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## **Workplace ergonomics and its influence on job performance with mediating role of job satisfaction: an Indian perspective**

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**Abstract:** The current study attempted to inspect the influence of workplace ergonomics (WE) and job satisfaction (JS) on job performance (JP). Besides, the study considered job satisfaction as a mediator to elaborate on the influence of workplace ergonomics on job performance. Data were gathered from 364 academics working in Higher Education Institutions of Uttarakhand state, India by using a survey questionnaire. Subsequently, the data were analysed by using the structural equation modelling technique. The study findings showed that WE and JS positively influenced JP. In addition, the results revealed a significant positive relationship between WE and JP. The results supported the mediator task of JS between the influences of WE on JP. The study was theoretically grounded on The Balance theory. The study added to the literature by providing evidence on how WE can serve as a booster to influence JP of academics. Even in the presence of a mediating variable (JS), the direct effect was significant which means that the mediating effect is partial in nature. We discuss the theoretical contributions of this research and its practical implications for organisations.

**Keywords:** workplace ergonomics; WE; job satisfaction; JS; job performance; JP; academicians; higher education institutions; HEIs.

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## **1 Introduction**

In recent times, the field of higher education has gained prominence as a very influential service industry on a global scale. This may be attributed to its remarkable expansion and substantial growth prospects, particularly in emerging nations. Higher education is seen as a powerful tool for transforming a country's economy and a long-term social endeavour for cultural growth, justice, and decency. This is especially true in emerging nations like India, where higher education is a significant driver of the service sector's and overall economy's growth (IBEF, 2020). Higher education in India has grown dramatically in recent years. Today, India has a total of 1,043 universities, 42,343 colleges, and 11,779 standalone institutions. The aggregate number of academicians currently working in these HEIs is 1,503,156 (AISHE, 2019–2020). These figures clearly show the presence of a large workforce in this area, enabling government programs and priorities to succeed. India's higher education system's efficacy and quality are still major causes for worry. As a result, this asset's performance and satisfaction are crucial (Kim et al., 2020; Taşkin and Taşkin, 2021).

Individual job performance (JP) is significant because completing tasks may provide a sense of satisfaction (Muchhal, 2014). Many aspects, including “equipment, physical work environment, meaningful job, standard operating procedures, and reward for excellent or bad systems, performance expectancy, and performance feedback, as well as knowledge, abilities, and attitudes”, can impact an employee’s JP (Stup, 2003). Referring to Chandrasekar (2011), the workplace environment significantly sways an employee’s JP, whether it is favourable or bad. According to Al-Omari and Okasheh (2017), situational restrictions, which embrace ‘noise, office furniture, ventilation, and light’, are the main elements of the workplace that negatively affect JP and should be given more thought. Rotundo and Sackett (2002) claim that JP is a specific activity controlled by an employee and permits the achievement of certain goals. It is accepted as a necessary aspect of the work (Jeong and Lam, 2016; Chan and Hooi, 2023). Managerial and organisational psychology includes JP. It significantly impacts HRM and organisational results (Campbell, 1990). Since JP is allied to discipline verdicts and rewards, it is regarded as an anticipated outcome (Goodwin et al., 2011). The incentive framework provided by the company to its employees is connected to the employee JP as well, and over time, more people are becoming aware of this connection (Rawabdeh et al., 2019).

According to Heath et al. (2006), the physical environment includes the immediate surroundings, behavioural processes, policies, regulations, culture, resources, working relationships, and work location, all of which impact the employee’s JP at the firm. Academicians in a work environment have constant and dynamic contact with their surroundings, which creates a variety of physiological and psychological reactions in them, affecting their ‘comfort, performance, productivity, safety, and health’ (Parsons, 2000; Dianat et al., 2016). A poor workplace ergonomics (WE) result in decreased employee productivity due to physical exertion, environmental conditions, and risks (Kahya, 2007). Various ergonomic variables, such as “excessive noise, dangerous and insufficient working conditions”, may directly or indirectly affect employee JP and productivity in one of the categories. Inadequate ergonomic circumstances at work may cause employees to lose focus on their jobs, resulting in low JP and workplace dangers (Kahya et al., 2019). Ergonomics, a new-fangled design of smearing sophisticated tools, expedites employees’ performance and wide-ranging productivity, warranting an amiable work environment (Rahman et al., 2022). Ergonomics deals with scheming a workplace, system, instrument, etc., bearing in mind an individual’s physical and psychological proficiencies to assure their health and safety. It aims at crafting the workplace in such a way that it fits with employees’ needs and competencies rather than physically urging their bodies to conform to the work (Ghosh et al., 2011). Therefore, the interactions of the human with the constituents of the system (ergonomics) should be thoroughly researched and understood in order to minimise the human’s limits and maximise its effectiveness within the system in which it exists (Korhan, 2023). Workplace design is a significant prognosticator of employee satisfaction, engagement, and productivity (Pitchforth et al., 2020). Ergonomics and quality are two intertwined factors influencing employee performance since better ergonomics may lead to higher human performance (Hadidi et al., 2019; Igwe and Utebor, 2023).

Employees job satisfaction (JS), or a positive emotional reaction to his or her work, is crucial for JP (Kim et al., 2005). A pleasurable or positive state of mind resulting from the appraisal of one’s job or job experiences creates enthusiasm which results into higher JP with better quality (Locke, 1970; Aung et al., 2023). When an organisation commits to

improving its employees' JS, it may gain long-term benefits (Hsiao et al., 2017). According to a previous study, the JS of an employee increases trust in their organisation and reduces the probability of quitting (Nadiri and Tanova, 2010). Academician's JS needs urgent and ongoing care. Many studies in India have focused on the satisfaction of elementary and secondary school teachers; conversely, little work has been accomplished on the contentment of university professors (Tahir and Sajid, 2019).

Therefore, it is important to find the answer of the following questions, particularly in the context of HEIs of India. How does WE, as an independent variable, impact the JP of academicians in HEIs, taking into account its direct effect on JP? Also, to what extent does JS explains the mechanism of effect of WE and JP amid academicians in higher education?

Henceforth, the existing study serves a distinct and noteworthy objective within the framework of India's higher education sector. This probe aims to deliver significant acumens through the analysis and recommendation of workplace ergonomic practices, with the ultimate goal of enhancing the well-being of individuals in academic settings. The effects of these improvements extend beyond mere physical comfort, as they are expected to exert a favourable impact on both JS and JP. Researchers in the fields of ergonomics and management will find the research findings to be of significant use, particularly in relation to the distinct issues encountered by academics in the realm of higher education. In addition, experts in the fields of architecture, healthcare, engineering, and human resources within organisations can get advantages from the insights offered. This can enable them to cultivate improved work environments and, eventually, enhance the entire academic experience.

This study is notable for its originality and the particular situation in which it is conducted. This study is significant due to the absence of any previous research undertaken in Uttarakhand that tackles the specific population gap (Miles, 2017) being examined. Moreover, this study investigates the hitherto unexplored domain of the correlation between WE, JS, and JP within the milieu of academicians in Indian higher education. The present study offers a distinctive viewpoint that addresses a significant gap in the current body of scholarly work, as previous research on these processes within the context of Indian higher education is lacking. Through the implementation of this research, the study endeavours to provide a valuable addition to the holistic welfare and efficacy of scholars within the realm of higher education.

## **2 Theoretical analysis and hypothesis development**

### *2.1 Theoretical foundation*

The proposed model is based on 'the balance theory' given by Smith and Sainfort (1989). According to this theory, stress is caused by an imbalance between several elements of the work system. This imbalance places a psychosocial, cognitive, and/or physical load on the individual, leading to negative JP and satisfaction. The 'work system model' outlines the things that surround an individual and their influence on that individual. The 'work system model' is a means of explaining all of the aspects of work that have an impact on employees and their results. The various elements as mentioned in the 'work system model' includes the person, tasks, technology and tools used, organisation and environment (physical and psychological). Tasks are done by an individual using tools

and technology in a physical environment and under organisational settings, according to the work system model. Each component of the work system can have both good and negative effects on the overall system's equilibrium. If certain bad parts of the work system cannot be removed, the other elements of the work system should be structured to compensate for or balance out the negative aspects' impact on the individual. The entire work system must be balanced such that the total influence on the individual results in beneficial outcomes such as improved QWL, optimal performance, low job stress, excellent health, and high safety and well-being. Hence, in our study, we have taken WE as a part of work system that leads to outcomes on academicians of HEIs in the form of JS and JP.

## 2.2 *Workplace ergonomics*

Wojciech Jastrzebowski, a Polish professor, coined the term 'ergonomics' in 1857. "Ergonomics is a scientific field concerned with the consideration of interfaces between humans and other system components, as well as the profession that connects theory, codes, and processes to improve human well-being and overall system performance" (IEA Report, 2018). Ergonomics is the study of how to make work situations more comfortable so that they are more suitable for the individuals who use them, as well as reduce the risk of injury or health problems among employees. Ergonomics is a major problem in today's workplaces since the more the environment is tailored to the needs of individuals, the better their productivity and performance will be (Leskovský et al., 2019). Recent research shows a growing demand for enhanced tools to establish a safe and healthy work environment based on ergonomic principles (Felekoglu and Oz Mehmet Tasan, 2020). The all-inclusive work environment, titled ergonomic design by Scott et al. (2010), can amplify employee satisfaction, performance, and yield (Khan et al., 2012). According to Joshi and Deshpande (2019), there is a need for ergonomics risk awareness and its causes and the need to avoid them. When designing a work zone, the workstation designer must first consider ergonomic aspects and philosophies to augment the JS level, then the JP level of employees.

## 2.3 *WE and JS*

JS defined as an individual's positive emotional and cognitive assessment of their employment, is a critical factor influencing motivation, productivity, and overall well-being in the workplace (Spector, 1997). Several studies have highlighted the fundamental role of ergonomic elements in enhancing JS. The design of workspaces, the choice of tools, and considerations of posture while working have all been shown to significantly impact JS (Tomovska-Misoska et al., 2014; Habibi et al., 2008; Zaidi et al., 2018).

This positive correlation between ergonomic factors and JS extends across different work environments. Personnel who are content with their physical working environment incline to demonstrate higher JS levels and greater efficiency (Ikonne, 2014; Ikonne and Yacob, 2014; Rahman et al., 2022). These findings are particularly pertinent to academicians in higher education, as demonstrated by research conducted at the University of Athens and other academic settings, which consistently showed a strong connection between workspace quality and JS among academicians (Been and Beijer, 2014; Villanueva et al., 2018). The impact of office workspace renovations cannot be

understated. Hongisto et al. (2016) and Abdulhamid and Majid (2020) publicised that strategic improvements in the physical environment led to significant enhancements in both environmental satisfaction and JS (Fassoulis and Alexopoulos, 2015). These findings underscore the importance of optimising the physical workspace to enhance JS.

Moreover, the study by Budie et al. (2019), which included workers from various knowledge-based firms, emphasised that both personal and workspace characteristics exert a substantial influence on employee JS. This highlights the broader relevance of WE, indicating that improvements in the work environment contribute to JS across various work settings (Hongisto et al., 2016; Abdulhamid and Majid, 2020). Considering these studies, following hypothesis is formulated for the current study.

H1 “Workplace ergonomics has a significant positive effect on JS of academicians of higher education”.

## 2.4 *JS and JP*

The notion of JS has been a topic of ongoing fascination among researchers and professionals ever since Hoppock’s initial formulation in 1935. The enduring significance of this phenomenon can be ascribed to its extensive beneficial outcomes, such as the reduction of attrition rates, the decrease in absenteeism, and the cultivation of heightened motivation, organisational commitment, and general well-being among employees in diverse sectors (James, 2021).

According to Das et al. (2022), there subsists a positive link amid JS and employee performance, as job satisfied individuals are probably to exceed the minimum expectations associated with their respective professions. The existing body of literature demonstrates a robust correlation between JS and JP, as evidenced by the findings of Opkara (2004), Silla et al. (2005), and Spector (2008). These studies collectively affirm the association between JS and JP. Therefore, it is imperative for organisations to prioritise the cultivation of employee satisfaction, as it is inherently connected to heightened productivity and overall achievement (Davar and RanjuBala, 2011). The substantial liaison amid JS and JP is reinforced by studies undertaken in various areas, such as the United Arab Emirates, Indonesia, and Vietnam (Al-Ali et al., 2019; Ramli, 2019; Phuong and Vinh, 2020).

The beneficial impact of JS on JP is also apparent across multiple domains, including healthcare services, small and medium-sized enterprises (SMEs), and higher education. One noteworthy discovery is the research conducted by Barlian (2016) on the staff of a Lung Hospital in Jember Regency. This study unveiled a noteworthy sway of JS on JP. Furthermore, scholarly investigations conducted by Hutabarat (2015) and Amin (2022) pertaining to university professors and women employed in the banking industry have revealed that JS partakes a substantial role in influencing JP. The robust and consistent body of research regarding this correlation underscores the importance of cultivating JS among employees across all settings.

The premise is substantiated and the significance of fostering JS among academicians to improve their JP and overall contributions to higher education institutions is reinforced by the combined results from diverse sectors, geographical locations, and academic contexts. Therefore, following hypothesis for the study is formulated.

H2 JS has a significant positive effect on JP of academicians of higher education.

## 2.5 *WE and JP*

The assessment of an employee's JP is a crucial metric that evaluates their contributions towards the realisation of a firm's objects and goals (Davoudi and Allahyari, 2013). According to Viswesvaran and Ones (2000), organisational citizenship behaviour refers to the actions, behaviours, and outcomes that individuals undertake or generate in order to assist in the realisation of organisational intents. Rees and French (2010) define JP as the magnitude to which an individual is competent to meet the demands and expectations of their job, encompassing all tasks and responsibilities carried out during the course of their employment. The notion of JP holds significant importance in the field of occupational studies, as it serves as a crucial measure for evaluating an individual's aptitude and efficacy within a professional setting (Fogaça et al., 2018; Javed and Javed, 2013; Sonnentag and Frese, 2002). In their recent study, Lemma et al. (2022) investigated the sway of the interior physical work environ on personnel performance within the aviation sector. Their findings indicate a noteworthy and favourable effect on JP. In their study, Dianat et al. (2013) examined the sway of illumination on staff JP within the milieu of an Iranian hospital. The researchers underscored the significance of adequate lighting in improving both work performance and healthcare safety. Jahangiri et al. (2023) observed that the quality of lighting & visual ergonomics display positive impact on reducing eye distress and enhancing performance in milieu of human-computer interaction.

Numerous studies conducted across various industries and locations constantly provide empirical evidence to substantiate the proposition that "The implementation of WE exerts a notable and favourable impact on the job performance of individuals employed in higher education as academicians". Alegbeleye et al. (2020) discovered a momentous correlation amid the physical work milieu and JP among University personnel, indicating the significance of offering a conducive work environment for staff members. Bhatia and Arora (2021) emphasised the substantial sway of ergonomics on employee JP within the context of Indian automobile company employees. Zakarani and Mohd Noor (2021) steered a probe to scrutinise the sway of the workplace environment on employee JP. Their outcomes indicate that JP is significantly influenced by aspects such as the physical environment, superintendent help, and performance response.

Based on the substantial corpus of research conducted across many sectors and geographical contexts, it is reasonable to postulate that there exists a noteworthy liaison amid WE and the JP of individuals in the academic profession within higher education. Therefore, it is conceivable to hypothesise that:

H3 WE has a significant positive effect on JP of academicians of higher education.

## 2.6 *Mediating role of JS between WE and JP*

The workplace, or the setting in which the employee works, has a clear influence on the employee's contentment. The term 'work environment' refers to everything that happens around employees, encompassing both physical and non-physical elements that affect workers' capacity to perform their duties (Kamif et al., 2016). The use of ergonomics science in the workplace and the interaction between them can assist in the design of working systems with high efficiency and productivity, reducing the reasons for employee accidents, promoting health, and improving JS (Malhi et al., 2016). Workplace

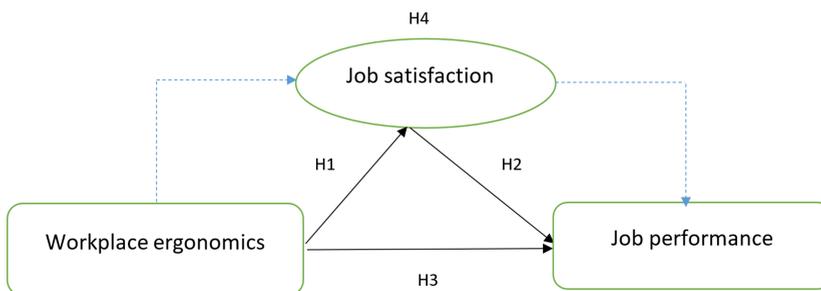
conditions may have a bearing on personnel moods. An individual will sense contented and do their duties well if they love functioning in their current environment. Both employee performance and productivity will be sturdy. The impact of work discipline and JS on JP on medical record managers in Nigeria was investigated by Dauda and Abubakar (2022). According to the study's findings, it is imperative to offer personnel with a contented job environment in order to increase their JS and ultimately their JP.

Proprietors who reject the substantiation of office architecture as a driver of employee JS and JP, risk losing important employees and, resulting in company success. The verdicts of the probe advocate a significant and affirmative liaison amid the dynamic work environment (ergonomics) and JS, and their combined influence on employee JP is large. Based on the aforementioned data, it is plausible to postulate that the work environment exerts a notable affirmative sway on the JP of those engaged in academic pursuits within the realm of higher education. The literature indicates the significant influence of WE on JS, and JS influences JP. Thus the JS could be the potential mediator amid WE and JP. Hence following hypothesis is proposed for the study.

H4 JS mediates the relationship between WE & JP of academicians of higher education.

## 2.7 Hypothesised model

**Figure 1** Proposed model (see online version for colours)



## 3 Methodology

### 3.1 Respondents and instrument design

Respondents include academicians from HEIs of Uttarakhand state, India. Questionnaire was castoff to obtain the primary data. It comprises of four sections viz.

- 1 demographic profile
- 2 WE
- 3 JS
- 4 JP.

Academicians JS was calculated with a ten-item scale adapted from Hackman and Oldham (1975). The six item scale for measuring JP has been adapted from Williams and

Anderson (1991) after discussion with experts and academicians. The 10 item scale for measuring WE has been adapted from the 'ergonomic risk analysis checklist' NIOSH 1997 by Cohen (1997), discussed with experts and academicians.

### 3.2 Data collection

The information was gathered from academicians working at HEIs of Garhwal province of Uttarakhand state, India. The academicians completed the questionnaire on behalf of their institution. Sample collection tenure is from December 2021 to April 2022. Thirty HEIs were invited to participate, and 26 accepted. 364 academics participated in study. The respond rate falls in necessary cut off (Baruch, 1999). Table 1 portrays the academician's demographic summary.

**Table 1** Demographic profile

<i>Demographic profile of respondent</i>			
		<i>Frequency</i>	<i>Percent</i>
Gender	Male	225	61.8
	Female	139	38.2
Age	Up to 25 years	10	2.7
	25–35 years	88	24.2
	35–45 years	120	33.0
	45–55 years	117	32.1
	Above 55	29	8.0
Experience	Upto 5 years	10	2.7
	5–10 years	70	19.2
	10–15 years	150	41.2
	15–20 years	110	30.2
	Above 20 years	24	6.6
Designation	Assistant Professor	129	35.44
	Associate Professor	156	42.86
	Professor	79	21.70
Qualification	Post Graduate	127	34.89
	Doctorate	218	59.89
	Post doctorate	19	5.22
Total		364	100

## 4 Result analysis

### 4.1 Data analysis

Primarily, the descriptive statistics of variables has been done (Table 2). The 'convergent and divergent validity' of measurement model is inveterate using apposite statistics. The

analysis completes with a narrative of model fit of proposed structure and hypothesis testing (Bentler and Bonett, 1980; Scott and Bruce, 1994).

#### 4.2 Descriptive analysis

Table 2 indicates ‘descriptive statistics’ of the study. The values certify the necessary cut-offs. The VIF value for JS and WE were below 5, confirming no issue of multicollinearity (Hair et al., 2010). The skewness and kurtosis value ranges within the threshold value of  $-1$  to  $+1$  (Demir, 2022), thus, the data assumed to be normally distributed and suitable for parametric test.

**Table 2** Descriptive analysis

Variable	Descriptive statistics		Pearson correlation		
	Mean	Std. deviation	JP	JS	WE
Job performance	2.894	0.770	1		
Job satisfaction	2.929	0.729	.535**	1	
Workplace ergonomics	3.007	0.832	.518**	.643**	1

Note: \*\* $p < 0.001$

#### 4.3 Assessment of ‘measurement model’

CFI	0.988
$\chi^2/df$	1.201
PClose	1.000
RMSEA	0.024
SRMR	0.032

Figure 2 shows the ‘measurement model’ of the study. The CFA was steered using Amos v21. The outcomes of the model were impeccable as certifying the necessary cut-offs. Table 3 displays the conclusions of CFA (Gaskin and Lim, 2017).

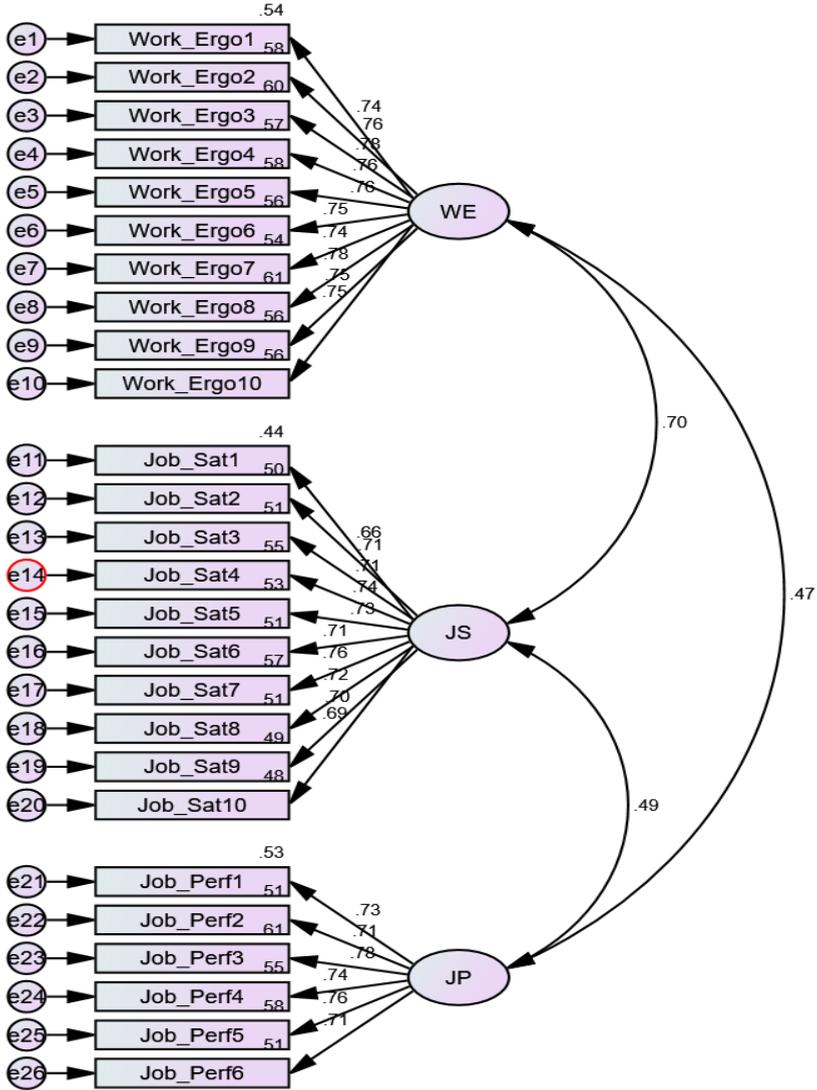
**Table 3** Normality, reliability and non-multicollinearity coefficient

N = 364	Skewness		Kurtosis		VIF
	Statistic	Std. error	Statistic	Std. error	
JP	-.519	.128	-.258	.255	
JS	-.757	.128	.189	.255	2.23
WE	-.510	.128	-.450	.255	2.23

Table 3 depicts sample population’s normal distribution. The obtained normality coefficients (i.e., skewness and kurtosis) indicate that WE, JP and JS are negatively skewed. Despite the apparent skewness, the reported coefficients were all within one standard deviation of the mean, indicating that the data were normally distributed

(George and Mallery, 2001). To determine if the resulting sample is multicollinear, the variance inflation factor (VIF) value is computed. VIFs values of 2.23 for WE, and 2.23 for JS are found to be unique for each of the variables studied which are less than ten in number. These findings suggest that multicollinearity is not an issue in data from research studies (Kutner et al., 2004).

**Figure 2** Confirmatory factor analysis (see online version for colours)



**Table 4** Factor loading and master validity

<i>Construct</i>	<i>Item</i>	<i>Std. reg. Wt</i>	<i>S.E.</i>	<i>t-value</i>
Workplace ergonomics	Work_Ergo1	0.735		
	Work_Ergo2	0.759	0.073	14.522***
	Work_Ergo3	0.777	0.07	14.886***
	Work_Ergo4	0.758	0.071	14.508***
	Work_Ergo5	0.761	0.071	14.57***
	Work_Ergo6	0.748	0.07	14.305***
	Work_Ergo7	0.736	0.07	14.048***
	Work_Ergo8	0.781	0.07	14.984***
	Work_Ergo9	0.749	0.067	14.327***
	Work_Ergo10	0.745	0.07	14.239***
Job satisfaction	Job_Sat1	0.788		
	Job_Sat2	0.709	0.081	12.076***
	Job_Sat3	0.712	0.088	12.111***
	Job_Sat4	0.742	0.088	12.555***
	Job_Sat5	0.731	0.088	12.394***
	Job_Sat6	0.713	0.086	12.131***
	Job_Sat7	0.756	0.09	12.745***
	Job_Sat8	0.716	0.084	12.175***
	Job_Sat9	0.764	0.084	11.895***
	Job_Sat10	0.793	0.084	11.838***
Job performance	Job_Perf1	0.725		
	Job_Perf2	0.715	0.079	12.861***
	Job_Perf3	0.782	0.078	14.048***
	Job_Perf4	0.743	0.076	13.363***
	Job_Perf5	0.759	0.074	13.653***
	Job_Perf6	0.711	0.078	12.791***

Note: \*\*\* $p < 0.001$ .

#### 4.4 Evaluation of reliability and validity of construct

Table 5 empirically endorses the model certifying convergent and discriminant validity amidst the constructs (Hair et al., 2010).

**Table 5** Reliability and validity of the construct

	<i>CR</i>	<i>AVE</i>	<i>MSV</i>	<i>MaxR(H)</i>	<i>WE</i>	<i>JS</i>	<i>JP</i>
WE	0.93	0.57	0.483	0.93	0.755		
JS	0.912	0.51	0.483	0.913	0.695***	0.714	
JP	0.879	0.547	0.237	0.88	0.474***	0.487***	0.74

Note: \*\*\* $p < 0.001$

4.5 Evaluation of structural model

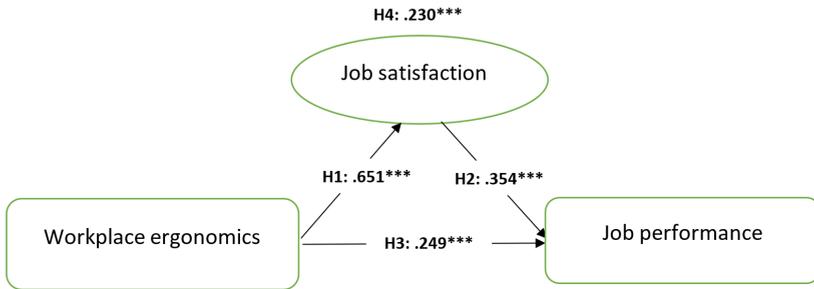
GFI	0.931
CFI	0.988
$\chi^2/df$	1.201
RMSEA	0.024
SRMR	0.032

Above values reflects the worthy model fit and apposite for path study.

4.6 Hypothesis testing

H1 quantified that WE is emphatically allied to JS in academicians of HEIs. Table 6 empirically endorses it ( $\beta = 0.651, t = 21.105, p < 0.001$ ), thus H1 is agreed. H2 quantified that JS is emphatically allied to JP in academicians of HEIs. Table 6 empirically endorses it ( $\beta = 0.354, t = 5.166, p < 0.001$ ), thus H2 is agreed. H3 quantified that WE is emphatically allied to JP in academicians of HEIs. Table 6 empirically endorses it ( $\beta = 0.518, t = 11.525, p < 0.001$ ), so H3 is accepted. The mediating role of JS between WE and JP was also tested via the ‘PROCESS macro’ for SPSS (Hayes, 2015). The fourth hypothesis stated that JS mediates in a major way the interaction between WE and JP in academicians of HEIs. Table 6 signposts the indirect effect of WE on JP is (.230) at a 95% confidence level, with 5,000 bootstrap samples as even in presence of JS as mediating variable between WE and JP, the direct effect of WE on JP is (.249) significant thus mediating effect found partial in nature.

Figure 3 Structural model (see online version for colours)



Note: \*\*\*p < 0.001.

Table 6 Hypothesis testing summary

Hypothesis	Path	Direct effect	Indirect effect	Total effect	Conclusion
H1	WE → JS	.651***	NA	.651***	H1: Accepted
H2	JS → JP	.354***	NA	.354***	H2: Accepted
H3	WE → JP	.518***	NA	.518***	H3: Accepted
H4	WE → JS → JP	.249***	.230***	.479***	H4: Accepted (partial mediation)

Note: \*\*\*p < 0.001.

## **5 Discussion**

The latter study holds three imperative variables specifying WE, JS, and JP. The nested association amid WE, JS, besides JP among academicians employed in HEIs, India is our intent. Amidst the connotation allying WE and JS, JS is dependent though WE abides independent variable. Among the union concerning JS and JP, JP is dependent though JS abides independent variable. The study also attempted to determine the impact of WE on JP of academicians directly where WE is independent and JP is dependent, as well as with the mediation of JS.

First hypothesis outcome manifests a momentous positive alliance amid WE and incidence of JS midst academicians of HEI, India which implies when the academicians are given better ergonomic conditions at the workplace, they have an enhanced level of JS. This aftermath is steady with the anterior researches executed in other pursuits by Habibi et al. (2008), Ikonne (2014), Been and Beijer (2014), Hongisto et al. (2016), Zaidi et al. (2018), Villanueva et al. (2018), Budie et al. (2019), Yarandi et al. (2020), Junejo et al. (2020) and Abdulhamid and Majid (2020), which says that ergonomic factors in the workplace have a relation with JS level of employees.

Second hypothesis outcome manifests a momentous positive alliance amid JS and JP among academicians of HEI in India which means the JP of academicians is higher when they have increased JS level. This aftermath is steady with the anterior researches executed in other pursuits by Davar and RanjuBala (2011), Platis et al. (2015), Barlian (2016), Sony and Mekoth (2019), Ramli (2019), Phillips and Masih (2019), Baluyos et al. (2019), Tahir and Sajid (2019), Al-Ali et al. (2019) and Phuong and Vinh (2020) in different professions.

The result further publicised a significantly positive and direct effect of WE on JP of academicians staffed at HEI, India statistically, meaning JP of academicians would be amplified with improvements in Ergonomic conditions at the workplace. This aftermath is steady with the anterior researches executed in other pursuits by Dianat et al. (2013), Al-Omari and Okasheh (2017), El-Zeiny (2018), Kahya et al. (2019), Masterizki et al. (2019), Alegbeleye et al. (2020), Bhatia and Arora (2021) and Zakarani and Mohd Noor (2021).

Result further broadcast partial mediating effectuate of JS amid the above two variables which means academicians experience JS and ergonomics play a focal part in increasing/decreasing it, affecting their JP level. This verdict is constant with earlier research of Kamif et al. (2016) and Badrianto and Ekhsan (2020).

## **6 Conclusions, implications and limitations**

### *6.1 Conclusions*

This research has a lot of potential to add to the overall presentation of WE and employee JP, focusing on higher education academics engaged at HEIs. A major topic of research is the rising knowledge and concern about WE among companies and employees. Workplace architecture is undergoing a global paradigm revolution, as it significantly influences employees' JS, resulting in variance in their JP. Despite the study's limitations, the findings will assist HEI promoters, human resource experts, and decision-makers in India in understanding and appreciating the relevance of WE in enhancing

academics' JP. The originality of the existent research rests in flaking light on the link amid WE and JP with highlighting the critical role of academicians JS in improving their JP in Indian context. This study created a good theoretical framework based on past relevant literature and theories and validated it using reliable primary data. This study will aid to highpoint the upshot of WE on academician's JP employed in HEIs of Uttarakhand state. The study's findings can aid torch bearers in countless arenas, predominantly Indian mavens employed in public besides private sectors, examine architectural issues, better plan and accomplish JS and JP. Additionally, Indian academics might utilise these findings to localise international exploration in this zone.

## 6.2 *Implications*

The discoveries of the investigation have important theoretical ramifications in comprehending the correlation between WE, JS, and JP among Indian academic professionals in HEIs. The study's validation of a positive correlation between JS and JP strengthens the firmly established connection between these two variables. In the realm of academia, there exists a positive correlation between elevated levels of JS and enhanced JP. This discovery is consistent with prior studies conducted across different occupations, highlighting the widespread nature of the JS-JP correlation.

Moreover, it can be observed that there exists a direct and favourable correlation between WE and JP, suggesting that the enhancement of WE has the potential to directly improve the JP of the individuals in the academic profession. The present discovery corroborates prior research conducted in various fields and underscores the significance of offering ergonomically appropriate work environments to enhance productivity and efficiency among faculty members.

The fallouts of this probe's insinuations hold significant importance for administrators and decision makers within HEIs in India. Institutions can prioritise investments in creating ergonomic workspaces that foster employee well-being and satisfaction by acknowledging the importance of WE on JS. This phenomenon has the potential to result in enhanced employee morale, decreased levels of burnout and heightened rates of faculty member retention.

Also, by comprehending the positive correlation between JS and JP, HEIs can prioritise efforts towards implementing initiatives that aim to improve the levels of JS among faculty members. The implementation of strategies that facilitate professional development, acknowledge accomplishments and cultivate a nurturing work environment has the potential to enhance JP and consequently, enhance the overall academic excellence of the institution.

Additionally, the fallouts of the work underscore the worth of recognising the interceding role of JS in the liaison between WE and JP. It is advisable for managers and administrators to contemplate the implementation of interventions that not only enhance WE but also foster JS, as the amalgamation of these factors can yield a synergistic impact on JP.

## 6.3 *Limitations*

Our study stays not unflawed as others. Just like most studies, there are certain limitations that create a new direction for auxiliary research. Our study's findings are confined to analysis of the established liaison among innumerable constructs by examination of only

a single sector, i.e., HEIs. Consequently, forthcoming surveys be steered in further segments and zones bearing our conceptual architecture. Besides, data only connotes academicians of HEIs employed in Uttarakhand state. Varied sample from diverse province may aid in generality the fallouts. There lies a likelihood that all-inclusive accessible literature might not been reached. As cross-sectional statistics was incorporated, study may grieve some precincts like ‘common method bias’ (CMB), causal relation, etc. Although apposite for the current study, results were likely to differ if longitudinal probe had been steered to surmise the causal link amid the variables. To assess the employees’ perceptions, the current study employed ‘self-administered’ questionnaires of WE, JS and JP. The employees have the chance to report socially desirable answers leading to self-serving bias. Because the data obtained is based on a survey, another weakness of the study is the respondents’ self-serving bias.

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