

Articles

Relationship between the level of physical activity and the level of work-related stress in drivers

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Abstract: This study analyzes the relationship between physical activity and occupational stress among drivers of the Línea 6 de Agosto during the 2025 period. Using a quantitative approach and a non-experimental correlational design, a sample of 40 drivers was assessed through the Global Physical Activity Questionnaire (GPAQ) and the Maslach Burnout Inventory (MBI) to measure the level of physical activity and the dimensions of occupational stress—emotional exhaustion, depersonalization, and personal accomplishment. The results showed that 52.5% of drivers had a moderate level of physical activity, 35% a low level, and only 12.5% a high level. Regarding occupational stress, 40% reported medium levels and 25% high levels. The Spearman correlation analysis revealed a strong and statistically significant negative relationship ($\rho = -0.868$, $p = 0.000$) between physical activity and occupational stress, indicating that higher levels of physical activity are associated with lower stress levels. These findings highlight the importance of promoting physical activity in the workplace as a strategy to mitigate stress. It is concluded that encouraging exercise programs can significantly contribute to the physical and mental well-being of public transport drivers, improving their quality of life and job performance.

Key words: Physical activity, Occupational stress, Public transport drivers, Burnout, GPAQ, Maslach Burnout Inventory.

Introduction

Due to the current pace of life and high work demands, caring for physical and mental health has become essential. In this context, exercise is considered essential for maintaining health and individual balance, as it contributes both to strengthening the body and mitigating the harmful effects of stress and pressure at work.

Physical activity is defined as any bodily movement produced by the contraction of skeletal muscles, whether through active movements or the adoption of sustained postures. These actions, present in daily life from walking to performing work tasks, increase the body's energy expenditure. "This energy expenditure is fundamental for maintaining health, as well as for the physical and emotional balance of the individual" (Ceballos, 2021).

"Physical activity is defined as any bodily movement generated by muscle contraction that involves energy expenditure above basal metabolism. It includes both daily activities, such as walking or doing household chores, as well as the practice of exercises and sports aimed at health or physical performance. Beyond its physiological benefits, physical activity contributes to emotional and social well-being by encouraging group interaction and improving people's quality of life" (WHO, 2020). This comprehensive conceptualization allows us to understand physical activity not only as a physiological phenomenon but also as a social experience that significantly influences multiple dimensions of human well-being.

On the other hand, work-related stress constitutes a considerably serious health problem. However, it is important to differentiate the general concept of stress from that specifically linked to the workplace. In this regard, "work-related stress is a phenomenon present throughout all stages of life, within the occupational field" (Patlán, 2023, p. 46), which demonstrates its relevance and the need to address it through appropriate prevention and management strategies, aimed at individuals exposed to occupational stressors that negatively impact their well-being.

"Work-related stress is conceptualized as the physical, emotional, and psychological response generated when the demands and pressures of the work environment exceed the worker's capacities and resources to cope with them effectively" (WHO, 2020). This response can manifest through symptoms such as anxiety, irritability, fatigue, difficulty concentrating, and alterations in physical health, including increased blood pressure.

Recent literature presents diverse findings on the role of physical activity (PA) in mitigating work-related stress. In studies with large samples, a significant inverse correlation has been shown; for example, Koriyama (2025) demonstrated in 7,192 Japanese workers that performing PA more than twice a week significantly reduces perceived stress. Similarly, Suárez (2024) and Flores (2021) reported that PA (Physical Activity) acts as a protective factor against emotional exhaustion and overweight in university settings in Colombia and Peru, respectively.

However, the evidence is not unanimous in specific contexts. Smaller-scale studies, such as those by Marín (2021) in Colombia and Panama, and Guacapiña (2022) in Ecuador, found no statistically significant correlations between the two variables. These authors suggest that external factors—such as COVID-19 pandemic lockdowns or sample size limitations—may mediate these results. In conclusion, although there is a trend linking exercise to occupational health, the need for structured interventions and larger-scale studies is emphasized to clarify its effectiveness as a preventive strategy.

The central purpose of the research is to determine the relationship between the level of physical activity and work-related stress among drivers of the "Línea 6 de Agosto" transit line during the 2025 management period. To achieve this objective, the following specific goals are proposed:

1. Assess the predominant level of physical activity in the sample.
2. Identify the dimensions of work-related stress: emotional exhaustion, depersonalization, and personal accomplishment.
3. Statistically contrast the association between exercise practice and perceived stress levels.

Research hypotheses:

- H1 (Alternative): There is a significant relationship between the level of physical activity and work-related stress among the evaluated drivers.

H0 (Null): There is no statistically significant relationship between the level of physical activity and work-related stress in the study population.

Material and Method

The study is based on a positivist paradigm with a quantitative approach and a realist ontology (Hernández-Sampieri et al., 2014). The design is non-experimental, cross-sectional, and correlational in scope, aimed at determining the relationship between the level of physical activity and work-related stress without manipulating the variables.

Population and Sample

The population consisted of 40 drivers (owners and chauffeurs) from the "Sindicato Mixto de Autotransporte 6 de agosto" in Sipe Sipe, Cochabamba. A non-probabilistic convenience sampling method was used. The inclusion criteria required a minimum seniority of six months and being an active driver; administrative staff, assistants, and drivers on a break or not registered were excluded.

Instruments

Two validated instruments were used for data collection:

1. **Global Physical Activity Questionnaire (GPAQ)** from the WHO (2023): Adapted to quantify physical activity at work, during travel, and leisure time.
2. **Maslach Burnout Inventory (MBI):** A 22-item Likert-type scale to assess emotional exhaustion, depersonalization, and personal accomplishment. Both instruments demonstrated high reliability (Cronbach's Alpha > 0.80).

Procedure and Statistical Analysis

Prior to signing the informed consent form, data collection was conducted in person and supervised.

The data were processed using SPSS software version 27. Due to the population size ($N=40$), the Shapiro-Wilk test was applied to verify the normality of the variables. The analysis included descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics for hypothesis testing based on the data distribution.

Results

Descriptive analysis of physical activity and job stress

The analysis of the population ($N=40$) using the GPAQ instrument revealed that most drivers on the "Línea 6 de Agosto" maintain moderate or insufficient levels of physical activity. Specifically, 52.5% fall into a moderate level, while a significant 35% present a low level, leaving only 12.5% of the population in the high physical activity category.

Regarding job stress, measured with the Maslach Burnout Inventory (MBI), the results indicate that 40% of drivers experience a moderate level of stress, followed by 35% with a low level and 25% reporting high levels. When breaking down stress by its dimensions, emotional exhaustion manifested at a moderate level in 50% of the subjects. Depersonalization presented a high level in 30% of cases, making it the dimension with the greatest critical impact, while personal fulfillment remained mostly at a moderate level (57.5%).

Correlational analysis and hypothesis testing

To determine the relationship between the variables, Spearman's correlation coefficient (ρ) was applied after verifying non-normality of the data using the Shapiro-Wilk test ($p < 0.05$). The findings confirmed a high and statistically significant negative correlation.

significant relationship between physical activity and overall work stress ($\rho = -0.868$; $p = 0.000$). This value allows us to reject the null hypothesis and accept the research hypothesis, showing that the greater the practice of physical activity, the lower the stress levels in drivers.

Regarding the specific dimensions, physical activity showed a very strong negative association with emotional exhaustion ($\rho = -0.753$; $p = 0.000$) and a moderate-to-strong negative correlation with depersonalization ($\rho = -0.699$; $p = 0.000$). Finally, a weaker but still significant negative relationship was found with personal accomplishment ($\rho = -0.291$; $p = 0.000$). These data suggest that physical exercise has a primary preventive impact on psychological burnout and cynical detachment from the work environment in this group of workers.

Discussion

The findings of this research demonstrate a high, statistically significant negative correlation ($\rho = -0.868$; $p < 0.001$) between physical activity (PA) and work stress in drivers from the "Línea 6 de Agosto" [August 6th Line]. This association is notably higher than that reported by Suárez in 2024, Flores in 2021, and Koriyama in 2025, suggesting that in the urban transport sector — characterized by forced sedentary behavior and high environmental demands — PA plays an even more critical and pronounced protective role. The prevalence of moderate and low levels of PA (87.5%) and the high stress detected (65%) coincide with the reality of a work environment characterized by long working hours and few opportunities for self-care.

While studies such as that by Suárez et al. (2024) confirm that PA reduces emotional exhaustion, the discrepancies found with Marín et al. (2021), who found no significance during confinement periods, reinforce that the PA-stress relationship is mediated by contextual factors.

In the present study, the monotonous and stressful nature of the transport service seems to enhance the effectiveness of exercise as a coping mechanism.

Nevertheless, the fact that 25% of the sample presents high stress levels suggests that PA, although essential, must be complemented with therapeutic interventions and psychological support, especially in cases where there are psychosocial barriers or pre-existing health problems. As proposed by Mejía et al. (2021), the solution requires on-site intervention programs specifically designed for the rhythms of public transport.

Despite the limitations of this study, such as the sample size ($N=40$) and the cross-sectional design, which prevents establishing definitive causality, the research has methodological strengths due to the use of internationally validated instruments (GPAQ and MBI) and its originality in the Bolivian context. In conclusion, the null hypothesis is rejected, and it is confirmed that promoting PA is an essential strategy to mitigate emotional exhaustion and depersonalization, directly impacting the driver's occupational health and, by extension, the road safety of the community.

Conclusion

First, a negative correlation of high magnitude and statistical significance was determined between the level of physical activity and work stress ($\rho = -0.868$; $p < 0.001$). These results allow us to reject the null hypothesis and confirm that increased physical activity practice is robustly associated with reduced psychological tension in the evaluated drivers, consolidating exercise as a modulating variable of occupational stress. Second. Regarding the physical activity profile, a predominance of medium levels (52.5%) and low levels (35.0%), revealing a pattern of structural

sedentary behavior in the sector. This insufficiency of vigorous or moderate physical activity limits the physiological and psychological coping mechanisms, increasing workers' vulnerability to the chronic demands of their work environment.

Third. The diagnosis of work stress revealed that 65% of the sample falls within moderate to critical levels, with emotional exhaustion being the most prevalent dimension (50% at a medium level). Likewise, the observed levels of depersonalization suggest a latent risk of deterioration in service quality and drivers' mental health, which justifies the need for urgent preventive interventions.

Fourth. The dimensional analysis showed that physical activity has a greater protective effect on emotional exhaustion ($\rho = -0.753$) compared to depersonalization and personal accomplishment. The weaker relationship found in this latter dimension suggests that satisfaction and professional achievement in public transport are subject to extrinsic and structural factors that transcend individual lifestyle.

Fifth. In summary, the empirical evidence obtained positions structured physical activity as a highly effective occupational health strategy. The findings underscore the relevance of designing public policies and institutional programs that promote on-site physical activation, in order to mitigate psychosocial risks and improve road safety in urban transport in the region.

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