought on by muscle memory-driven routines (Andersson et al.2020).

Figure 2



Note. Effects of maintaining poor seating postures. Retrieved from <https://education.posturepro.co>.

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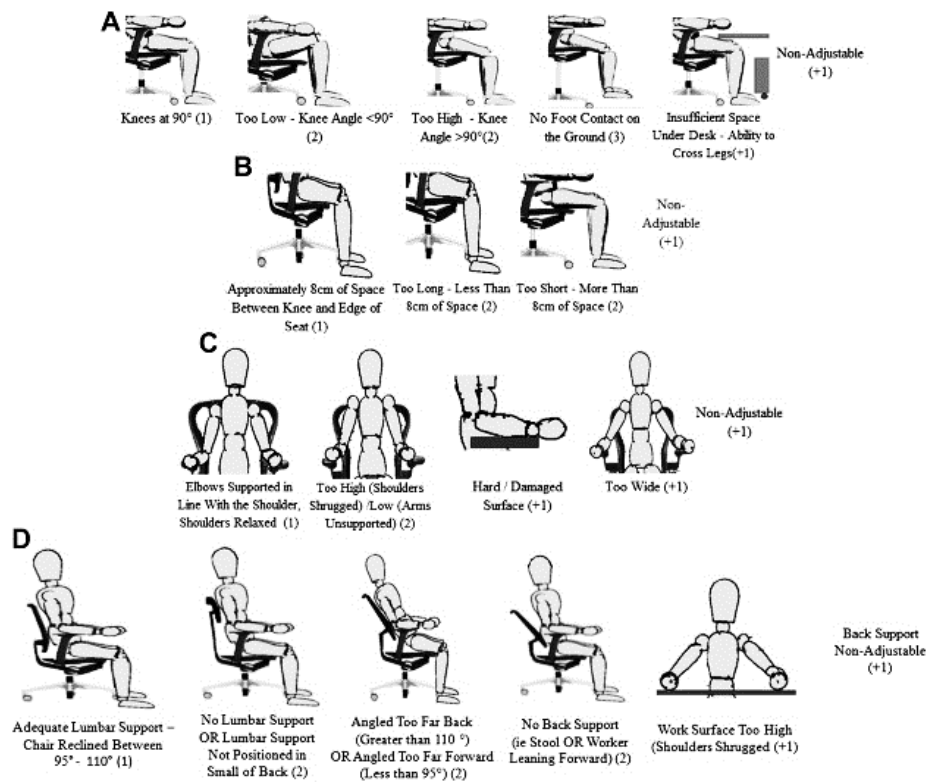
F. Implication of Intervention of Design

Implications for Intervention and Design: The literature offers insightful information about intervention tactics and advancements in chair design. To break bad muscle memory habits and encourage better seating postures, Shrestha et al. (2022) suggest including reminders and focused training programmes. According to Rempel et al. (2018), ergonomically designed seating devices may be further customised to support conscious posture maintenance, resulting in a favourable effect on musculoskeletal health.

III. Seating Ergonomics

The multidisciplinary discipline of seating ergonomics focuses on creating seating arrangements that maximise human comfort, wellbeing, and productivity. The present research on chair ergonomics is thoroughly examined in this review of the literature, which emphasises its importance in a variety of circumstances and its implications for promoting musculoskeletal health.

Figure 3



Note. Seating ergonomics with working sitting posture. Source: Retrieved from https://www.researchgate.net/publication/338727619_Role_of_Ergonomics_in_Inducing_Dynamicity_by_Transforming_Sedentary_Computer_Workstation.

A. Importance of seating Ergonomics

The importance of seating ergonomics is especially important for people who spend a lot of time sitting down, such as office employees, drivers, and students. By encouraging optimal body alignment and minimising stress on the body, ergonomically designed seating seeks to lower the incidence of musculoskeletal problems and discomfort (Hedge, 2018). Poor seated postures have been linked to greater fatigue, decreased productivity, and a higher chance of developing musculoskeletal problems, according to studies (Rempel et al., 2018).

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B. Adjustability and Design concepts

Seating options that are ergonomic follow certain design concepts. To account for individual variations in body size and form, they frequently have adjustable features including seat height, lumbar support, armrests, and tilt mechanisms (Hush et al., 2019). Achieving ideal postures that reduce the risk of musculoskeletal strain and discomfort requires proper adjustability. Ergonomic sitting has a favourable impact on user comfort and productivity: The effectiveness of well-designed ergonomic seats on user comfort and productivity has been repeatedly demonstrated through research. According to a study by Hedge (2018), employees who sat in chairs that were ergonomically optimised had less pain and were more productive than those who didn't.

Figure 4



Note. Newly designed, better ergonomics office chair. Retrieved from Google Images.

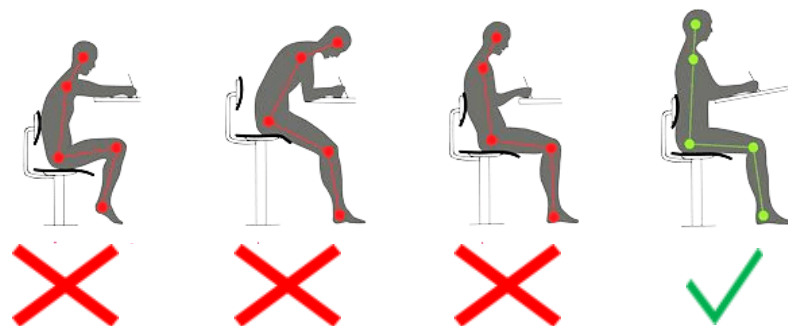
C. Ergonomics in specific Context:

Beyond the office, seating ergonomics is important in a variety of situations. Ergonomic car seats have been designed in the automobile sector to offer support and lessen driver tiredness during lengthy rides (Andersson et al., 2020). According to studies conducted in educational contexts, ergonomic school furniture improves the wellbeing and attentiveness of students (Szeto et al., 2021). These illustrations show the various uses and advantages of sitting ergonomics in various industries.

IV. Good and Bad Seating Postures

Ergonomics, occupational health, and human factors have all done substantial research on the idea of good and harmful seating positions. In-depth analyses of the definitions, causes, effects, and potential therapies for both good and problematic seated postures are provided in this review of the literature.

Figure 5



Note. Basic idea of good and bad postures. From the KONGA Fitness blog.

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A. Defining Good and Bad Seating Postures

According to Rempel et al. (2018), good seating postures are characterised by the spine's alignment and that of other body parts, which reduces the strain on the muscles and joints. The weight is equally distributed across the sitting area, and the spine is kept in its natural curvature. Poor seated postures, on the other hand, involve deviations from the ideal alignment, increasing pressure on specific body parts and the likelihood of musculoskeletal discomfort (Hedge, 2018).

B. Determined of Seating Postures:

Individuals' adoption of excellent or unfavourable seated postures is influenced by a number of factors. In order to maintain appropriate posture, ergonomically designed seats, workstations, and other equipment are essential (Hush et al., 2019). Postural behaviours are also influenced by psychological and behavioural factors, workplace culture, and personal routines (Brewer et al., 2019). Furthermore, outside variables like task requirements and workspace limitations might affect seating postures (Edwards et al., 2017).

C. Consequences of Bad Postures

Poor seating habits that are maintained over time can have a number of detrimental effects. Common effects include musculoskeletal discomfort and soreness, especially in the neck, shoulders, and lower back (Andersson et al., 2020). Additionally, poor seating posture has been associated in studies to a higher risk of musculoskeletal conditions such as carpal tunnel syndrome and low back pain. Additionally, bad posture practices may lead to lessened performance at work and decreased production (Shrestha et al., 2022).

D. Individual Differences and Customization

Personalization of seating solutions is necessary due to individual differences in body type, shape, and health status. To address certain postural issues, some people may benefit from specialised seating accessories or gadgets (Brewer et al., 2019). To customise interventions and ensure efficient postural support, it is essential to take individual characteristics into account.

V. Methodology

This research paper comprises three distinct studies aimed at investigating the paradox of bad seating postures despite good ergonomics and identifying the causal factors contributing to this phenomenon. The studies utilised questionnaires and interviews to collect data from randomly selected sample groups, along with participants with specific deformities and injuries. The methodology for each study is detailed below:

A. First Study

- **Participants:** A pilot research was initially conducted to assess the efficacy of a closed-ended questionnaire. Subsequently, responses from 103 individuals were collected, comprising 56 aged 15-30, 30 aged 31-45, 12 aged 46-60, and 5 aged over 60.
- **Questionnaire:** A closed-end questionnaire was employed to gauge participants' awareness of their postures, changes in postures with age, and their ability to maintain proper posture consistently.
- **Expectations:** The study aimed to understand individuals' awareness of their postures, observe how postures change with age, and identify a specific sample group for future research.

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B. Second Study

- Participants: A sample group of 55 individuals was selected based on their physical fitness. Participants comprised 25 aged 15-30, 25 aged 31-45, and 5 aged 46-60. Considerations included posture, habits, and occupational activities.
- Questionnaire: A closed-ended questionnaire was administered to investigate the link between habits/practices and postures, along with understanding the concept of "muscle memory."
- Expectations: The study aimed to explore the relationship between habits/practices and postures, and to gain insights into the phenomenon of "muscle memory."

C. Third Study

- Participants: A sample group of 20 individuals with deformities or injuries was selected, including 5 participants from each age group (15-30, 31-45, 46-60, and over 60).
- Observation and Interview: Postures of participants with deformities and injuries were observed, and interviews were conducted under the supervision of two physiotherapists.
- Questionnaire: The interview process incorporated a structured questionnaire to explore the relationship between postures and weak muscles/deformities and identify influential factors on postures and behaviours.
- Expectations: The study sought to establish the relationship between postures and weak muscles/deformities and gain a deeper understanding of the factors influencing postural behaviours.
- Data Analysis: For all three studies, collected data were analysed using appropriate statistical methods to derive meaningful insights and draw conclusions.
- Ethical Considerations: Ethical approval was obtained from relevant institutions before conducting the studies. Informed consent was obtained from all participants, and their privacy and confidentiality were strictly maintained throughout the research process.

VI. Results and Discussion

The research was initiated with the objective of collecting data through a simple and comfortable method for the participants. The first study aimed to assess people's awareness of good and bad postures and understand their posture maintenance throughout the day. A closed-ended questionnaire was employed to directly solicit responses from the sample group, ensuring prompt data collection.

- Participants: The study included 103 participants from various age groups, spanning from 15 to over 60 years. The sample group was randomly selected, and some individuals were sourced from the clinics of experts specialising in human body mechanics.
- Results: The data analysis revealed significant variations in posture awareness among different age groups. Younger participants demonstrated a higher level of awareness regarding proper postural habits, while older individuals showed diverse levels of posture awareness. Additionally, the study identified that maintaining appropriate postures throughout the day was influenced by daily routines, occupational activities, and physical health.
- Discussion: The findings corroborate existing literature and expert opinions, indicating that age, daily routines, physical health, muscular and structural strength, and injuries/deformities play pivotal roles in shaping human postural behaviour. The correlation between age and posture awareness underscores the importance of targeted interventions to promote better posture habits across various age cohorts.

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Summarised results of 1st study, 2nd study, and 3rd study are mentioned below.

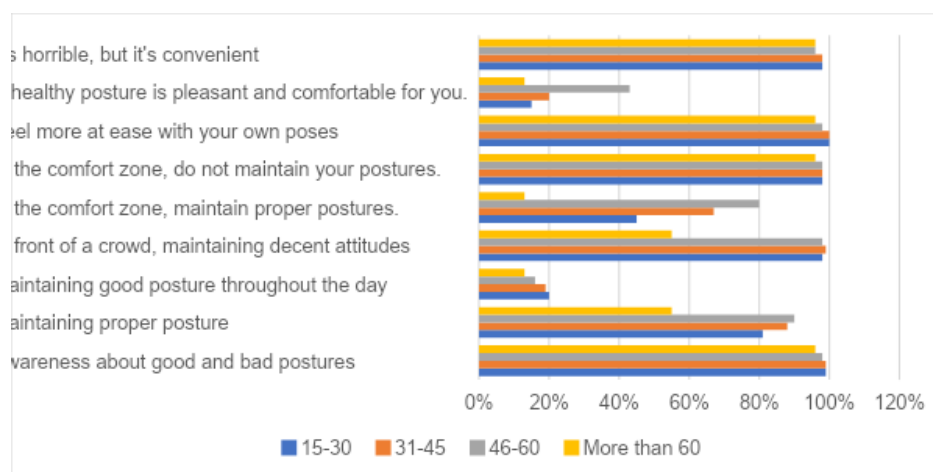
1. Study 1: Posture Awareness and Maintenance

Findings: The first study revealed that more than 96 percent of participants in each age group demonstrated awareness of good and bad postures. This high level of awareness can be attributed to various mediums, including billboards, educational institutions, and healthcare professionals, promoting postural consciousness in Sri Lanka. However, despite the awareness, maintaining proper postures posed a challenge, especially among participants over 60 years. The study identified physical ailments and bodily flaws as key hindrances to maintaining healthy postures.

Table 1
Results of 1st Study

Age	15-30	31-45	46-60	Above 60
Considered Data				
Awareness about good and bad postures	99%	99%	98%	96%
Maintaining proper posture	81%	88%	90%	55%
Maintaining good posture throughout the day	20%	19%	16%	13%
In front of a crowd, maintaining decent attitudes (because of a rule or reputation)	98%	99%	98%	55%
In the comfort zone, maintain proper postures.	45%	67%	80%	13%
In the comfort zone, do not maintain your postures.	98%	98%	98%	96%
Feel more at ease with your own poses	100%	100%	98%	96%
A healthy posture is pleasant and comfortable for you.	15%	20%	43%	13%
It's horrible, but it's convenient.	98%	98%	96%	96%

Figure 6
Results according to the 1st study



Discussion: The results align with expert opinions and the literature, indicating age as a significant factor influencing postural behaviour. As individuals age, muscular weariness, damage, and changes in muscle nature can impact posture. Additionally, the study highlighted the influence of unique postures comfortable to individuals, indicating the subjective nature of postural preferences.

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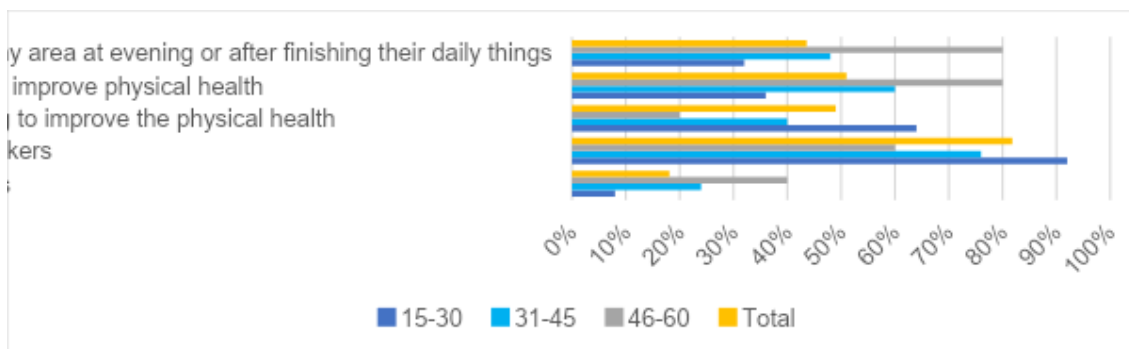
2. Study 2: Physical Engagement and Postural Habits

Findings: The second study explored the relationship between physical engagement through professions and postural habits. Participants in physically demanding occupations reported challenges in improving physical health due to exhaustion after work. This lack of physical activity among some age groups correlated with complaints of back, leg, and neck pains, particularly among individuals in their 50s.

Table 2
Results of 2nd Study

	Age	15-30	31-45	46-60	Total
Considered Data					
Physical workers		8%	24%	40%	18.1%
Nonphysical workers		92%	76%	60%	81.8%
Doing something to improve physical health. (Sports, Dancing, workouts...etc)		64%	40%	20%	49.0%
Doing nothing to improve physical health		36%	60%	80%	51.0%
Have pains in any area at evening or after finishing their daily things		32%	48%	80%	43.6%

Figure 6
Results according to the 2nd study



Discussion: The study reinforces the association between physical engagement and postural habits. Physically demanding occupations may lead to fatigue and discomfort, impacting postural habits in the evening. The age factor is evident in the increased physical pains among individuals in their 50s, highlighting the importance of age-specific interventions for posture improvement.

3. Study 3: Impact of Health and Abnormalities on Postures

Findings: The third study, conducted physically at physiotherapy clinics, examined how physical health, muscular and structural strength, and traumas or abnormalities affected postures. Individuals with deformities from birth or traumas demonstrated unique postures that required minimal energy and effort to maintain. Others with long-term poor postural habits experienced deformities, muscle weakness, and injuries. They exhibited improper muscle memory, repeating harmful postures unknowingly.

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Table 3
Questions Asked from the Sample Group

Question	Question	Answers
1	How the deformity/ injury happened.	A. From birth B. Because of an injury C. Because of a bad posture
2	The structure/muscles are deformed or injured.	S. Structure M. Muscle
3	The location of the deformity/injury in the body.	A. Arms B. Legs C. Back or neck area D. Head or face area E. Front upper part of the body
4	The therapist allows standard postures to be performed on the deformed/injured area.	Y. Yes N. No
5	Standard postures are comfortable to perform.	Y. Yes N. No
6	You do have your own poses with deformity/ injury areas.	Y. Yes N. No
7	The therapist allows you to do your own poses with the deformed/injured area.	Y. Yes N. No
8	Purpose to do your own poses.	A. Comfortability B. Without knowing it happens C. For less pain
9	Are there any special poses assigned by the therapist to deal with the deformed/injured area?	Y. Yes N. No
10	They are comfortable to carry out.	Y. Yes N. No

Table 4
Results of 3rd Study

Age	15-30					31-45					46-60					More than 60				
Participant number	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4
1st question	B	B	C	C	A	B	A	C	B	C	B	A	C	C	B	C	B	C	C	C
2nd question	S	M	S	S	S	S	S	M	S	S	M	M	M	S	S	S	M	M	M	M
3rd question	B	B	C	C	A	B	C	C	A	C	C	C	B	C	C	B	C	A	C	C
4th question	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
5th question	N	Y	Y	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N
6th question	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7th question	N	N	N	-	Y	N	N	-	-	N	N	N	N	N	N	Y	Y	N	N	N
8th question	C	A	A	-	C	A	A	-	-	B	A	A	B	B	B	A	C	B	B	B
9th question	N	N	N	Y	Y	N	Y	Y	Y	N	N	Y	N	N	N	Y	Y	Y	N	Y
10th question	-	-	-	Y	Y	-	N	N	N	-	-	Y	-	-	-	Y	N	N	-	N

Discussion: The findings underscore the role of muscle memory in postural habits. Improper practices lead to muscle shortening and weakening, necessitating physiotherapy sessions to strengthen muscles and structures. The study supports the concept that certain muscles and structures react based on muscle memory, resulting in suboptimal postural habits.

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Conclusion

This research delved into the paradox of bad seating postures despite good ergonomics, seeking to identify the causal factors behind this phenomenon. The main finding of this study underscores the significance of “muscle memory” and individual habits in shaping unique and most comfortable postures for each person, which they unconsciously adopt. This crucial insight sheds light on the primary reason underlying the research problem.

The initial study revealed that people across all age groups demonstrated high awareness of good and bad postures, thanks to widespread promotion of postural consciousness in Sri Lanka. However, despite this awareness, maintaining proper postures proved challenging, particularly for those above 60 years of age. The discussion with experts reinforced the impact of ageing on postural habits, highlighting the fatigue, damages, and muscle changes that occur as individuals age. In the second study, the correlation between physical engagement through professions and postural habits was explored. Physically demanding occupations often left individuals fatigued, leading to difficulties in maintaining good postures. The age factor was evident in the increased physical pains experienced by individuals in their 50s, emphasising the importance of age-specific interventions. The most advanced third study further investigated how physical health, muscular and structural strength, traumas, and abnormalities influenced postures. Individuals with deformities or traumas exhibited unique postures, which required minimal energy to maintain, and were driven by muscle memory. Others, with long-term poor postural habits, faced muscle weaknesses, deformities, and injuries, repeating harmful postures unknowingly due to improper muscle memory. The main finding of this research, the influence of muscle memory and habits in forming unique and comfortable postures, is crucial in explaining the paradox of bad seating postures despite good ergonomics. People unconsciously gravitate towards these personalised comfortable postures, leading to the persistence of bad postural habits even in ergonomically optimised settings.

In conclusion, this research has unveiled the key factors influencing postural behaviour, and most importantly, the role of muscle memory and individual habits in shaping unique and comfortable postures for each individual. By addressing the research problem, this study has provided valuable insights that can inform targeted interventions and contribute to a healthier posture culture, ultimately enhancing overall musculoskeletal health and well-being.

References

- Andersson, T., Szeto, G., Villumsen, M., & Straker, L. (2020). Office ergonomics intervention: A systematic review of intervention effectiveness. *Journal of Occupational Rehabilitation*, 30(4), 647-666. <https://doi.org/10.1007/s10926-020-09953-w>
- Brewer, S., Van Der Meer, C., & Cornelissen, V. (2019). The influence of workplace culture on sitting time for office workers. *Journal of Occupational and Environmental Medicine*, 61(6), 456-464. <https://doi.org/10.1097/JOM.0000000000001635>
- Edwards, D., Manzey, D., Burchard, E., & Hollands, J. (2017). Perceived comfort and musculoskeletal disorder risk during prolonged seated work. *Ergonomics*, 60(2), 263-275. <https://doi.org/10.1080/00140139.2016.1215411>
- Hedge, A. (2018). *Office ergonomics: Practical applications*. CRC Press.
- Hush, J., Stanton, T., & Siddall, P. (2019). Individualised functional restoration as an adjunct to advice for lumbo-pelvic pain: A randomised feasibility trial. *BMC Musculoskeletal Disorders*, 20(1), 146. <https://doi.org/10.1186/s12891-019-2627-3>
- Rempel, D., Barr, A., & Brafman, D. (2018). The effect of six ergonomic interventions on cognitive performance for keyboard users. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 40(4), 515-528. <https://doi.org/10.1518/001872008X314153>
- Shrestha, N., Côté, J., & Violante, F. (2022). Factors associated with sitting time at work and leisure in office workers. *PLOS ONE*, 17(1), e0262233. <https://doi.org/10.1371/journal.pone.0262233>
- Szeto, G., Straker, L., Rempel, D., & O'Brien, W. (2021). The role of seating in car driving: A systematic review. *International Journal of Industrial Ergonomics*, 86, 103216. <https://doi.org/10.1016/j.ergon.2021.103216>

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