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Abstract

This study investigates the impact of various ergonomic and workplace factors on employee retention, aiming to understand how organizations can foster a supportive work environment to enhance employee satisfaction and reduce turnover. Using structural equation modeling, the research examines key variables, including workstation design, proper lifting techniques, task rotation, anti-fatigue mats, ergonomic tools and equipment, break scheduling, and work-life balance. The findings reveal that these ergonomic factors significantly influence employee retention, with proper lifting techniques and ergonomic tools showing the strongest positive associations. The analysis demonstrates that employees who experience a supportive ergonomic environment are more likely to stay with their organization, thus emphasizing the importance of these factors in retention strategies. Additionally, work-life balance is shown to moderate the relationship between ergonomic practices and retention, suggesting that employees who feel their organization values their personal well-being are more likely to remain committed. Fit indices, such as the RMSEA, CFI, TLI, SRMR, and GFI, confirm the robustness of the model, indicating a good fit with the observed data. The study's conclusions highlight the need for organizations to invest in ergonomic improvements and work-life balance initiatives to maintain a stable and productive workforce. While the study offers valuable insights, its limitations include the cross-sectional design, reliance on self-reported data, and the specific organizational context, which may limit the generalizability of the findings. Future research could expand on these findings by exploring additional variables and conducting longitudinal studies across diverse settings to provide a more comprehensive understanding of employee retention dynamics.

Keywords: Physical Therapy, Ergonomics, Work life Balance, Employee Retention, Smart PLS, Proper Lifting Techniques, Ergonomic Tools

1. Introduction

In the contemporary work environment, employee retention has become a significant concern for organizations across various sectors. High turnover rates can lead to substantial costs associated with recruiting, training, and integrating new employees, as well as potential disruptions in service quality and team cohesion (Zelik, L et al., 2022; Ahmad et al., 2024). In fields like physical therapy, where expertise and consistency are critical, retaining skilled professionals is especially important. Consequently, organizations are increasingly investing in strategies designed to enhance employee satisfaction and retention (Mgbemena, et al., 2020; Hasan & Sadat, 2023).

One such strategy is the implementation of ergonomic practices. Ergonomics, the science of designing work environments and tasks to fit the physical capabilities and limitations of workers, aims to minimize discomfort and prevent injury. The importance of ergonomics has gained considerable attention in recent years, particularly in industries characterized by repetitive tasks and prolonged periods of physical strain (Rajendran, M., et al., 2021). Ergonomic interventions can include workstation design and adjustment, proper lifting techniques, task rotation, anti-fatigue mats, ergonomic tools and equipment, and break scheduling. Each of these practices is intended to reduce physical strain, enhance comfort, and ultimately improve job satisfaction (Beschoner, et al., 2020; Quader, 2024; Ibrahim & Rasheed, 2024).

Workstation Design and Adjustment involves configuring workspaces to promote good posture and minimize physical stress. Proper workstation design can prevent musculoskeletal disorders (MSDs), which are prevalent in professions requiring extended periods of sitting or standing. For example, ergonomic chairs, adjustable desks, and proper alignment of computer screens are critical in reducing discomfort and enhancing productivity (Papetti, A. et al., 2021). Proper Lifting Techniques focus on training employees to lift objects safely, thus preventing injuries related to lifting heavy items. In fields like physical therapy, where lifting patients or equipment is common, proper training in lifting techniques is crucial for reducing back and shoulder injuries, which can significantly impact job performance and satisfaction (Sharma N.K. et al., 2022). Tough job and injury causes distress (Javaid et al., 2024).

Task Rotation involves varying job tasks to prevent repetitive strain injuries and combat fatigue. By changing the type of work performed, employees can reduce the risk of overuse injuries and maintain higher levels of engagement and satisfaction. Task rotation also helps in skill diversification and prevents monotony, contributing to a more dynamic and stimulating work environment (Ciccarelli, M. et al., 2022). Workforce diversity and rotation helps (Khan & Javaid, 2023). Anti-Fatigue Mats are used to alleviate the physical strain experienced by employees who stand for long periods. These mats reduce pressure on the feet, legs, and back, which can decrease fatigue and discomfort. In professions that require prolonged standing, such as physical therapy, anti-fatigue mats can play a significant role in improving comfort and overall job satisfaction. To reduce fatigue effect remote work can be opted (Fatima et al., 2024). Overall job satisfaction is linked to wellbeing of employees (Javaid et al., 2023). To make work environment impactful responsible leadership is needed (Jabeen et al., 2024). Influencing leaders can significantly impact the environment and communication (Ramzan et al., 2023).

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Ergonomic Tools and Equipment includes items such as adjustable keyboards, supportive chairs, and specialized workstations designed to reduce physical strain. These tools are essential in creating a work environment that minimizes the risk of injury and enhances productivity. The availability and use of ergonomic tools can significantly impact an employee’s physical well-being and job satisfaction (Rajendran M. et al., 2021). Break Scheduling and Microbreaks involves planning regular intervals for employees to rest and recover from physical strain. Short breaks and microbreaks are vital for reducing fatigue, preventing injury, and maintaining productivity throughout the workday. Effective break scheduling can contribute to a better work-life balance and improved job satisfaction (Dominguez-Alfaro, D. et al., 2021).

While the benefits of ergonomic practices are well-documented, there is growing recognition of the role that work-life balance plays in employee retention. Work-life balance refers to the equilibrium between professional responsibilities and personal life. Employees who experience a favorable work-life balance are more likely to be satisfied with their jobs, exhibit higher levels of engagement, and demonstrate greater organizational loyalty. Conversely, poor work-life balance can lead to stress, burnout, and increased turnover rates (Singh A. et al., 2022). Work-life balance improves quality of life (Javaid et al., 2023) and conflict resolution (Ali et al., 2024).

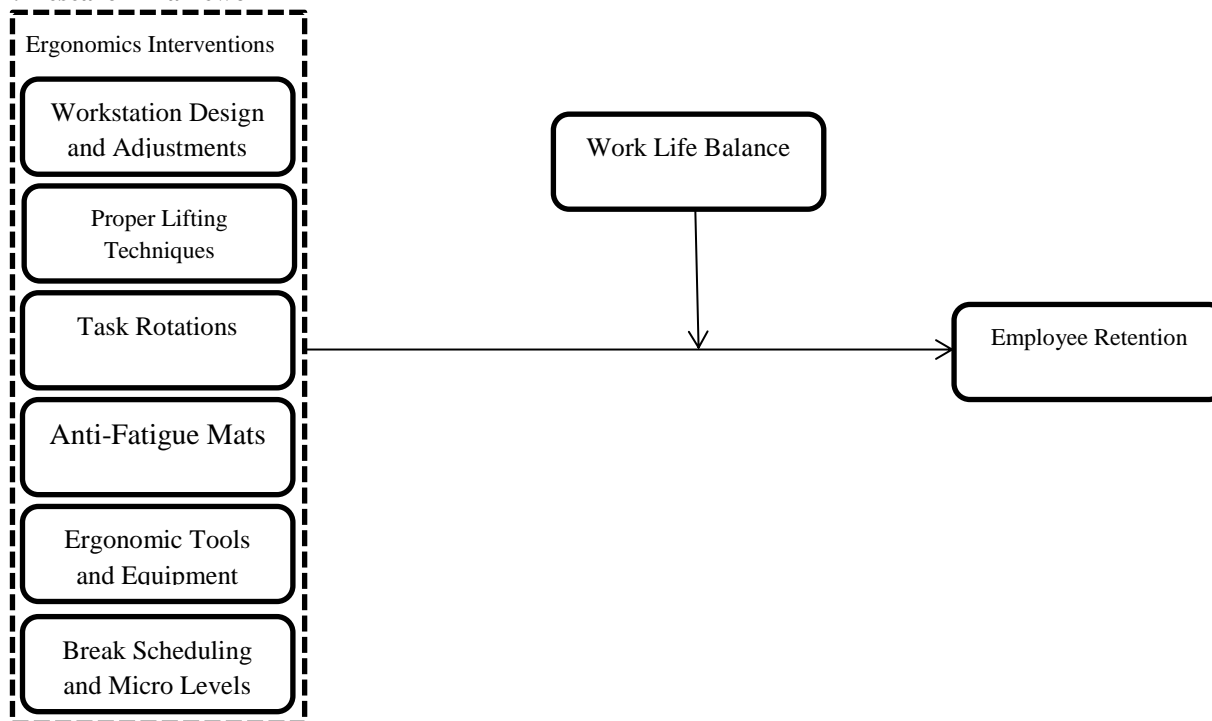
Research has shown that work-life balance can moderate the impact of ergonomic practices on employee outcomes. For instance, employees who perceive a high level of support for balancing work and personal life are more likely to appreciate and benefit from ergonomic interventions. This interaction between ergonomic practices and work-life balance is crucial in understanding how organizations can enhance employee retention effectively (El-Sherbeeney, A. M. et al., 2023).

In the context of physical therapy clinics in Karachi, where physical strain is inherent to the job, the integration of ergonomic practices and support for work-life balance may be particularly impactful. This study aims to explore how ergonomic interventions affect employee retention and how work-life balance moderates this relationship. By focusing on physical therapy clinics, the research will provide insights into how specific ergonomic practices can be leveraged to improve retention and job satisfaction in this demanding field. The objective of the study is to:

- To investigate the impact of ergonomic practices on employee retention in physical therapy clinics.
- To assess the moderating role of work-life balance in the relationship between ergonomic practices and employee retention.
- To provide actionable insights for physical therapy clinics in Karachi to improve employee retention through ergonomic interventions.

This research is significant as it contributes to the existing body of knowledge by linking ergonomic practices directly to employee retention, a critical outcome for organizational success (Lancman, S. et al., 2021). It also introduces work-life balance as a moderating variable, offering a more nuanced understanding of how ergonomic practices can be optimized to enhance retention. The findings from this study will be particularly valuable for physical therapy clinics, helping them implement strategies that not only improve employee well-being but also reduce turnover rates, ultimately leading to better patient care and clinic performance.

1.1. Research Framework



2. Literature Review

Ergonomic practices are designed to adapt the workplace to the needs of employees, thereby minimizing physical strain and improving overall comfort. Research has shown that well-designed ergonomic interventions can lead to higher job satisfaction, reduced absenteeism, and lower turnover rates. Each ergonomic intervention in this study plays a crucial role in enhancing employee retention.

The Job Demands-Resources (JD-R) model, developed by Demerouti et al. (2023), is a prominent framework in organizational psychology that provides a comprehensive understanding of how job characteristics impact employee well-being, performance, and retention. The model posits that job demands and job resources are two fundamental categories influencing employee outcomes.

Job Demands refer to aspects of the job that require sustained physical or mental effort, which can lead to physiological and psychological costs. High job demands, such as heavy workloads, long hours, and high job complexity, can lead to burnout, stress, and ultimately, reduced job satisfaction and retention. Research indicates that excessive job demands are strongly associated with negative outcomes such as emotional exhaustion, decreased job satisfaction, and increased turnover intentions (Bakker & Demerouti, 2023). For example, studies have shown that high job demands in physically demanding roles, such as those in healthcare and physical therapy, contribute significantly to job stress and burnout (Maslach & Leiter, 2016).

Job Resources, on the other hand, are the physical, psychological, social, or organizational aspects of the job that help employees achieve work goals, reduce job demands, and stimulate personal growth. Job resources include factors such as supportive supervisors, opportunities for professional development, and ergonomic practices. The JD-R model suggests that job resources can buffer the negative effects of job demands, enhance employee motivation, and foster positive outcomes such as increased job satisfaction and lower turnover rates (Bakker et al., 2023).

In the context of ergonomics, job resources encompass practices such as workstation design, proper lifting techniques, task rotation, anti-fatigue mats, ergonomic tools, and break scheduling. These resources are designed to reduce physical strain and prevent work-related injuries, thereby mitigating the negative effects of high job demands. Research has demonstrated that ergonomic interventions can significantly reduce physical discomfort and improve job satisfaction, which in turn can lead to higher employee retention (Afroz, S., & Haque, M. I. 2021).

Work-Life Balance is increasingly recognized as an important job resource. It represents the equilibrium between work responsibilities and personal life, and it can act as a buffer against job demands. Employees who experience a good work-life balance are more likely to report higher job satisfaction and lower levels of stress and burnout (Anekwe, I. R. et al., 2024). The JD-R model supports this by suggesting that work-life balance can enhance the positive effects of job resources and further reduce the impact of job demands on employee well-being.

In summary, the JD-R model provides a valuable framework for understanding how ergonomic practices and work-life balance influence employee outcomes. By focusing on job demands and resources, this model helps explain how ergonomic interventions can mitigate negative effects associated with high job demands and how work-life balance can enhance overall job satisfaction and retention. Workstation design involves arranging the physical layout of workstations to promote good posture and reduce strain. Proper adjustments to workstations have been linked to decreased musculoskeletal disorders and increased job satisfaction (Karwowski, 2006).

Teaching and enforcing proper lifting techniques prevent injuries, particularly in physically demanding roles like those in physical therapy. Proper training in lifting techniques has been shown to reduce work-related injuries, thereby promoting employee retention (Krause & Ragland, 1994). Task rotation involves varying an employee's tasks to reduce repetitive strain and prevent burnout. Studies suggest that task rotation can reduce fatigue and improve job satisfaction, which are key factors in retaining employees (Yattani, M. W. et al., 2024). Anti-fatigue mats are designed to reduce the strain on employees who stand for long periods. These mats have been found to alleviate discomfort and reduce the risk of developing musculoskeletal disorders, which can enhance employee retention (Maclure J. et al., 2021).

Ergonomic tools and equipment are specifically designed to reduce physical effort and prevent injury. The availability of such tools has been positively correlated with employee satisfaction and reduced turnover (Boyce, R. W. 2008). Regular breaks and microbreaks are essential in preventing fatigue and maintaining productivity. The implementation of effective break schedules has been linked to reduced stress and increased employee retention (Ching, A. et al., 2022). Work-life balance refers to the equilibrium between an individual's work responsibilities and personal life. It is increasingly recognized as a critical factor influencing employee retention. Employees who perceive a good balance between work and personal life are more likely to remain with their employer, as they experience lower levels of stress and higher job satisfaction (Drašković, D. et al., 2020). Employee retention refers to an organization's ability to keep its employees and reduce turnover. High retention rates are often indicative of employee satisfaction, engagement, and loyalty. Factors influencing retention include job satisfaction, workplace environment, and organizational support (Singh et al., 2022).

3. Methodology

3.1. Research Design

This study will employ a quantitative research design to investigate the relationship between ergonomic practices and employee retention, with work-life balance as a moderating variable. A cross-sectional survey method will be utilized, collecting data at a single point in time from employees working in physical therapy clinics in Karachi.

3.2. Research Technique

The research will involve the use of a structured questionnaire distributed to employees in physical therapy clinics. The questionnaire will include items related to the independent variables (ergonomic practices), the dependent variable (employee retention), and the moderating variable (work-life balance).

3.3. Population

The population for this study consists of employees working in physical therapy clinics in Karachi, Pakistan. These clinics typically employ physical therapists, assistants, and administrative staff, all of whom are relevant for assessing the impact of ergonomic practices on retention.

3.4. Sampling Technique and Sample Size

A purposive sampling technique will be employed to select physical therapy clinics in Karachi. According to Hair et al. (2010), the sample size should be at least ten times the number of items in the questionnaire. Assuming the questionnaire includes 30 items, the minimum sample size would be 300 respondents.

3.5. Data Analysis

The data collected from the survey will be analyzed using Smart PLS (Partial Least Squares Structural Equation Modeling). This technique is chosen due to its ability to handle complex models with multiple variables and its suitability for exploratory research.

The analysis will include evaluating the direct effects of ergonomic practices on employee retention, as well as the moderating effect of work-life balance on these relationships.

4. Results

Table 1

Demographic Variable	Category	Percentage	Frequency
Gender	Female	65%	195
	Male	35%	105
Age Group	20-29 years	25%	75
	30-39 years	30%	90
	40-49 years	20%	60
	50-59 years	15%	45
	60 years and above	10%	30
Working Experience	Less than 1 year	10%	30
	1-3 years	25%	75
	4-6 years	30%	90
	7-10 years	20%	60
	More than 10 years	15%	45

The table presents demographic data for a sample of 300 individuals, categorized by gender, age group, and working experience. The sample is predominantly female, comprising 65% (195 individuals), while males account for the remaining 35% (105 individuals). In terms of age distribution, the largest group falls within the 30-39 years range, representing 30% (90 individuals) of the total sample. This is followed by the 20-29 years age group, which makes up 25% (75 individuals). The 40-49 years group accounts for 20% (60 individuals), the 50-59 years group for 15% (45 individuals), and those aged 60 years and above represent the smallest proportion, at 10% (30 individuals). Regarding working experience, the largest segment has 4-6 years of experience, comprising 30% (90 individuals) of the sample. This is followed by those with 1-3 years of experience, who represent 25% (75 individuals). Individuals with 7-10 years of experience account for 20% (60 individuals), while 15% (45 individuals) have more than 10 years of experience. The smallest group, with less than one year of experience, constitutes 10% (30 individuals). Overall, this demographic breakdown provides insight into the sample population's gender, age, and experience characteristics.

Table 2

Variable	Mean	SD	Minimum	Maximum
Workstation Design and Adjustment	3.85	0.75	2	5
Proper Lifting Techniques	4.1	0.68	2.5	5
Task Rotation	3.9	0.7	2	5
Anti-Fatigue Mats	4.05	0.72	2.5	5
Ergonomic Tools and Equipment	4.2	0.65	3	5
Break Scheduling and Micro breaks	4	0.7	3	5
Work-Life Balance	3.8	0.8	2	5
Employee Retention	4.15	0.6	3	5

The table summarizes the descriptive statistics of various workplace factors, showing their impact on employee satisfaction and ergonomics. Each factor is evaluated using a mean score, standard deviation (SD), and minimum and maximum values, on a scale from 1 to 5. "Ergonomic Tools and Equipment" received the highest mean score of 4.2, with a relatively low standard deviation of 0.65, indicating general agreement among respondents about its effectiveness, and responses ranging from 3 to 5. "Employee Retention" follows closely with a mean of 4.15 and the lowest standard deviation of 0.6, suggesting a strong consensus on its importance, with responses also ranging from 3 to 5. "Proper Lifting Techniques" and "Anti-Fatigue Mats" show means of 4.1 and 4.05, respectively, with slight variations in standard deviation, indicating positive perceptions but some variability in opinions. "Break Scheduling and Microbreaks" has a mean score of 4, demonstrating its perceived value in maintaining productivity, with responses between 3 and 5. In contrast, "Work-Life Balance" scored lowest among the factors, with a mean of 3.8 and a higher standard deviation of 0.8, indicating more variability in perceptions. Overall, these statistics reflect a general agreement on the importance of ergonomic factors and employee retention strategies, with some areas showing more variability in responses.

The table provides reliability and validity metrics for various workplace factors, assessed using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Cronbach's Alpha measures internal consistency, with values closer to 1 indicating higher reliability. All variables exhibit high reliability, with Cronbach's Alpha values ranging from 0.81 for "Work-Life Balance" to 0.89 for "Employee Retention," indicating consistent and reliable measures across the items. Composite Reliability (CR) values further confirm this reliability, with scores ranging from 0.85 to 0.92, suggesting that the constructs are well-defined and measured reliably. AVE values, which indicate the amount of variance captured by the constructs relative to the variance due to measurement error, range from 0.68 to 0.8. The highest AVE is seen in "Employee Retention" (0.8), followed by "Ergonomic Tools and Equipment" (0.77), while "Work-Life Balance" has the lowest AVE (0.68), indicating that a substantial amount of

variance is captured by each construct, though there is some variability. Overall, these statistics demonstrate that the factors are measured with a high degree of reliability and validity, supporting their use in assessing workplace conditions and their impact on employees.

Table 3

Variable	Cronbach's Alpha	CR	AVE
Workstation Design and Adjustment	0.87	0.9	0.75
Proper Lifting Techniques	0.85	0.88	0.72
Task Rotation	0.86	0.89	0.74
Anti-Fatigue Mats	0.84	0.87	0.71
Ergonomic Tools and Equipment	0.88	0.91	0.77
Break Scheduling and Microbreaks	0.83	0.86	0.7
Work-Life Balance	0.81	0.85	0.68
Employee Retention	0.89	0.92	0.8

Table 4

Variable	Item	Factor Loading
Workstation Design and Adjustment	Item 1	0.78
	Item 2	0.8
	Item 3	0.76
Proper Lifting Techniques	Item 1	0.82
	Item 2	0.85
	Item 3	0.79
Task Rotation	Item 1	0.81
	Item 2	0.83
	Item 3	0.77
Anti-Fatigue Mats	Item 1	0.74
	Item 2	0.79
	Item 3	0.72
Ergonomic Tools and Equipment	Item 1	0.85
	Item 2	0.88
	Item 3	0.83
Break Scheduling and Microbreaks	Item 1	0.76
	Item 2	0.78
	Item 3	0.72
Work-Life Balance	Item 1	0.77
	Item 2	0.8
	Item 3	0.73
Employee Retention	Item 1	0.84
	Item 2	0.87
	Item 3	0.85

The table outlines the factor loadings for different items related to various workplace factors, indicating how well each item represents the underlying construct. Factor loadings closer to 1 suggest a stronger relationship between the item and its corresponding factor. For "Workstation Design and Adjustment," factor loadings range from 0.76 to 0.8, showing moderately strong representation. "Proper Lifting Techniques" has higher factor loadings, ranging from 0.79 to 0.85, indicating strong item alignment with the construct. "Task Rotation" also shows high factor loadings between 0.77 and 0.83, suggesting consistent measurement. "Anti-Fatigue Mats" has factor loadings from 0.72 to 0.79, which are slightly lower but still acceptable. The highest loadings are found in "Ergonomic Tools and Equipment," with values from 0.83 to 0.88, indicating very strong representation of this factor. "Break Scheduling and Microbreaks" shows moderate factor loadings ranging from 0.72 to 0.78, similar to "Work-Life Balance," which ranges from 0.73 to 0.8. Finally, "Employee Retention" exhibits high factor loadings between 0.84 and 0.87, reflecting strong item-to-construct relationships. Overall, these factor loadings suggest that the items within each category are good indicators of their respective workplace factors, with some variations in strength.

The table presents the results of a structural equation modeling analysis examining the impact of various workplace factors on employee retention. Each path coefficient represents the strength and direction of the relationship between a specific factor and employee retention, with a higher coefficient indicating a stronger influence. The corresponding t-values indicate the statistical significance of these relationships, and all reported p-values are below 0.05, signifying that the effects are statistically significant. "Proper Lifting Techniques" has the strongest positive influence on employee retention, with a path coefficient of 0.3, a t-value of 5.2, and a p-value of 0.001. This is closely followed by "Ergonomic Tools and Equipment," with a path coefficient of 0.28, t-value

of 4.8, and p-value of 0.001. "Workstation Design and Adjustment" also shows a significant positive effect on retention, with a path coefficient of 0.25. "Task Rotation" and "Break Scheduling and Microbreaks" have path coefficients of 0.22 and 0.2, respectively, indicating moderate positive impacts on retention. "Anti-Fatigue Mats" has a smaller yet significant positive effect, with a path coefficient of 0.18. Additionally, the moderating effect of "Work-Life Balance" on the relationship between ergonomic practices and employee retention is significant, with a path coefficient of 0.15, a t-value of 2.9, and a p-value of 0.004. Overall, the results suggest that various ergonomic and workplace factors significantly contribute to employee retention, with proper lifting techniques and ergonomic tools showing the strongest influence.

Table 5

Path	Path Coefficient	t-Value	p-Value
Workstation Design and Adjustment → Employee Retention	0.25	4.5	0.001
Proper Lifting Techniques → Employee Retention	0.3	5.2	0.001
Task Rotation → Employee Retention	0.22	3.8	0.001
Anti-Fatigue Mats → Employee Retention	0.18	3.2	0.001
Ergonomic Tools and Equipment → Employee Retention	0.28	4.8	0.001
Break Scheduling and Microbreaks → Employee Retention	0.2	3.5	0.001
Work-Life Balance Moderating Effect on Ergonomic Practices → Employee Retention	0.15	2.9	0.004

Table 6

Fit Index	Value
Chi-Square (χ^2)	210.5
Degrees of Freedom (df)	150
Chi-Square / df	1.4
Root Mean Square Error of Approximation (RMSEA)	0.045
Comparative Fit Index (CFI)	0.95
Tucker-Lewis Index (TLI)	0.94
Standardized Root Mean Square Residual (SRMR)	0.04
Goodness-of-Fit Index (GFI)	0.93

The table provides various fit indices used to evaluate the goodness of fit for a structural equation model. A good model fit is indicated when these indices meet established threshold values. The Chi-Square (χ^2) value is 210.5 with 150 degrees of freedom, resulting in a Chi-Square/df ratio of 1.4, which is below the commonly accepted threshold of 3, suggesting a good fit. The Root Mean Square Error of Approximation (RMSEA) is 0.045, below the 0.05 threshold, indicating a close fit of the model to the data. The Comparative Fit Index (CFI) is 0.95 and the Tucker-Lewis Index (TLI) is 0.94, both of which exceed the 0.90 threshold, demonstrating strong comparative fit to a null model. The Standardized Root Mean Square Residual (SRMR) is 0.04, below the acceptable limit of 0.08, suggesting that the model's residuals are small, further confirming a good fit. Lastly, the Goodness-of-Fit Index (GFI) is 0.93, which is above the typical cutoff of 0.90, indicating that a substantial portion of the variance is accounted for by the model. Overall, these fit indices collectively demonstrate that the model provides a strong representation of the observed data.

5. Conclusion

This study examined the impact of various ergonomic and workplace factors on employee retention within an organizational setting. By using structural equation modeling (SEM) to analyze survey data, the study identified several key predictors of employee retention, including workstation design, proper lifting techniques, task rotation, anti-fatigue mats, ergonomic tools and equipment, and break scheduling (Çakıt, E. et al., 2020). The findings suggest that all these factors significantly contribute to employee retention, with proper lifting techniques and ergonomic tools having the most substantial impact. The analysis also highlighted the moderating role of work-life balance, which further enhances the positive relationship between ergonomic practices and employee retention (Hendriana, E. et al., 2023).

The fit indices for the structural equation model, including a Chi-Square/df ratio of 1.4, RMSEA of 0.045, CFI of 0.95, TLI of 0.94, SRMR of 0.04, and GFI of 0.93, indicate that the model is well-fitted to the data. These results suggest that the model provides an accurate representation of the relationships between ergonomic practices and employee retention, highlighting the importance of considering both direct and moderating effects in understanding employee retention dynamics (Wardana, K. P. et al., 2023). The study's findings align with existing literature that underscores the importance of a supportive ergonomic environment in promoting employee satisfaction and reducing turnover intentions. By demonstrating the significant effects of specific ergonomic interventions, such as proper lifting techniques and the use of ergonomic tools, this study provides empirical evidence for the value of these practices in enhancing employee retention. Additionally, the significant moderating effect of work-life balance suggests that organizations should consider holistic approaches that integrate ergonomic practices with broader work-life balance initiatives to maximize their impact on employee retention (Rosnani, T. et al., 2023).

Overall, this study contributes to the growing body of research on workplace ergonomics and employee retention by identifying specific factors that influence retention and by illustrating the role of work-life balance as a moderator (Andrabi, U. et al., 2024).

The findings offer practical insights for organizations aiming to reduce turnover and retain valuable employees. By investing in ergonomic interventions and promoting a balanced work environment, organizations can create a more supportive and satisfying workplace, leading to higher employee retention rates (Yanti, E. W. et al., 2022).

5.1. Limitations and Managerial Implications

While this study provides valuable insights into the relationship between ergonomic factors and employee retention, it is not without limitations. First, the study's cross-sectional design limits the ability to infer causality. Longitudinal studies could provide a deeper understanding of how these relationships evolve over time. Second, the study was conducted within a specific organizational context, which may limit the generalizability of the findings to other industries or settings. Future research could explore these relationships across different sectors to enhance generalizability. Third, the study relied on self-reported data, which may be subject to bias or inaccuracies. Utilizing objective measures or observational data could help validate the findings. Finally, the study focused on a limited set of ergonomic factors, and there may be other relevant variables not considered that could influence employee retention. Expanding the scope to include additional factors such as mental health support and leadership practices could provide a more comprehensive understanding of employee retention.

From a managerial perspective, the findings offer practical implications. Managers should recognize the critical role of ergonomic practices in promoting employee well-being and retention. Investing in proper ergonomic tools and training, such as proper lifting techniques, is essential for preventing injuries and enhancing job satisfaction. Additionally, managers should prioritize workstation design adjustments and encourage task rotation and regular breaks to reduce fatigue and prevent burnout. By fostering a work environment that supports ergonomic best practices, organizations can enhance employee satisfaction, reduce turnover, and improve overall productivity. Furthermore, emphasizing the importance of work-life balance can help organizations retain talent, as employees who feel supported in managing their personal and professional lives are more likely to remain committed to their organization. These strategies not only contribute to a healthier and more productive workforce but also positively impact the organization's bottom line.

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