

## Social support in workers' physical activity

Apoio social na prática de atividade física de trabalhadores  
 Apoyo social en la práctica de actividad física de trabajadores

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## Abstract

**Objective:** To analyze the role of formal and informal social support in the practice of physical activity during workers' leisure time.

**Methods:** A cross-sectional study carried out with 395 technical administrative workers at a public university. Data were collected using sociodemographic questionnaire, Baecke Habitual Physical Activity Questionnaire and Physical Activity and Social Support Scale. Data were analyzed using descriptive statistics, Student's t test, Cohen's d test and Analysis of Variance.

**Results:** Participants who reported some type of support for physical activity in their leisure time (92.2%) had higher means in the physical activity score. Institutional support (58.0%) had a prominent role as a potential influencer compared to support from immediate superiors (14.2%), although they had a certain differential among maintenance workers.

**Conclusion:** Social support plays an important role in promoting physical activity in workers' leisure time. Institutional initiatives to encourage active behavior in the work environment need to be aligned with encouragement by immediate superiors so that they are more effective.

## Resumo

**Objetivo:** Analisar a função dos apoios sociais formal e informal na prática de atividade física durante o tempo livre de trabalhadores.

**Métodos:** Estudo transversal realizado com 395 trabalhadores técnicos administrativos em uma universidade pública. Os dados foram coletados utilizando: questionário sociodemográfico, Questionário de Atividade Física Habitual de Baecke e Escala de Apoio Social para a prática de Atividade Física. Os dados foram analisados por meio de estatística descritiva, teste *t* de Student, teste *d* de Cohen e Análise de Variância.

**Resultados:** Os participantes que referiram algum tipo de apoio para atividade física no tempo livre (92,2%) apresentaram maiores médias no escore de atividade física. O apoio institucional (58,0%) teve função de destaque como potencial influenciador em comparação ao apoio de chefias imediatas (14,2%), embora elas tenham exercido um certo diferencial entre os trabalhadores da manutenção.

**Conclusão:** O apoio social tem função importante na promoção da atividade física no tempo livre de trabalhadores. As iniciativas institucionais de estímulo ao comportamento ativo no ambiente de trabalho carecem de alinhamento com o incentivo por parte dos superiores imediatos, para que sejam mais efetivas.

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**Conflicts of interest:** manuscript extracted from the thesis presented to the *Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo*, entitled "Fatores psicossociais relacionados ao engajamento em atividade física: um estudo com trabalhadores", 2019.

## Resumen

**Objetivo:** Analizar la función del apoyo social formal e informal en la práctica de actividad física durante el tiempo libre de trabajadores.

**Métodos:** Estudio transversal realizado con 395 trabajadores técnicos administrativos de una universidad pública. Los datos se recopilaron utilizando un cuestionario sociodemográfico, el Cuestionario de Actividad Física Habitual de Baecke y la Escala de Apoyo Social para la Práctica de Actividad Física. Los datos se analizaron mediante estadística descriptiva, *test-T de Student*, *prueba d* de Cohen y análisis de varianza.

**Resultados:** Los participantes que relataron algún tipo de apoyo para actividad física en el tiempo libre (92,2 %) presentaron mayores promedios en el puntaje de actividad física. El apoyo institucional (58,0 %) tuvo una función destacada como posible influenciador en comparación con el apoyo de jefes directos (14,2 %), aunque estos últimos hayan ejercido cierto diferencial entre los trabajadores de mantenimiento.

**Conclusión:** El apoyo social tiene una función importante en la promoción de la actividad física en el tiempo libre de trabajadores. Las iniciativas institucionales de estímulo a un comportamiento activo en el ambiente de trabajo necesitan estar alineadas con el incentivo por parte de los superiores inmediatos para que sean más efectivas.

## Introduction

Coping with non-communicable chronic diseases (NCDs) is one of the great challenges to public health, given the increase in their prevalence. These diseases cause several consequences, such as increased morbidity and mortality, decreased quality of life and direct and indirect health and social costs.<sup>(1,2)</sup>

In epidemiological terms, approximately 29.5% of the adult population in Brazil has at least one NCD. Such diseases were responsible for 54.7% of deaths in the country in 2019.<sup>(3)</sup> Furthermore, it is estimated that up to 8% of deaths from NCDs worldwide can be attributed to physical inactivity.<sup>(4)</sup>

Thus, national and international health agencies have increasingly emphasized the need to develop strategies for the population to reach the recommended level of weekly physical activity (moderate intensity activity:  $\geq 150$  minutes; vigorous intensity activity:  $\geq 75$  minute).<sup>(1,2,5)</sup>

The prevalence of insufficient physical activity is 27.5% in the world and 44.1% in Brazil, highlighting that reducing this prevalence by at least 10% is one of the global goals to prevent and treat NCDs.<sup>(1,6)</sup> These data reinforce the importance of approaches, programs and public policies that encourage and promote such activity among individuals and in communities. Despite the different approaches described in previous studies, adherence and engagement in such practices are still challenges for people to reach the recommended level of physical activity for health.<sup>(7,8)</sup>

In this context, social support is configured as a strategic resource that can be incorporated into actions to promote active behavior. The term “social

support” refers to material and emotional assistance and interpersonal information and has been described as an important protective factor for health.<sup>(9)</sup> This support can be provided both by formal sources (people linked to organizations and/or institutions that provide support in a structured way and with a defined objective, in accordance with institutional policies) and by informal sources (everyday people, such as friends and family, who have not had any training or formal guidance to offer this assistance).<sup>(9)</sup>

Studies that have shown the role of social support in the practice of physical activity at the national and international levels have been developed mainly with adolescents, older adults, women, adults in general or people with some health condition.<sup>(9-13)</sup> Thus, it is understood that exploring this topic in other populations is necessary to advance knowledge in the area.

The population of Brazilian workers is a public with specific characteristics in terms of behavior and health needs. It is, therefore, an important group to be explored in relation to the theme of physical activity. Furthermore, the different sources of support for physical activity in this group are characterized as a fundamental object that must be investigated, since recent literature, which addresses the theme in the Brazilian context, has not explored this aspect.<sup>(13-15)</sup>

At the international level, studies have highlighted the role of social support in structuring interventions to promote physical activity among workers.<sup>(16-18)</sup> Some of them measured how much they perceived social support and specified the source of this support, although restricting the response options to family members, professionals or

peers.<sup>(17,18)</sup> This confirms the importance of specific studies with workers considering a broader range of sources of social support.

As for the knowledge gap, another important aspect is the focus given by such studies. In general, studies that permeate social support and physical activity and discuss their specificity in leisure were developed with other audiences, such as older adults, women and Hispanic adults.<sup>(11,12,19)</sup>

Summing up, three important aspects can be listed in relation to the knowledge gap on social support and physical activity: working population's specificities; importance of considering multiple sources of support; and aspects focused on leisure.

Thus, this study aimed to analyze the function of formal social support (institution and immediate superior) and informal (family and friends) in the practice of leisure-time physical activity (LTPA) among workers. Its results will contribute to outline future actions to promote physical activity and worker health policies as well as to monitor the NCD plan.

## Methods

This was a cross-sectional and analytical study carried out at a public university, located in the countryside of the state of São Paulo, which offers courses in the areas of exact, human, social, biological and health sciences (95% of the vacancies offered). During the data collection period (July 2017 to June 2018), the target population was estimated at 2,075 administrative technical workers, arranged in ten teaching and/or administrative units. Workers aged  $\geq 18$  years old, composing the technical administrative staff effective in the institution and not being away or on vacation during the data collection period, were included.

The sampling plan adopted was stratified sampling with proportional allocation by strata in which each strata was formed by *campus* units.

To obtain a conservative estimate, the prevalence value of physical inactivity of 50% was adopted, resulting in a sample size that includes any p-value.<sup>(20)</sup> This methodological option was based on two pre-

vious studies, one that pointed to a 44.1% prevalence of insufficient physical activity in the Brazilian population<sup>(1)</sup> and another that compiled such measure in several other studies, indicating prevalence of inactivity between 32 and 69% (mean: 52%).<sup>(21)</sup> A relative error parameter of 10% and a significance level of 5% were adopted. A sample of 324 participants (N; n) was then estimated for the ten units, as follows: 1 (544; 85); 2 (236; 37); 3 (69; 11); 4 (122; 19); 5 (170; 27); 6 (213; 33); 7 (48; 7); 8 (39; 6); 9 (464; 72) and 10 (170; 27).

The units did not provide the identification of workers to carry out the draw necessary to compose the sample. Thus, personal invitations were made to the servants who were at their workplaces, and those who accepted made their emails available.

Electronic messages were sent reinforcing the invitation and providing the link to the form for data collection. For those who did not respond to the message, three more attempts to contact were made, reinforcing the invitation and resubmitting the form.

Of the total of 527 invited workers, 395 (74.9%) made up the final sample. The main reasons for refusal were unavailability of time to answer the questionnaire (n=102) or previous participation in another research not linked to this study (n=30).

The researchers were previously trained to collect the data. The questionnaires were mostly completed remotely (n=312; 79%). In the case of participants with limited access to the Internet (n=83; 21%), the opportune moment for data collection was arranged using a printed form. Filling in the questionnaires took an average of 40 minutes.

For data collection, three instruments were used: a sociodemographic questionnaire (elaborated by the researchers) based on the minimum indicators of the Brazilian Institute of Geography and Statistics (IBGE - *Instituto Brasileiro de Geografia e Estatística*),<sup>(22)</sup> Baecke Habitual Physical Activity Questionnaire (QAFHB) and Physical Activity and Social Support Scale (PASSS).

In the sociodemographic questionnaire, closed questions were included about work characteristics, work/occupational environment and formal support for the practice of physical activity (aspects

related to the institution and immediate superiors encouraging the practice of physical activity as well as whether the supporters offered conditions for this practice), since PASSS does not include formal supporters.

To assess LTPA, data from the QAFHB (component b: Leisure Physical Exercise) validated in Brazil were used.<sup>(23)</sup> Component b is composed of four questions that explore the practice of regular LTPA. Despite the specific nomenclature of this component, the acronym "LTPA" was adopted throughout the text, corroborating the nomenclature proposed by the Ministry of Health and IBGE in their official reports on the subject.<sup>(1,24)</sup>

To investigate informal social support, the PASSS was used, also validated in Brazil, which seeks to assess the perception of support received from family and friends for physical activity.<sup>(25)</sup> The Brazilian version of PASSS addresses the informal support provided by family members (people who sleep and have meals in the same house) and friends (anyone who does not live in the household, even if they are relatives).<sup>(25)</sup>

This instrument refers to walking and moderate to vigorous physical activity (MVPA) performed during leisure time, questioning the frequency with which supporters "did", "invited to" or "encouraged" in the last 3 months.<sup>(25)</sup> Scores from zero to six indicate less or more support for such activities, depending on the source of support.

After double checking, data were transferred to the Statistical Package for the Social Sciences (SPSS) version 20. Descriptive analyzes of numerical variables (age, QAFHB score and PASSS) were performed. Categorical variables (gender, age group, education, marital status and children; sector and working hours; informal support – by family and friends – and formal support – by institution and immediate superior) were presented using absolute (n) and relative (%) frequency.

Student's t test for independent samples was used to compare LTPA means, considering informal and formal support groups. Social support scores were dichotomized into "yes" (they received support from family and/or friends and the institution and/or work unit) and "no" (they did not

receive such support), considering the group mean as the cut-off point, as is usual in studies that use social support scales.<sup>(13,26,27)</sup> Cohen's d test was used to calculate the extent of the effect of one variable on another. One-way Analysis of Variance (ANOVA) (post hoc; Bonferroni) was used to compare LTPA between groups in work sectors.

Some attributes of the support network mentioned by participants were analyzed using the Gephi software (Common Development and Distribution License and General Public License; 0.9.1; v.3; 2008-2016) to obtain a visual representation of the structural character of such a network.<sup>(28)</sup>

The research followed the Brazilian National Health Council (Resolution 466/ of 2012) guidelines and norms, and was approved by the Research Ethics Committee (protocol 2,129,977/2017) of the *Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo*. Written consent was obtained from all participants.

## Results

### Profile of participants

Participants' mean age was 44.4 years (standard deviation 9.7). Most were women, with complete higher education, stable union and children (Table 1).

A group effect on LTPA [ $F_{3,391}=5,384$ ;  $p=0.001$ ] and that the LTPA score of the "community service" group was different from that of the "administrative" and "maintenance" groups, but not of the "laboratory" group.

### Engagement in leisure-time physical activity

Most participants (71%) reported having performed some type of activity (of moderate or vigorous intensity) in the last 12 months. Furthermore, 43% of them engaged in such activities for more than 4 hours a week; and 63% maintained such involvement for more than 9 months during 1 year. The mean LTPA score was 2.62 (standard deviation 0.89; minimum 1.0; maximum 5.0; median 2.50;  $P_{25}=2$ ;  $P_{75}=3.25$ ).

**Table 1.** Participants' socioeconomic, demographic and occupational work characteristics

Variables	n(%)
Sex	
Female	217(54.9)
Male	178(45.1)
Age group, years <sup>c</sup>	
26-40	159(40.3)
41-55	170(43.0)
56-70	59(14.9)
Education <sup>f</sup>	
Elementary school	18(4.6)
High school	78(19.7)
Higher education	158(40.0)
<i>Stricto and/or lato sensu</i> graduate degree	137(34.7)
Stable union <sup>g</sup>	
Yes	296(74.9)
No	95(24.1)
Children <sup>h</sup>	
Yes	265(67.1)
No	129(32.7)
Business sector	
Maintenance sector <sup>s</sup>	35(8.9)
Community service sector <sup>t</sup>	68(17.2)
Laboratory sector <sup>l</sup>	130(32.9)
Administrative or financial sector <sup>u</sup>	162 (41.0)
Weekly working hours (h) <sup>v</sup>	
≤30	25(6.3)
40	276(69.9)
≥40	92(23.3)

<sup>a</sup>Seven missing data; <sup>b</sup>four data missing; <sup>c</sup>1a missing data; <sup>e</sup>electrician, plumber, gardener, driver, machine operator, building maintenance assistant and general services; <sup>f</sup>surveillance agent, social worker, cook, journalist, lactation counselor, physical education professional, pedagogue and nutrition and dietetics technician; <sup>g</sup>biologist, biomedical, dentist, nurse, pharmacist, physiotherapist, physician, psychologist, chemist and laboratory technician; <sup>h</sup>analyst, financial assistant, accountant, secretary and technical functions; <sup>v</sup>two data missing.

### Social support for leisure-time physical activity

In general, participants (92.2%) mentioned receiving some kind of support for the practice of LTPA. Although most of them (58.0%) mentioned that the university encouraged and/or offered its workers conditions for LTPA (institutional support), 85.8% of them specifically mentioned that their immediate superiors did not offer conditions for such practice.

Among those who mentioned formal support (n=229), workers in the maintenance sector were the ones who most mentioned support from their immediate superiors (maintenance registered 53.3%; community service, with 28.6%; administrative, with 18.6% and laboratory, with 13.2%).

As for the frequency with which informal supporters went together, encouraged or invited for walks, the mean was 2.08 (standard deviation of 1.98) in relation to family and

1.44 (standard deviation of 1.75) in relation to friends. Regarding support for MVPA, similar means were obtained for support from family (1.45; standard deviation of 1.98) and friends (1.43; standard deviation of 1.98).

Most workers mentioned more than one source of support. Support from friends and family was similar in quantitative terms. On the other hand, an important difference was identified between institution and superiors, showing that immediate superiors had less power of influence (Figure 1).

### Leisure-time physical activity according to the support received

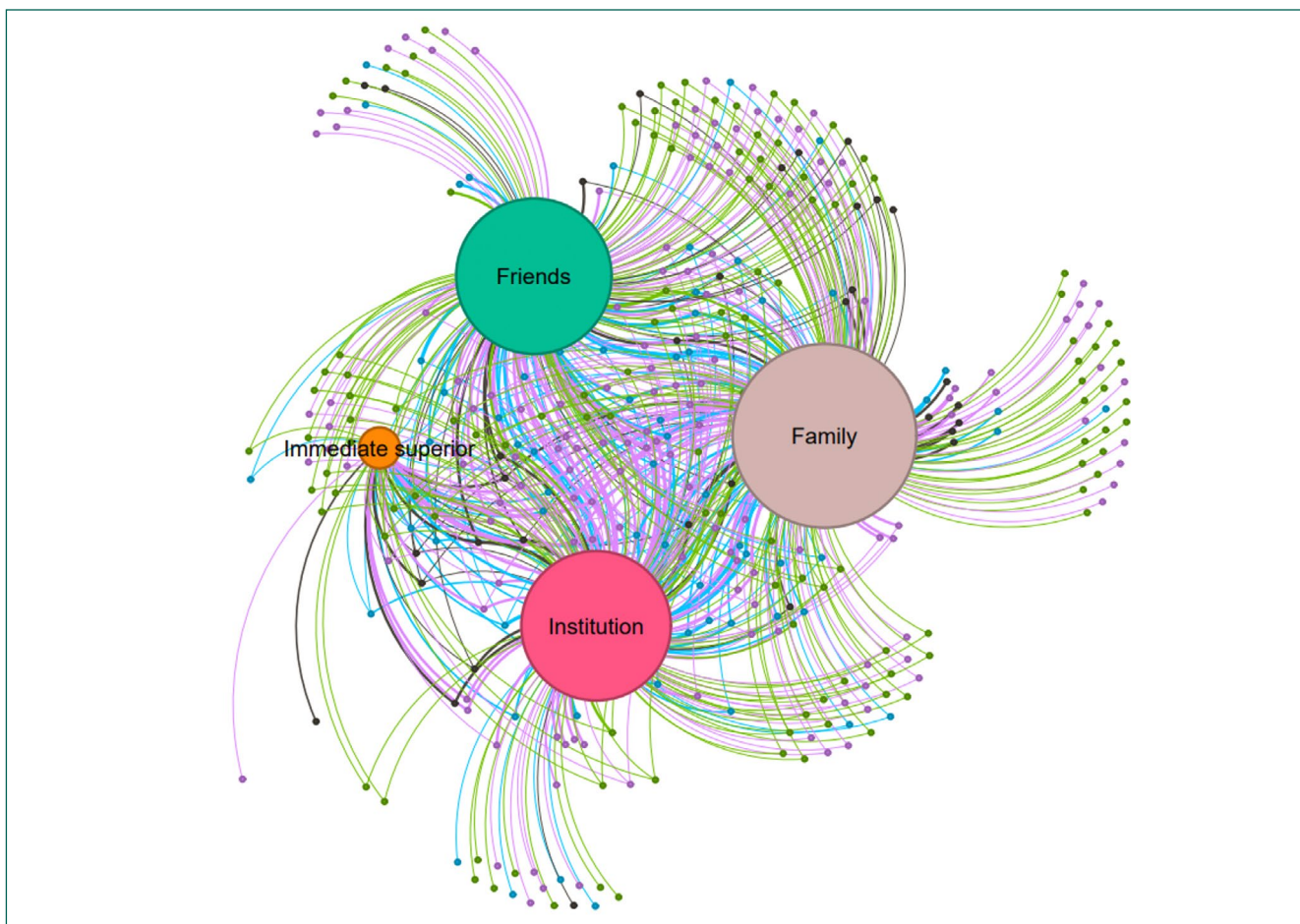
The mean LTPA score was higher among workers who mentioned receiving social support from the different sources analyzed (Table 2).

## Discussion

Among the limitations of this study, the use of two forms to measure social support stands out, as no scale was identified addressing both types of support (formal and informal) related to LTPA. Moreover, it is important to consider that the cross-sectional design does not allow establishing causal relationships between variables. The sample selection bias is also highlighted, as the people who volunteered to participate in the study may be those most involved with LTPA. Finally, it is pointed out that the way in which the data were collected (part online and part on-site) enabled the adherence of a greater number of participants; however, it is important to highlight the possible non-response bias for online collection and the interviewer bias for on-site collection.

As shown in results, most participants reported having some kind of support for LTPA. Workers who perceived formal or informal support had higher LTPA means. Regarding the sources of support, informal sources predominated (family and friends), which comprise the main sources investigated in previous studies.<sup>(9,10)</sup>

Formal support provided by the institution of work was reported by most participants, who obtained higher LTPA means. This suggests that the



Each small circle corresponds to a participant, and the lines correspond to participants' mention of the source's support outlined in the larger circles. The size of the larger circles corresponds to the number of times each supporter was mentioned, corresponding to the attribute called "click" (which, in the analysis of social networks, deals with the power of influence of a given actor in the network). The colors of the small circles and the respective lines correspond to the work sectors. Different colors were used to represent the support mentioned by professionals with administrative (purple), community service (blue), and maintenance (black) and laboratory (green) activities. Thus, the predominance of color in the lines that affect each circle illustrates the category of workers who most mentioned the respective source of support. Such identification comes from the attribute called "degree" in the analysis of social networks and concerns about how actors position themselves and how information or resources from such a network (social support in the case of this study) circulate in this network, giving clues about the paths (shorter or longer) to go from one actor to another

**Figure 1.** Social support network for the practice of leisure-time physical activity by workers on a university *campus*

**Table 2.** Mean difference between leisure-time physical activity and formal and informal social support variables (n=395)

Variables	Leisure-time physical activity			Mean difference	95% confidence interval of difference		Cohen's d
	n	Means ± SD	p-value*		Lower limits	Upper limits	
Informal social support							
Family							
Yes	281	2.72±0.86	0.001	0.339	0.146	0.531	0.379
No	114	2.38±0.91					
Friends							
Yes	233	2.75±0.92	0.001	0.315	0.137	0.492	0.357
No	162	2.44±0.81					
Formal social support							
Institution							
Yes	229	2.70±0.82	0.035	0.196	0.133	0.378	0.212
No	166	2.51±0.96					
Immediate superior							
Yes	56	2.84±0.95	0.046	0.257	0.005	0.509	0.274
No	339	2.59±0.87					

\* Student's t test for independent samples. SD: standard deviation.

institution's support is a relevant variable to promote more active behaviors in leisure time, and should be considered for future interventions among workers.

It is believed that the offer of direct support, for example, offering physical spaces (gym, soccer field, swimming pool, courts and dedicated rooms) and activities guided by specific professionals to the campus community may have contributed to the greater perception of institutional support by workers.<sup>(29)</sup>

It is noteworthy that events and extension and research projects in the area of promoting LTPA for different population groups are typical activities in universities that offer courses in the health area.<sup>(30)</sup> This is the case on the campus where this study was carried out, where activities and campaigns related to healthy lifestyles are disseminated to the community through the communication service through posters, newsletters or electronic messages. This condition may also have favored participants' perception of institutional support for LTPA.

Immediate superiors' support was the least mentioned. It is understood that conditions and work processes, in the microspace of sectors, if perceived by employees as hierarchical relationships and focused on production (and not on workers), may have contributed to the weakened role of immediate superiors as supporters, accentuating the difference observed between the number of participants who mentioned informal and institutional support in relation to the support provided by immediate superiors.<sup>(31)</sup>

Among the participants who mentioned formal support, those in the maintenance sector were the ones who most perceived immediate superiors as supporting LTPA. In such a sector, server assignments are usually accompanied by an implicit expectation of some performance, as their occupational activities require greater physical effort when compared to those carried out in other sectors of the studied institution. It is suggested then that such a requirement can be explicitly reinforced by immediate superiors in such workers' lives, influencing, in some way, their perception of this issue.

However, when stratifying the LTPA means, the community service sector was the one with the highest mean physical activity. This sector is the only one that has physical education professionals, which may

have raised the mean for the group. The community service sector is equivalent to that of the laboratory, which has more professionals with higher education, including more healthcare professionals compared to other sectors. The maintenance sector was, therefore, the one with the lowest LTPA mean among the groups, even though it perceived more support from immediate superiors. This suggests that other variables may be involved in this group's compliance with active behavior during leisure time.

Another relevant aspect to be highlighted was the fact that workers who perceived the different sources of support also had the highest LTPA means, highlighting the importance of both informal and institutional sources. This result confirms the importance of strategies that promote physical activity in the work environment with effective involvement of immediate superiors as well as the pertinence of strengthening legal requirements for institutions to foster such strategies in a work environment.<sup>(16-18)</sup>

## Conclusion

It was identified that the different types of support, formal and informal, play an important role in workers' involvement with LTPA. The institutional support in this involvement is a highlight. Furthermore, it was evident that immediate superiors were the least mentioned source of support, although they were widely perceived by maintenance workers. In this regard, directors and superiors must be made aware of the importance and impact of a work environment on employees' health. These results are promising in terms of incorporating different sources of social support into LTPA promotion strategies. In addition, a networking approach, with family and friends aware of the effect of their role as supporters for LTPA, can substantially contribute to more positive health outcomes for their peers.

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## Collaborations

Almeida LY, Almeida JCP, Oliveira JL, Belchior DV, Zanetti ACG and Souza J contributed to study design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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