

Effect of a workplace physical activity program on quality of life

Efeito de um programa de exercício físico no ambiente de trabalho sobre a qualidade de vida

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ABSTRACT

Aim: To evaluate the effect of a Workplace Physical Activity Program (WPAP) on the quality of life (QoL) of administrative technical staff. **Methods:** Twenty-six sedentary or insufficiently active employees evaluated by the International Physical Activity Questionnaire (IPAQ) criteria were divided into experimental and control groups. To assess QoL, the World Health Organization Quality of Life-bref (WHOQOL-bref) questionnaire was applied. The intervention was performed with 10-minute sessions, three times a week, for 12 weeks, totaling 36 exercise classes or 6 hours. **Results:** No difference was observed in the facets of each QoL domain (General, Social Relations, Psychological, Physical and Environment) after the intervention between the groups. **Conclusion:** WPAP in this format was not sufficient to change the QoL of the administrative technical staff, as QoL is a complex concept, and it is necessary to combine other programs for a positive result.

Keywords: exercise; quality of life; occupational health.

RESUMO

Objetivo: Avaliar o efeito de um Programa de Exercício Físico no Ambiente de Trabalho (PEFAT) sobre a qualidade de vida (QV) dos funcionários técnicos administrativos. **Métodos:** Participaram da pesquisa 26 servidores sedentários ou insuficientemente ativos avaliados pelos critérios do Questionário Internacional de Atividade Física (IPAQ), divididos em grupo experimental e controle. Para avaliar a QV foi aplicado o questionário *World Health Organization Quality of Life-bref (WHOQOL-bref)*. A intervenção foi realizada com sessões de 10 minutos, três vezes por semana, durante 12 semanas, totalizando 36 aulas com exercícios ou 6 horas. **Resultados:** Não se observou diferença na análise das facetas de cada domínio de QV (Geral, Relações Sociais, Psicológico, Físico e Meio Ambiente) após a intervenção entre os grupos. **Conclusão:** o PEFAT neste formato não foi suficiente para alterar a QV dos funcionários técnicos administrativos, já que a QV é um termo complexo, sendo necessária a combinação de outros programas para um resultado positivo.

Palavras-chave: exercício físico; qualidade de vida; saúde do trabalhador.

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Introduction

Work transforms people's daily lives, covering a large part of the hours of the day in the workplace, consequently reducing free time for leisure [1], causing stress that often triggers occupational diseases of physical and/or mental origin, decreasing the quality of life and productivity [2].

Quality of life is not only well-being, health status, lifestyle, or mental state, but also encompasses the individual's subjective perception of their position in life [3], in the context of the culture and system of values in which they live concerning their goals, expectations, standards, and concerns [4].

In the work environment, quality of life involves physical and environmental aspects, as well as psychological aspects [5,6]. The decrease in the quality of life in the workplace can leave workers unmotivated and dissatisfied, with high rates of absences, leaves, turnover, and work accidents, in addition to low productivity and poor quality in the products and services provided [7].

Several companies, seeking to improve their production and quality in products and services, through a more favorable environment for the physical and mental well-being of their employees, invest in worker health promotion programs aimed at reducing and preventing occupational diseases [8].

Among the occupational health promotion programs, those involving physical activity stand out, such as the Workplace Physical Activity Program (WPAP) [9]. It should be noted that, unlike Labor Gymnastics, which is usually associated with a stretching program, WPAP develops in systematic and structured way flexibility, stretching, relaxation, muscle strengthening, and motor coordination exercises, through playful activities, performed statically or dynamically, individually or in groups [8].

Studies linking short-term WPAP with various aspects that make up the quality of life have been carried out and point out several benefits of this practice, such as reduced levels of anxiety [10], improvement in fine motor coordination [11] and in the mood state enhancing positive mood, vigor [12], decreasing medical certificates for systemic and musculoskeletal diseases [6], preventing repetitive strain injuries (RSI), work-related musculoskeletal disorders (WMSD) and improving interpersonal relationships [13], in addition to the change in the working environment due to the decrease in tension [1].

But it is questioned whether WPAP can directly influence the quality of life of a company's employees. Therefore, this study aimed to verify the effect of a physical activity program in the work environment on the quality of life of administrative-technical employees of the *Universidade Federal da Fronteira Sul*.

Methods

The study has an experimental design [14], in which a pre- and post-assessment of quality of life was applied, after 36 classes, for 12 weeks, three times a week of WPAP.

This research was approved by the Research Ethics Committee (CEP) of the *Universidade Federal da Fronteira do Sul*, CAAE No. 53085216.5.3001.5564. All participants signed the free and informed consent form, and all norms of National Health Council resolution 466/12 were respected.

Seventy-five technical-administrative servants from the *Universidade Federal da Fronteira Sul* (UFFS), Chapecó/SC, were invited to participate in the study. The study group was selected according to the following precepts: an invitation, as well as disclosure at UFFS, and an applied anamnesis to identify the age and if they practiced physical activity regularly to define the participants. Were excluded from the study: 1) individuals who attended less than 75% of WPAP classes; 2) who demonstrated changes in the levels of physical activity practice during the study; 3) who had some type of injury during the study period.

The study group consisted of 26 technical servants from administrative sectors aged between 19 and 45 years, considered as sedentary or insufficiently active A or B according to the criteria of the International Physical Activity Questionnaire (IPAQ) reduced version VIII. The groups were equally separated through a simple draw, with 13 members in the Control Group (CG) and 13 in the Experimental Group (EG), as described in figure 1.

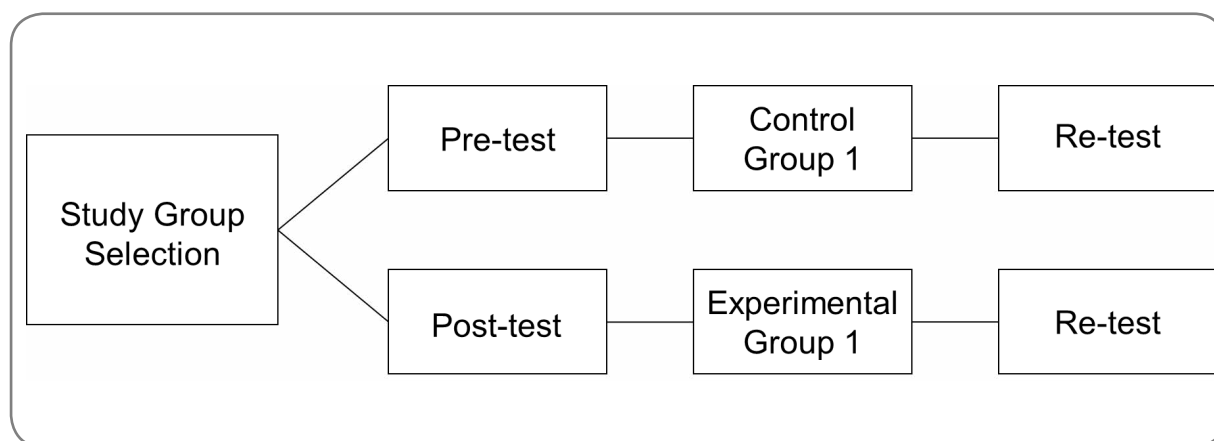


Figure 1 - Experimental study design

Three collection instruments were used: 1) anamnesis to characterize and define the subjects, as well as to assess body mass expressed in kilograms (kg) and height expressed in meters (m), used to calculate the Body Mass Index ($BMI = \text{Body Mass}/(\text{Height}^2)$); 2) the reduced IPAQ version VIII, to check the level of physical activity, according to the classification: a) Irregularly active: those who perform physical activity for at least 10 continuous minutes, however insufficient to be considered active. It is subdivided into Irregularly active A: meets at least one of the recommendation criteria regarding frequency (5 days/week) or duration (150 minutes/week) of physical activity; Irregularly active B: does not meet any of the recommendation criteria regarding frequency or duration, but practiced the 10 continuous minutes of physical activity; and b) Sedentary: one who did not perform any physical activity for at least 10 continuous minutes during the week [15].

To assess the quality of life, the World Health Organization Quality of Life-Bref (WHOQOL-Bref) questionnaire of the World Health Organization [16] was applied, which considers the last two weeks of the study subjects and is performed in a self-assessment manner for the Physical, Psychological, Social Relationships, and Environment domains. In total, 26 questions are answered on a Likert scale from 1 to 5, considering 1 for levels as very low, very dissatisfied, and nothing, and 5 for levels as very good, very satisfied, and extremely.

The intervention was carried out with 10-minute physical exercise sessions according to the WPAP proposal [8]. These classes were divided into three stages: 1) initial part of 3 to 5 minutes in duration, with warm-up exercises; 2) main part of 4 to 6 minutes, with flexion exercises and muscle strengthening; 3) final part of 1 to 4 minutes, with relaxation and stretching exercises. Classes took place three times a week for 12 weeks, totaling 36 classes or six hours of activities (Table I).

Table I - Description of activities proposed in the intervention (intervention protocol)

Part of the class	Activities	Materials used
Initial part (4 minutes)	Playful activities, providing moments of social interaction and relaxation, involving rhythm, fine motor coordination, quick thinking, and attention	Rubber balls, newspaper, volleyball, bows, bats and music
Main part A) Flexibility (4 to 6 minutes) B) Muscle Strengthening (4 to 5 minutes)	A) Activities performed in pairs or individually, statically or dynamically, with a logical sequence in the cephalocaudal or near-distal direction, emphasizing the regions with the greatest pain or the muscle groups most demanded during work B) Selected activities emphasizing the characterization of employees and the work environment, carried out individually or in pairs with or without the use of material dynamically or statically	Rubber balls, bats, bows, mats and music
Final part A) Relaxation (1 to 4 minutes) B) Stretching (1 to 4 minutes)	A) When the main part was flexibility, the relaxation exercises applied were breathing, meditation, massage, and group dynamics B) When the main part was muscle strengthening, the choice for the end was stretching to relax the exercised muscle groups, performed individually or in pairs, static or dynamic	Mats, balloons and music Mats and music

Adapted from Laux, Corazza, and Andrade [8]

For controlling the intensity during the proposed activity, the Borg Rating of Perceived Exertion scale [17] was used so that the subject evaluates their perception of exertion between mild and intense (13-15 points).

For data analysis, descriptive and inferential statistics were used. Comparisons between groups were performed using the t-test for independent samples and comparing description variables, the ANOVA and Friedman test for comparison between periods (pre and post), and between groups, Bonferroni's Post Hoc. In compa-

ring physical activity levels, the Chi-square test was used. The tests were performed using the Statistical Package for Social Sciences (SPSS®) version 21.0 for Windows®, with a significance level of 5%.

Results

Table II shows the characterization data of the 26 administrative technicians who participated in the study, with an average age for the EG of 30.12 ± 7.4 years, while the average age of the CG was 30.49 ± 5.63 years, classified as sedentary or insufficiently active. It is observed that there is no difference in the characterization variables when compared between CG and EG.

Table II - Characterization of the study group

	Control group n (13)		Experimental group n (13)		p
	Mean	SD	Mean	SD	
Age (years)	30.49	5.63	30.12	7.4	0.905 ^a
Body mass (kg)	73.68	16.1	73.96	18.31	0.968 ^a
Height (m)	1.67	0.08	1.68	0.09	0.714 ^a
BMI (kg/m ²)	22.07	4.89	21.83	7.4	0.897 ^a
IPAQ	n (%)		n (%)		
Sedentary	6(46.15%)		5(38.45%)		0.691 ^b
Insufficiently Active A and B	7(53.84%)		8(61.53%)		

^a T-test for independent samples; ^b Chi-Square; SD = Standard Deviation; BMI = Body Mass Index; kg = kilograms; m² = square meters; m = meters; n = number of members; IPAQ = International Physical Activity Questionnaire

Table III shows the frequencies and percentages of perception of administrative technicians on the general questions (Q1 and Q2) of the WHOQOL-Bref. It was observed in these results that 13.5% of administrative technicians considered their quality of life poor, while 59.6% considered it positively, and from these, 51.9% rated their quality of life good, and 7.7% rated it very good.

In the question about the level of satisfaction with health, it was found that 3.8% of technicians are very dissatisfied, 17.3% are dissatisfied, and 53.9% consider their health positive, and from these, 38.5% are classified as satisfied and 15.4% very satisfied.

Table IV shows the differences between the facets of each domain: General, Social Relationships, Psychological, Physical, and Environment from WHOQOL-Bref of administrative technicians, and no difference was observed between CG and EG.

Table III - Frequencies and percentages of perception of administrative technicians on the general questions (Q1 and Q2) of the WHOQOL-Bref

Questions	Answer Options	Control Pre n (%)	Control Post n (%)	Experiment Pre n (%)	Experiment Post n (%)	Total n = 52(%)
"How do you rate your quality of life?"	1- Very bad	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	2- Bad	1(7.7)	2(15.4)	3(23.1)	1(7.7)	7(13.5)
	3- Neither bad nor good	4(30.8)	4(30.8)	4(30.8)	5(38.5)	17(32.7)
	4- Good	8(61.5)	6(46.2)	6(46.2)	7(53.8)	27(51.9)
	5- Very good	0(0.0)	1(7.7)	0(0.0)	0(0.0)	1(7.7)
"How satisfied are you with your health?"	1- Very dissatisfied	0(0.0)	0(0.0)	1(7.7)	1(7.7)	2(3.8)
	2- Dissatisfied	2(15.4)	4(30.8)	2(15.4)	1(7.7)	9(17.3)
	3- Neither satisfied nor dissatisfied	3(23.1)	3(23.1)	3(23.1)	4(30.8)	13(25.0)
	4- Satisfied	6(46.2)	3(23.1)	7(53.8)	4(30.8)	20(38.5)
	5- Very satisfied	2(15.4)	3(23.1)	0(0.0)	3(23.1)	8(15.4)

n = number of members

Table IV - Differences between the facets of each WHOQOL-Bref domain in administrative technicians

Domains	Control		Experiment		p
	Pre m (SD)	Post m (SD)	Pre m (SD)	Post m (SD)	
General	64.4(15.2)	60.6(24.4)	55.8(22.0)	62.5(21.0)	0.406 ^a
Social Relationships	64.7(16.0)	73.7(13.1)	58.3(12.3)	72.4(15.0)	0.023 ^a
Psychological	59.9(10.6)	57.4(12.9)	57.7(13.7)	61.5(11.3)	0.277 ^b
Physical	56.0(10.5)	58.8(7.7)	54.1(8.2)	51.6(9.4)	0.505 ^b
Environment	63.9(10.4)	66.3(8.5)	62.7(7.8)	67.1(8.4)	0.336 ^b

^a Friedman test; ^b Anova; Mean; SD = Standard Deviation

Discussion

This study analyzed the effect of a WPAP on the quality of life of administrative-technical employees at the Universidade Federal da Fronteira Sul, Chapecó/SC, and no difference was observed in the quality of life between the control and experimental groups. Furthermore, most employees considered their quality of life as good (59.6%) and reported satisfaction with their health (53.9%).

In a study like this one, carried out by Freitas-Swerts and Robazzi [18], who evaluated the effect of a compensatory labor gymnastics program in workers, the labor gymnastics promoted a reduction in spine pain, but without a reduction in levels of occupational stress. One justification would be the occupational stressors that are often related to the organization of the work environment, such as pressure for productivity, retaliation, unavailability of training and guidance, abusive relationship

between supervisors and subordinates, and inadequate work/rest cycles [19].

Freitas-Swerts and Robazzi [18] justify that this scenario favors responses in the short and long term, which increases the possibility of developing different pathologies of occupational origin, affecting the physical and psychological health of employees, which can lead to human and economic losses due to occupational stress.

Another study like the present one was carried out by Candotti, Stroschein, and Nol [20], in which they evaluated the effect of labor gymnastics on back pain and postural habits of workers in the administrative sector, who stay for long periods in the sitting position, with sessions consisted of stretching, flexibility, resistance, relaxation, and joint mobilization exercises, lasting 15 minutes, three times a week for three months. The results showed that after the gymnastics sessions, the experimental group showed a decrease in the intensity and frequency of referred pain (20% without pain in each region: neck and back, and 93.3% mild pain in each region: arm, wrist-hand, and leg) and change of postural habit during work, improving their sitting posture. The authors clarify that labor gymnastics acts as an educational action, making practitioners aware of health promotion and quality of life.

The study by Grande *et al.* [1] investigated the determinants of quality of life. After three months of health promotion programs for 190 workers from 4 companies. Company A received interventions with labor gymnastics plus educational programs, B only labor gymnastics, C only educational programs, and D without intervention (control). Only the occupational environment domain showed changes in companies A and B. The perception of the workers' quality of life, as well as the health domain, showed no differences between companies, like the one in the present study.

Therefore, it can be understood that there is no standard of quality of life that can be satisfactory to all employees, as everyone has different needs. Thus, what is needed is to have a good quality of life management within the organization [21], creating a more productive and pleasant environment.

However, unlike this study, Vigário *et al.* [22] addressed the quality of life issue with exercise programs of longer duration with patients with differentiated thyroid carcinoma and undergoing treatment for TSH suppression. This was developed with long sessions (60 minutes of aerobic activities and stretching, twice a week for 12 weeks), with the outcome of improving health-related quality of life, by minimizing the side effects of treatment with suppression of TSH.

In this context, Tairova and Lorenzi [23] reinforce that regular physical activity of light to moderate intensity with 60-minute sessions three times a week positively influences the quality of life and the climacteric symptoms intensity in postmenopausal women.

The results of the present study, with no difference in the quality of life after 12 weeks of WPAP in administrative-technical servers, may have been due to the intervention of this program having focused only on the physical exercise program in the work environment to assess the quality of life, without considering other aspects of daily life that influence the quality of life, such as work motivation, recognition,

remuneration and additional perspectives of social life and relationships [24].

Studies with the same intervention protocol (including application time) found a reduction in anxiety [10] and in medical certificates [6], improvement in reaction time [5], and in the mood [12] of administrative-technical servers in a federal university. It was expected, therefore, that for this variable, quality of life, a positive effect would also be observed after the protocol application.

However, the term quality of life is broad and includes several variables, which was cited by Martins and Michels [25], revealing examples found in companies in Brazil and around the world, which implemented or expanded the worker's health promotion program, emphasizing key points to improve program performance such as program communication; health, hygiene, and safety; medical exams; healthy eating; alcoholism; physical exercise, among others, and complements the study by stating that the program must link objectives related to health, environment, and human resources, that is, programs to promote workers' health must involve several activities to achieve a quality of life.

Conclusion

The Workplace Physical Activity Program with 10 minutes of intervention, three times a week for 12 weeks, showed no difference between the control and experimental groups concerning the quality of life. This result may be associated with the complexity of the "Quality of Life" concept, and due to this factor, further research is needed with strategies that can be considered and scientifically validated.

Academic affiliation

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Conflict of interest

No potential conflict of interest relevant to this article has been reported.

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Authors' contributions

Conception and design of the research: Oliveira LD; Backes R; Laux RC; **Data collection:** Oliveira LD; Backes R; Laux RC; **Data analysis and interpretation:** Oliveira LD; Backes R, Antonio DS, Laux RC; **Statistical analysis:** Laux RC; Corazza ST; **Obtaining financing:** Laux RC; **Writing of the manuscript:** Laux RC; Antonio DS; Oliveira LD; Backes R; **Critical review of the manuscript for important intellectual content:** Laux RC; Antonio DS; Oliveira LD; Backes R; Corazza ST.

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