



Designing a Structural Equation Model for Physical Activity Level, Job Satisfaction, and Effectiveness of Police College Officers in Iraq

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ABSTRACT

This study aimed to propose a structural model for the relationship between physical activity level, job satisfaction, and the effectiveness of police college officers in Iraq.

The research method was applied in terms of its purpose and descriptive in terms of its nature, conducted through a survey approach. The statistical population included all police officers at the Police Academy of Iraq. Data collection was performed using standardized questionnaires, including the Physical Activity Questionnaire by Askari et al. (2013), the Minnesota Satisfaction Questionnaire (MSQ), and the Effectiveness Questionnaire by VandeWalle (2000). Data analysis employed one-sample t-tests, Sobel tests, and structural equation modeling (SEM) using LISREL software. The results indicated that job satisfaction mediates the relationship between physical activity level and the effectiveness of police college officers in Iraq. Additionally, there was a positive and significant relationship between the components of physical activity level, job satisfaction, and the effectiveness of police college officers in Iraq.

Keywords: *Physical activity, job satisfaction, effectiveness, Iraqi police.*

1. Introduction

In today's era, organizations strive to enhance competitiveness and achieve strategic goals by relying on efficient and highly productive employees. Employee effectiveness, a key indicator of organizational success, is influenced by various factors, including physical activity and job satisfaction (1-3). Addressing the physical and psychological needs of employees and creating an environment that promotes their health and motivation are critical priorities. Effectiveness is essentially the extent to

which actions undertaken achieve predefined goals. It is realized when needs are clearly identified, appropriate programs are designed to address these needs, the programs are implemented correctly, and a proper evaluation of the processes and outcomes is conducted (4). Among the factors influencing employee effectiveness, physical activity and job satisfaction are the most significant.

Physical activity, encompassing regular exercise and adequate daily movement, not only improves physical health but also has positive effects on mental health, stress

reduction, and daily energy levels. Studies have shown that appropriately intense physical activity leads to increased job satisfaction among employees (5, 6). Such individuals are generally more motivated to fulfill their professional duties and exhibit greater ability to concentrate and solve complex problems.

Additionally, Tahir (2023) argues that physical activity improves physical health and can reduce sick leave and absenteeism, contributing to lower turnover rates and increased job satisfaction (6). Success in physical activities can enhance individuals' self-confidence, which in turn positively affects workplace and social relationships, ultimately improving job satisfaction (7).

Providing opportunities and facilities for physical activity at the workplace or encouraging employees to engage in sports during their leisure time can serve as an effective strategy to improve employees' health and productivity. Organizations can support this initiative by creating sports facilities, offering exercise programs, and encouraging greater mobility, thereby promoting employee health and job satisfaction.

In addition to physical activity, job satisfaction is a critical determinant of employee effectiveness. Job satisfaction refers to the pleasant feeling individuals derive from their jobs, which may stem from factors such as a conducive work environment, adequate compensation and benefits, opportunities for growth and professional development, and positive relationships with colleagues and supervisors (Judge et al., 2017). Employees who are satisfied with their jobs work with greater motivation and commitment, resulting in improved performance and reduced turnover rates (Huang et al., 2016).

Research indicates that job satisfaction not only affects employees' motivation but also their work quality and productivity (Schleicher et al., 2004). Employees satisfied with their working conditions are more likely to engage in teamwork and foster positive interactions with their colleagues, which enhances efficiency and productivity at the organizational level (Christian et al., 2011). High job satisfaction enables employees to focus more effectively on their tasks and seek ways to improve work processes, directly impacting the overall effectiveness of the organization. Moreover, job satisfaction can reduce absenteeism and increase effective employee presence at

work. Satisfied employees are less likely to be absent due to psychological or physical issues arising from dissatisfaction. Continuous and active participation of satisfied employees promotes team cohesion and contributes to greater organizational effectiveness (Kim & Park, 2020).

Organizations that prioritize improving employee job satisfaction benefit from reduced turnover-related costs, increased organizational commitment, and overall improvement in organizational culture. Creating a work environment where employees feel valued and satisfied can directly or indirectly impact the organization's success and effectiveness (8).

Safaei et al. (2022) conducted a study assessing the impact of three types of physical activities on job satisfaction among industrial workers, including volleyball, table tennis, and aerobics. The results revealed that team sports requiring minimal expertise positively influenced workers' job satisfaction (9).

Hazrati Athar and Khodapasand (2019) examined the impact of physical activity on the performance of athletic and non-athletic employees. Their findings indicated that athletic employees demonstrated significantly higher levels of task performance, job discipline, adherence to ethical values, and overall performance compared to non-athletic employees (10).

Habibi Vatan et al. (2018) investigated the impact of physical activity on employee productivity, absenteeism, and work engagement. Their results showed that aerobic exercise increased employee productivity and work engagement (11).

Dallmeyer et al. (2023) explored the relationship between leisure-time physical activity and job satisfaction. Their study demonstrated a positive and significant association between regular physical activity and job satisfaction, contributing compelling evidence to the limited literature in this field (12).

Overall, physical activity is a simple yet effective approach to increasing job satisfaction, improving employees' quality of work life, and enhancing individual effectiveness. To optimize this strategy, organizations and managers can integrate physical activities into workplace culture and provide support for sports initiatives. Related studies (5, 7, 13) highlight the impact of physical activity on job satisfaction and productivity. However, the present

research aims to address the mediating role of job satisfaction in the relationship between physical activity levels and effectiveness among police college officers in Iraq.

While the relationship between job satisfaction and effectiveness has garnered significant research attention, no study has specifically examined these critical constructs in relation to the physical activity levels of police college officers in Iraq. Furthermore, previous studies have often produced inconclusive findings regarding this relationship across various organizational contexts. This gap in the literature suggests a need to explore the relationship among physical activity, job satisfaction, and effectiveness within the unique context of police college officers in Iraq. The effectiveness and well-being of these officers are crucial not only on an individual level but also for the broader effectiveness of Iraq's security infrastructure.

This, the research hypothesizes that:

- The current levels of physical activity, job satisfaction, and effectiveness among police academy officers in Iraq are favorable.
- There is a significant relationship between the components of physical activity and job satisfaction with the effectiveness of police academy officers in Iraq.
- Job satisfaction mediates the relationship between physical activity and effectiveness.
- The structural equation model of the relationships among physical activity levels, job satisfaction, and effectiveness at the Iraqi Police Academy demonstrates a good fit.

2. Methods and Materials

2.1. Study Design and Participants

This study is applied in terms of its purpose, descriptive in nature, and survey-based, employing a structural equation modeling (SEM) approach. The statistical population of this research includes all officers at the Police Academy in Iraq. The sample size was calculated as 384 individuals (the recommended size for an unlimited population) using the Krejcie and Morgan table. A random sampling method was employed.

2.2. Data Collection

To measure physical activity levels, the Physical Activity Questionnaire developed by Askari et al. (2013) was utilized. This questionnaire consists of 18 items covering three components: physical activity during work, leisure time, and exercise. Responses were measured on a five-point Likert scale (11).

Job satisfaction was assessed using the 19-item Minnesota Satisfaction Questionnaire (MSQ). The MSQ is a globally recognized tool for measuring job satisfaction and is particularly relevant to the police context. This comprehensive questionnaire evaluates overall job satisfaction as well as specific details such as intrinsic and extrinsic satisfaction. It consists of six subscales: pay system (3 items), job nature (4 items), advancement opportunities (3 items), organizational climate (2 items), leadership style (4 items), and physical conditions (3 items). The MSQ uses a Likert scale for scoring, where options "Strongly Disagree," "Disagree," "Neutral," "Agree," and "Strongly Agree" are assigned scores of 1, 2, 3, 4, and 5, respectively (9).

The 44-item Effectiveness Questionnaire by VandeWalle (2000) was used to measure effectiveness. This questionnaire evaluates the variable through nine components: communication methods, clarity of goals and objectives, secondary work positions, intra-unit collaboration, information sharing, customer orientation, inter-unit collaboration, compensation, and servant leadership operations. Responses were also measured on a five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." (4)

To assess the validity and reliability of the measurement scales, confirmatory factor analysis (CFA) was conducted. Results showed that the t-value for all items was greater than 1.96, and the factor loadings exceeded 0.4, indicating that the selected questions provide an appropriate factorial structure for measuring the research variables. Cronbach's alpha was used to determine the reliability of the questionnaires. Given that Cronbach's alpha values for all variables were greater than 0.7, the questionnaires demonstrated good reliability.

2.3. Data Analysis

The Kolmogorov-Smirnov test was used to check the normal distribution of the data. To test the research hypotheses, one-sample t-tests, Sobel tests, and structural equation modeling (SEM) were applied. These analyses were conducted using SPSS and LISREL software.

3. Findings and Results

The demographic characteristics of the participants in this study revealed that all were male (100%). Regarding

educational levels, 32.6% had an associate degree, 45.8% held a bachelor's degree, and 21.6% had a master's degree or higher. In terms of age distribution, 16.7% of the participants were between 20 and 25 years old, 25.3% were aged 26 to 30, 35.9% were in the 31 to 35 age group, and 22.1% were between 36 and 40 years old.

The Kolmogorov-Smirnov test was used to examine the normality of the variables in this study. According to the results, the main components of the study have a normal distribution (Table 1).

Table 1

Results of Kolmogorov-Smirnov Test

Variables	N	Z	p
Pay System	384	0.101	0.231
Job Nature	384	0.135	0.065
Advancement Opportunities	384	0.106	0.244
Organizational Climate	384	0.209	0.092
Leadership Style	384	0.130	0.088
Physical Conditions	384	0.168	0.076
Job Satisfaction	384	0.122	0.134
Physical Activity at Work	384	0.120	0.148
Physical Activity in Leisure	384	0.173	0.304
Physical Activity in Sports	384	0.127	0.103
Physical Activity	384	0.100	0.221
Information Sharing	384	0.137	0.075
Goal Clarity	384	0.102	0.204
Secondary Job Positions	384	0.128	0.098
Intra-unit Collaboration	384	0.135	0.065
Information Sharing	384	0.140	0.077
Customer Orientation	384	0.148	0.087
Inter-unit Collaboration	384	0.116	0.187
Compensation	384	0.134	0.070
Servant Leadership	384	0.126	0.109
Effectiveness	384	0.136	0.062

Since the significance levels for all variables are greater than 0.05, the assumption of normal distribution for the study variables is accepted. Consequently, structural equation modeling (SEM) using LISREL software was employed to test the hypotheses.

To assess the current levels of physical activity, job satisfaction, and effectiveness among the police officers in

the studied academy, a one-sample t-test was conducted. The questionnaire used a 5-point Likert scale, where 1 indicated the lowest value for the respective item and 5 indicated the highest. A mean score above 3 was considered indicative of a favorable status for the variable. Table 2 presents the results of this test.

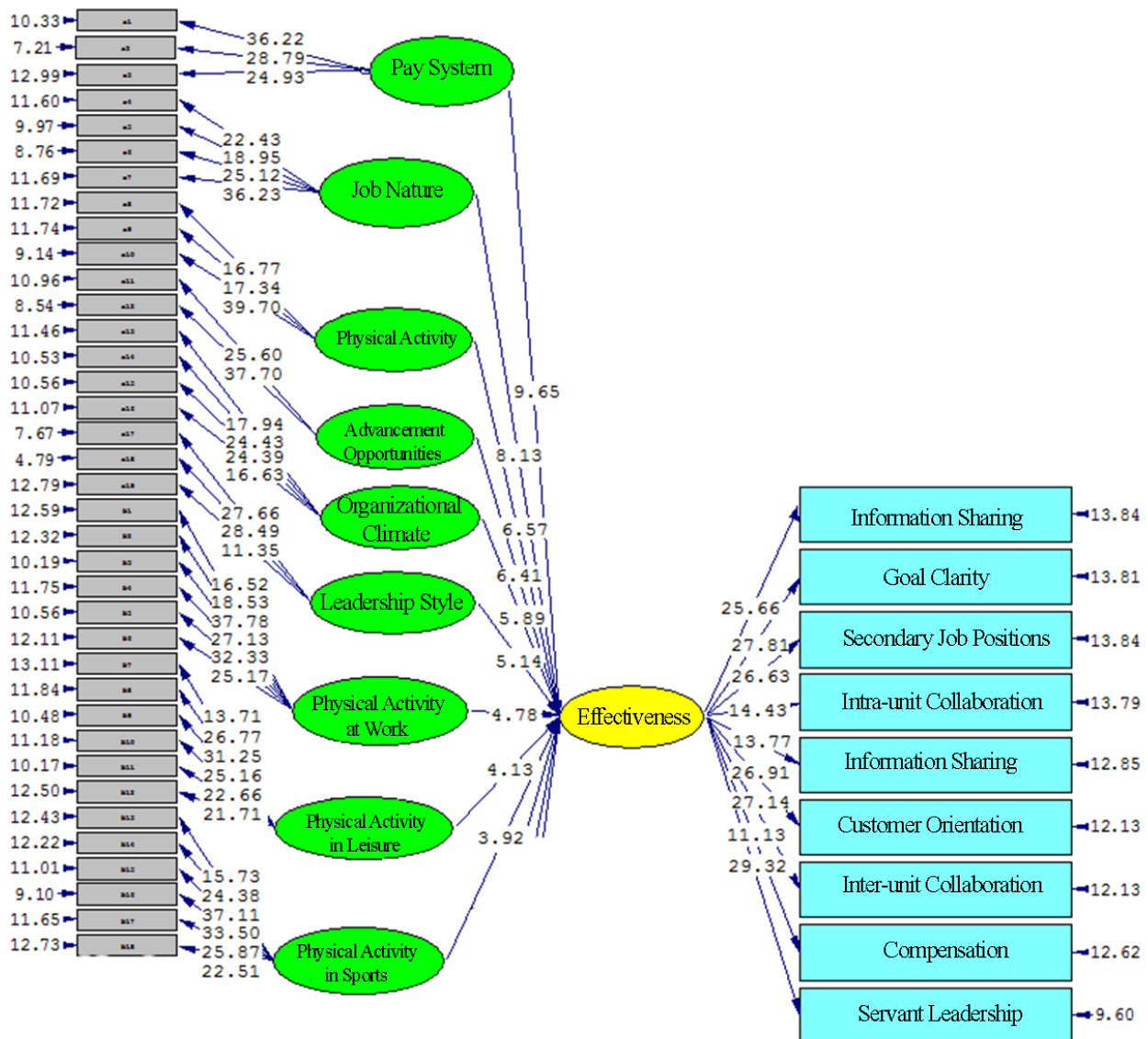
Table 2

Results of One-Sample t-Test for Study Variables

Variable	Mean	Standard Deviation	t-Statistic	Degrees of Freedom	Significance Level
Physical Activity	3.642	0.622	20.249	383	<0.0001
Job Satisfaction	3.513	0.732	13.742	383	<0.0001
Effectiveness	3.867	0.345	49.173	383	<0.0001

Figure 1

Initial Proposed Model



Chi-Square=6220.28, df=2132, P-value=0.00000, RMSEA=0.071

The results in Table 2 indicate that for physical activity, job satisfaction, and effectiveness, the significance levels are less than 0.05, and the t-statistics are positive. Therefore, with 95% confidence, it can be concluded that the levels of physical activity, job satisfaction, and effectiveness among the officers at the Iraqi Police Academy are above average, indicating favorable conditions.

To test the structural model hypotheses, significance was determined using a threshold t-value of 1.96. A t-value greater than or equal to 1.96 indicates the validity of the relationship between constructs, confirming the research hypotheses. Table 3 shows the results, demonstrating significant relationships between the components of physical activity and effectiveness, as well as a positive and

significant relationship between job satisfaction and effectiveness, thus confirming Hypothesis 2.

Table 3

Results of First Hypothesis Testing

Path	Path Coefficient	t-Statistic	Standard Error (SE)
Pay System → Effectiveness	0.47	9.65	0.049
Job Nature → Effectiveness	0.41	8.13	0.050
Advancement Opportunities → Effectiveness	0.38	6.57	0.058
Organizational Climate → Effectiveness	0.33	6.41	0.051
Leadership Style → Effectiveness	0.31	5.89	0.053
Physical Conditions → Effectiveness	0.30	5.14	0.058
Activity at Work → Effectiveness	0.28	4.78	0.059
Activity in Leisure → Effectiveness	0.25	4.13	0.061
Activity in Sports → Effectiveness	0.20	3.92	0.051

To examine the mediating role of job satisfaction in the relationship between physical activity and effectiveness, the conditions for mediation were tested. The first condition—significance of the relationship between the independent variable and mediator—was satisfied. The second condition—significance of the relationship between the mediator and dependent variable—was also met. The indirect effect of physical activity on effectiveness through job satisfaction was calculated by multiplying the path coefficients:

$$0.51 * 0.45 = 0.23$$

The Sobel test confirmed the significance of the mediating effect with a calculated z-value of 7.48, which exceeds the threshold of 1.96. Thus, it can be concluded that job satisfaction plays a mediating role in the relationship between physical activity and effectiveness, confirming Hypothesis 2.

Model fit indices were used to evaluate the structural equation model. These indices, shown in Table 4, indicate that the structural equation model for the relationships among physical activity levels, job satisfaction, and effectiveness at the Iraqi Police Academy exhibits good fit.

Table 4

Model Fit Indices

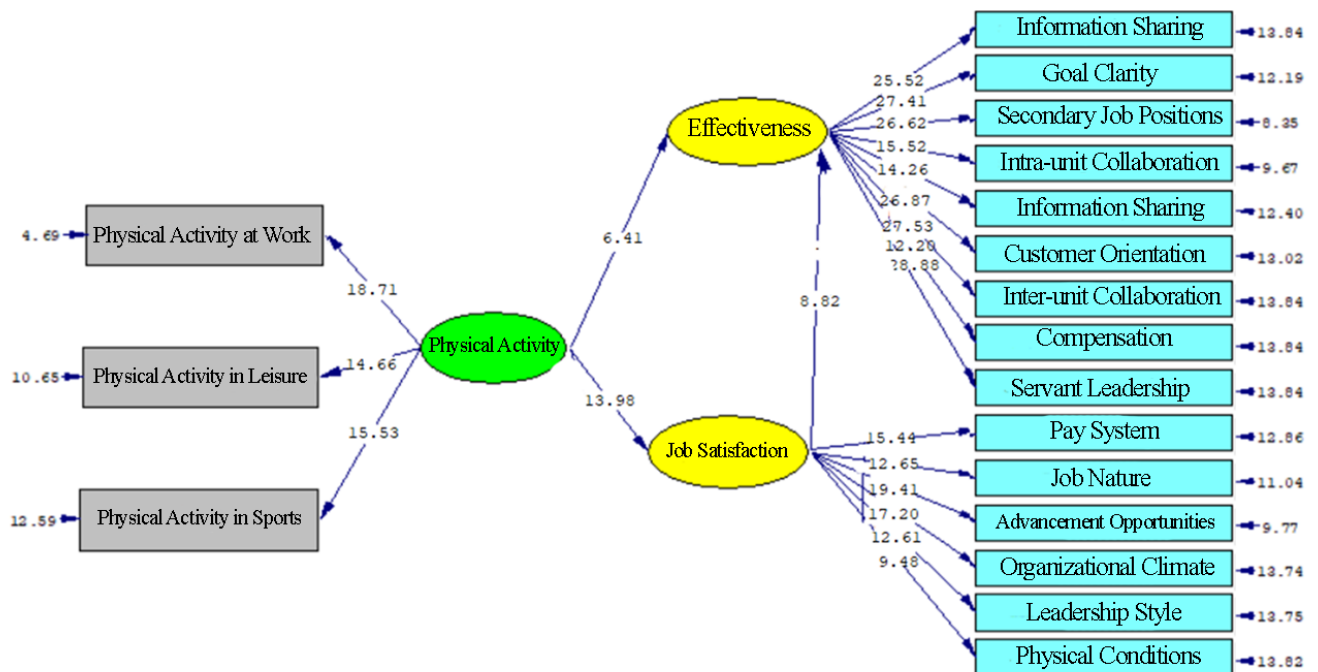
Model	X ² /df	CFI	GFI	NFI	RMSEA
Acceptable Threshold	<3	>0.9	>0.9	>0.9	<0.1
Measurement Model	2.895	0.93	0.92	0.95	0.070

The results demonstrate that the structural equation model for the relationships among physical activity levels,

job satisfaction, and effectiveness at the Iraqi Police Academy exhibits good fit.

Figure 2

Final Model of the Study



Chi-Square=537.31, df=185, P-value=0.00000, RMSEA=0.070

4. Discussion and Conclusion

This study aimed to design a structural model for the relationship between physical activity level, job satisfaction, and the effectiveness of police college officers in Iraq. The results of the first hypothesis showed that the levels of physical activity, job satisfaction, and effectiveness among the police officers at the Iraqi Police College are favorable. Therefore, it can be concluded that these officers exhibit an appropriate level of physical activity, contributing to their physical and mental health. This adequate level of physical activity may include regular exercise, job-related physical training, and daily physical activities.

Additionally, the favorable job satisfaction among the officers suggests that they are content with their jobs, which could be due to factors such as appropriate working conditions, sufficient compensation and benefits, positive relationships with colleagues and managers, and a sense of fulfillment and usefulness. High job satisfaction can lead to

reduced stress and increased motivation and work commitment. The officers demonstrate effectiveness in performing their duties, which may include precise and efficient task execution, problem-solving abilities, emergency management, and maintaining public safety and order. High effectiveness may result from the combination of job satisfaction and adequate physical activity, facilitating improved job performance. Overall, confirming this hypothesis indicates that the existing measures and conditions within the police organization have been effectively managed to maintain and enhance these three critical aspects of the officers' conditions. This could lead to improved organizational performance and better service delivery to society.

The second hypothesis examined the relationship between the components of physical activity and job satisfaction with the effectiveness of Iraqi Police College officers. In the first part, the relationship between physical activity and effectiveness was analyzed. Structural equation

modeling indicated a significant relationship between physical activity levels and both individual and collective effectiveness. The results showed that individuals with higher physical activity levels tend to be more productive and successful in workplace and educational environments. Given the significant and positive t-statistics for the components of physical activity, it can be concluded that promoting physical activity can enhance effectiveness. This finding aligns with studies by Jacobson et al. (2015), Liu and Song (2021), Habibi Vatan et al. (2018), and Zamanepour et al. (2023), which highlight the positive impact of physical activity on individuals' physical and mental health.

Managers and administrators can promote physical activity levels in their organizations by implementing programs such as providing sports infrastructure (facilities and equipment), offering incentives (financial rewards and friendly competitions), conducting educational workshops and specialized consultations, and fostering a culture of active living through managerial support. Group sports (e.g., volleyball and basketball) and regular fitness classes (e.g., yoga and aerobics) can encourage officer participation. Based on the findings of this study, it is recommended that organizations and educational institutions develop and implement comprehensive programs to increase physical activity levels. Such initiatives not only improve physical and mental health but also enhance overall productivity and organizational effectiveness.

The second part of this hypothesis explored the relationship between job satisfaction components and the effectiveness of Iraqi Police College officers. Structural equation modeling confirmed that the t-statistics for job satisfaction components were positive and significant. The findings indicate that employees who are satisfied with their jobs are more likely to perform high-quality work, exhibit greater productivity, and remain committed to organizational goals. These findings are consistent with previous studies that demonstrate the positive impact of job satisfaction on employee performance and effectiveness. Job satisfaction, as a psychological variable, plays a crucial role in fostering motivation, commitment, and a sense of belonging to the organization.

Conversely, employee effectiveness, defined as the result of optimal performance and high productivity, is influenced by factors such as the work environment, managerial

support, opportunities for personal growth and development, and career advancement. Thus, creating conditions that enhance job satisfaction can directly impact employee effectiveness. These findings align with prior (14, 15).

The third hypothesis revealed that job satisfaction mediates the relationship between physical activity and the effectiveness of Iraqi Police College officers. This finding can be considered a significant contribution of this study. Regular and consistent physical activity can improve various aspects of individuals' work life and job performance. Health and vitality can enable individuals to excel in different areas of life, including professional work and family environments. These individuals are likely to experience fewer physical and mental health complaints, which may lead to improved job performance. Healthy individuals are less affected by job-related stress and are better able to maintain high-quality work. Physical activity appears to enhance job satisfaction, which, in turn, significantly impacts their effectiveness.

Based on the findings, it is recommended that managers enhance physical activity levels among Iraqi Police College officers to improve their job satisfaction, thereby positively influencing their effectiveness. This can be achieved by organizing regular physical activity programs, providing sports facilities and equipment, and creating opportunities for physical activity for the officers. Additionally, conducting surveys to assess employees' sports-related needs can improve the quality of sports services provided and increase employee satisfaction.

To improve job satisfaction and, consequently, employee effectiveness, organizations can implement strategies such as improving working conditions (providing a suitable work environment, necessary equipment, and resources), recognizing employee performance through incentive systems, conducting training courses and providing opportunities for personal growth and development, creating clear and transparent career paths, involving employees in organizational decision-making processes, offering flexible work hours, implementing welfare programs, and fostering a positive organizational culture. Given the findings of this study, organizations are encouraged to focus on enhancing employee job satisfaction. Implementing these strategies can lead to increased job satisfaction and, subsequently, improved employee effectiveness. Organizations that

provide a favorable work environment and address employee needs and desires are more likely to achieve higher productivity and success in meeting their goals.

Authors' Contributions

A. F. H. contributed to the study's conceptualization, data collection, and analysis. A. A. assisted in the development of the research methodology, structural equation modeling, and manuscript preparation. A. J. N. participated in questionnaire validation, data interpretation, and statistical analysis. M. K. provided oversight for study design, contributed to the theoretical framework, and revised the manuscript critically. All authors reviewed and approved the final manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for

research with human subjects as outlined in the Declaration of Helsinki.

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