


## Physical Activity and Stress in employees of a public university in Bahia during the COVID-19 pandemic

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### ABSTRACT

The research aimed to analyze the association between the practice of Physical Activity (PA) and the prevalence of stress in technical-administrative employees of UEFS during the COVID-19 pandemic context. This is a cross-sectional epidemiological study, conducted online, in which the instruments for data collection were the sociodemographic questionnaire, the International Physical Activity Questionnaire (IPAQ) long version and the Inventory of Stress Symptoms for Adults (ISSL). The statistical data showed that, among the 143 employees who collaborated with the research, 55.9% presented stress; among them, 53.8% were in the resistance phase. In addition, the data also showed that 60.0% had a high level of PA. Moreover, the data showed that there was no statistically significant association ( $p < 0.05$ ) between the practice of PA and the prevalence of stress ( $p$ -value = 0.635) and its phases ( $p$ -value = 0.183). Therefore, we need to think about people in an integral way and reflect on the various spheres in which they find themselves in society. In addition, the university needs to think about strategies of assistance and support to the servers, since they were in a psychic suffering during the context of the pandemic and with the return in person the demands became excessive. The purpose of the research was to contribute and think of strategies and improvements that contribute to the general health of these workers.

**Keywords:** Physical Activity, Stress, COVID-19.

## 1 INTRODUCTION

The current society has brought many advances in the various spheres of human knowledge such as culture, work, politics, education and health. However, technological advances have also contributed to several changes in working conditions, which have contributed to the development of Mental Disorders (MD), such as high rates of psychological diseases; especially the stress, in the working class, especially the university servers, subjects investigated in this research (AZEVEDO, 2017; FERREIRA *et al.*, 2022; RIBEIRO, 2019).

The COVID-19 pandemic has brought with it significant transformations in people's lives, especially that of workers. These, especially the female public, had to reconcile work with domestic activities, maternal responsibility and wife role, in which physical and mental exhaustion was present because of the high demand to which they were subjected (FERREIRA *et al.*, 2022; DOS SANTOS *et al.*, 2023).

Some studies related to Mental Health (MH) already published have identified that the problems related to this theme will have an increase in the period of 25 years, surpassing alcohol dependence, mental deficiency, Alzheimer's disease, (FRANCO; DRUCK; SELIGMANN-SILVA, 2010; AZEVEDO, 2017). Depression, schizophrenia and other diseases with the characteristics of MD are more prevalent than chronic degenerative diseases.

Thus, with regard to stress, Marilda Lipp, a Brazilian researcher responsible for validating the Inventory of Symptoms for Stress in Adults (ISSL), defines it as "a psychological reaction with physical, mental and chemical emotional components to certain stimuli that irritate, frighten, excite and/or confuse the person" (LIPP, 1984, p. 6).

According to Robbins (2002, 1999), there are three categories of potential stressors: environmental, organizational and individual. The first category concerns the uncertainties arising from the political, economic and technological spheres. The second, more directly linked to the scope of work, refers to the pressures to meet deadlines, tasks and overloads. And, finally, the individual ones correspond to the situations linked to the family sphere and to the difficulties of relationship. In addition, according to Silva and Silva (2015, p. 202), "the identification of the factors that cause this phenomenon can contribute to the elaboration of proposals for health promotion actions in the workplace."

Also, it is worth mentioning that stress has four phases, Filgueiras and Hippert (1999) highlight in their study that Hans Selye was the first researcher who tried to define stress and classified it according to its dimensions, the author addressed three phases, 1) alarm phase, which corresponds to the moment when the individual is faced with the stressor agent and is characterized by acute manifestations; 2) resistance phase, when the stressor is of great intensity or of long duration and the

organism needs to use its energy reserves in an attempt to return homeostasis and; 3) exhaustion phase, when the body no longer has energy reserves to face the stressor agent (SADIR; BIGNOTO; LIPP, 2010; AZEVÊDO, 2017; FERREIRA *et al.*, 2021). In addition, Lipp (1984) identified a fourth phase which she called near-exhaustion, characterized by the intermediation between the resistance phase and the exhaustion phase. According to the author, the subject does not immediately enter into exhaustion, because the mental faculties enter into a prolonged period of resistance before reaching the phase of exhaustion. To this intermediate period where the subject still resists, the author called it near-exhaustion (AZEVEDO, 2017).

Physical Activity (PA) is an important promoter/instrument for people's health and its constant practice has benefits that contribute to the physical, cognitive and social improvement of individuals (AMARAL, 2017; AZEVÊDO, 2017; COAST; SOARES; TEIXEIRA, 2007). In addition, the effects of regular physical exercise have great impacts on the health of the subjects helping/preventing cardiovascular diseases, diabetes, hypertension, cancer, among others (MACEDO *et al.*, 2003; POLISSENI; RIBEIRO, 2014); providing an increase in people's General Quality of Life (GHQOL), especially for the working class who may be subject to suffering from stress in their work environment.

Similarly, studies show that PA linked to leisure can relieve the symptoms of stress, collaborating with the maintenance of the health of the individual and, in particular, of the worker (BARROS; SAINTS, 2001; MELLO *et al.*, 2005; NAHAS, 2003).

In view of a survey in the literature, it was identified that there are few studies on technical-administrative servers. In particular, the servers of the State University of Feira de Santana (UEFS), where specifically the research was conducted. The objective of this study was to analyze the association between the practice of PA and the prevalence of stress in the technical-administrative staff of UEFS in the context of the COVID-19 pandemic.

## 2 METHOD

This is a cross-sectional epidemiological study whose sample was composed of technical-administrative employees of the UEFS. The same is characterized by the sharing of the same experience and the direct analysis of a planned number of individuals in a single opportunity in which the measures are evaluated concomitantly (MEDRONHO *et al.*, 2009). The sample was composed of 143 technical-administrative employees of UEFS, 42 men and 101 women, aged between 23 and 65 years.

For data collection, the following instruments were used, the sociodemographic questionnaire covering, in addition to questions about personal characteristics, socioeconomic and relationships with family and friends, questions about working conditions in *home office* (AZEVEDO, 2017; FERREIRA

et al, 2022); the complete form of version 8 of the *International Physical Activity Questionnaire* (IPAQ). The IPAQ is an instrument that, in addition to the practice of PA, also considers the activities performed during leisure time, at home, and when commuting to work; the Inventory of Stress Symptoms for Adults (ISSL) was used, which aims to identify a) the existence of stress, b) the specific phase of stress and c) the prevalence of physical or psychological symptoms and presents three tables related to the phases of stress (LIPP, 2000; AZEVÊDO, 2017).

It is also noteworthy that the study was evaluated by the Ethics Committee of the State Department of Health of Santa Catarina, according to Resolution No. 466/12 of the National Health Council, under opinion number 1.437.801 and CAAE 44009814.2.0000.0115. In addition, the participants were informed about the purpose of the study and the guarantee of return of the results obtained and conclusions highlighted through the Term of Free and Informed Consent (ICF), which was forwarded along with the other questionnaires.

Regarding data analysis, the following steps were performed: a) descriptive analysis of the variables under study; b) bivariate analysis of the possible associations between the variables of interest (sociodemographic aspects, PA levels, stress and associated factors). In addition, the data were entered, processed and classified electronically through the SPSS 9.0 program for Windows.

### 3 RESULTS

A total of 143 technical-administrative employees participated in the research, 70.6% of whom were women. Among the participants, 9.15% were under 30 years of age, 32.40% were between 30 and 39 years old, 35.91% were between 40 and 49 years old, 18.31% were between 50 and 59 years old, and 4.22% were between 60 and 69 years old.

Regarding the occurrence of stress in the study population, the data showed that 55.9% presented stress, with 53.8% in the resistance phase (Table 01).

Table 01. Stress Prevalence (yes/no) and stress phases

Variables	N	%
<b>Stress</b>		
Yes	80	55,9
No	63	44,1
<b>Alert Phase</b>		
Yes	2	1,4
No	141	98,6
<b>Resistance Phase</b>		
Yes	77	53,8
No	66	46,2
<b>Exhaustion phase</b>		
Yes	1	0,7
No	142	99,3

Regarding the PA level, the study identified that most of the investigated servers were classified as having a high level of PA of 60%, and only 10% of the participants had a low level and 30% were classified as a moderate level of PA.

Moreover, by associating the classification of PA levels and stress (p-value = 0.635) (Table 04) and its phases (p-value = 0.183) (Table 05), it was shown that there was no association between the variables.

Table 04 – Association between the classification of the level of physical activity (IPAQ) and stress

Variables	Physical Activity Level					
	Low		Moderate		High	
	n	%	n	%	n	%
<b>Stress</b>						
Yes	6	9,1	18	27,3	42	63,6
No	5	11,4	15	34,1	24	54,5
<b>p-value</b>	0,635					

Table 05 – Association between the classification of the level of physical activity (IPAQ) and stress phases

Variables	Physical Activity Level					
	Low		Moderate		High	
	n	%	n	%	n	%
<b>Phases of Stress</b>						
Alert	1	50,0	1	50,0	-	-
Resistance	5	9,6	12	23,1	35	67,3
Almost exhaustion	-	-	5	45,5	6	54,5
Exhaustion	-	-	-	-	1	100,0
<b>p-value</b>	0,183					

#### 4 DISCUSSION

This study sought to determine the association between PA and stress, whose data were collected during the COVID-19 pandemic, in which there were radical changes in the routine of the life of the institution's technical-administrative employees. Thus, analyzing the effects of these changes, linked to the context in which the country found itself, in a health, economic, educational and political crisis, in addition to a crisis in the MH of these workers, proved to be essential for the scientific field.

Also, with the increase in the rates of mental disorders currently, especially the stress studied in this study, which may be related to the accelerated lifestyle, there is a high interest for research with the same content. Thus, it is essential to investigate stress and associated factors in the working class,

especially in university environments, which are still little explored in the scientific environment, such as the institution of this research.

According to Scarcelli and Alencar (2009), one cannot think about the aspects that define man in separate parts, in this sense, reflect the relationship between health-disease linked to other social points (FREITAS, 2012; FERREIRA *et al.*, 2022) is essential to understand the data from this study.

Therefore, the data collected in this study showed that 55.9% of the sample presented stress, with 53.8% in the resistance phase, a high percentage when compared to other studies of the same content, such as the one by Baptista *et al.* (2022) and Ribeiro (2019), which manifested 23.19% and 24%, respectively.

It is worth mentioning the importance of identifying the stress phase in which individuals find themselves to think, analyze and intervene in appropriate actions for their prevention/treatment (AZEVEDO, 2017; FERREIRA *et al.*, 2022). In this study, most were in the resistance phase, this may have occurred due to the need to use their energy reserves to deal with the transformations and stressors to which they were subjected in the pandemic context, in an attempt to resume homeostasis (SADIR; BIGNOTO; LIPP, 2010; FIG TREES; Hippert, 2011; AZEVEDO, 2017).

Regarding PA levels in this study, it was analyzed that 10% of the participants had a low level, 30% a moderate level and 60% a high level. In this way, the data emphasize that the study population was physically active during the pandemic. Such information may suggest that they sought to keep busy, distracted or even relaxed with the practice of PA (AZEVEDO, 2017; DE SOUZA-JUNIOR, 2020; DOS SANTOS *et al.*, 2022; MIRANDA *et al.*, 2021).

In addition, when we associated the PA levels with the sociodemographic issues of the participants, it was identified that there was no association ( $p$ -value  $<0.05$ ), which may be related to the fact that the practice of PA was regular and active in the individuals at the time the research occurred, with daily practice being an ideal level and recommended by the World Health Organization (WORLD HEALTH ORGANIZATION *et al.*, 2020; BRAZIL, 2021).

However, even with the data demonstrating a high prevalence of stress in the population of this study, when we analyzed the association of PA levels with stress ( $p$ -value = 0.635) and its phases ( $p$ -value = 0.183) no statistically significant bases were found. Thus, the study raises a different result from the others found in the literature, which manifest an association between the variables PA and stress (AZEVEDO, 2017; JUNIOR BIRTH; CHAPELRY; VIEIRA, 2012; NUNOMURA; TEIXEIRA; FERNANDES, 2009; RIBEIRO, 2019).

However, according to Scarcelli and Alencar (2009) we cannot think and classify individuals separately in the social spheres, since the high rate of stress verified in this research may be more related to sociodemographic aspects and labor changes to which workers were submitted than to the

absence of PA practice. Still, it is emphasized in this study that Physical Activity was a factor that directly or indirectly provided benefits to the overall Quality of Life of the participants who composed the sample.

## **5 FINAL CONSIDERATIONS**

Modern society has brought technologies to optimize and improve people's lives, especially for the working class. However, these technological advances do not apply to everyone and have contributed to physical and mental illness, and mental illness has had a growing increase in postmodernity.

Thus, investigating the prevalence of stress in the employees of this study proved to be fundamental, both for the lack of research on this theme with this population and for the discovery of the impacts generated in the lives of these individuals during the pandemic, especially in mental health, in which the data showed a high percentage of stress in the sample (55.9%).

However, it was also verified in the data a high level of PA practice (60%) by the participants, in view of this, it was shown in the objective of this study, the non-association between the variables studied, stress (p-value 0.635) and stress phases p-value (0.183). These results demonstrate that even with the high prevalence of stress in the study population, PA being something regular in the lives of these individuals, was a protective/preventive factor for the health of these workers during the context in which this study was conducted.

Nevertheless, it is worth mentioning that as this is a cross-sectional study, there are some limitations, such as the very well delimited time frame and, when it comes to health, there may be other variables interfering in the results, since there are numerous factors that determine the health-disease process. Thus, it is not possible to conceive the physical and mental state of the individuals in this research only with the variables studied.

In short, the data presented indicate the importance of creating internal policies and strategies that provide adequate support to the employees of this institution, due to the psychological suffering to which they were subjected during the pandemic context in which this study was conducted, in order to verify, analyze and intervene to improve the general health of these workers.

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