

# Scientific production on workplace physical activity intervention programs: intervention studies and their outcomes

## Abstract

**Introduction:** Among workers' health programs, there are Workplace Physical Activity Intervention Programs that aim to improve life quality and reduce the witchcrafts of work.

**Objectives:** To investigate and analyze the scientific production related to workplace physical activity intervention programs through a bibliometric analysis.

**Methods:** We searched in studies about workplace physical activity intervention programs in the electronic database: Scientific Electronic Library Online, SciELO. We searched these databases from their inception through November 2017. The search terms used in the database were ("Workplace Physical Activity Intervention Programs" OR "Ginástica Laboral" OR "gimnástica laboral" OR "Workplace exercise"). The criteria for exclusion were: (1) review articles, (2) articles about places without the workplace physical activity intervention, and (3) published papers with only English, Spanish and Portuguese abstracts but without full texts in English, Spanish and Portuguese. Data analysis describable was conducted using "Statistic Package for the Social Sciences" (SPSS) for Windows version 21.0.

**Results:** The nine articles that fit the inclusion criteria were analyzed. The year that had the greatest amount of publication on the theme was in 2014. In the analysis by language, most articles are published in two languages (33.3% in English and Portuguese) or Portuguese (33.3%). Most of the studies have interventions with 15 minutes of intervention and with stretching exercises. The outcomes are related to muscular pain, physical abilities and quality of life are highlighted.

**Conclusion:** The studies with Workplace Physical Activity Intervention Programs use traditional methods with 15 minutes sessions and the most studied outcomes are pain and physical abilities.

Volume 4 Issue 4 - 2019

Rafael Cunha Laux

Department of Physical Education, Universidade do Oeste de Santa Catarina, Brazil

**Correspondence:** Rafael Cunha Laux, Department of Physical Education, Universidade do Oeste de Santa Catarina, Brazil, Tel 55(49)3319-2728, Email rafael-laux@hotmail.com

**Received:** May 14, 2019 | **Published:** July 22, 2019

## Introduction

The increase in medical certificates caused by excessive work activities has encouraged several companies to create programs to promote worker health, to make the work environment safer and more productive.<sup>1</sup>

In these programs to promote workers' health, it is important to highlight those who develop physical exercises such as the Labor Gymnastics in Brazil internationally known as Workplace Physical Activity Intervention Programs.<sup>2,3</sup> This program consists of a set of specific physical exercises to compensate the malefics of the work, in which play activities and exercises are performed for muscle strengthening and for improving or maintaining the flexibility indexes.<sup>3</sup> Despite the numerous studies using these programs, there are still many disagreements about the execution time and number of weekly sessions.<sup>3,5</sup> According to Branco<sup>5</sup> the ideal would be to apply this type of program with sessions of 15 minutes, three times a day, every day of the week, however, if a quick analysis is done, it is observed that this generates an average expenditure of 3 hours and 45 minutes without considering the commuting of the employees to perform the exercises.

Therefore, this study aims to investigate and analyze the scientific

production related to workplace physical activity intervention programs through a bibliometric analysis. In order to accomplish this, we performed an in-depth analysis of intervention studies and their outcomes.

## Methods

### Search strategy

We searched studies about workplace physical activity intervention programs in the electronic database: Scientific Electronic Library Online, SciELO. We searched these databases from their inception through November 2017. The search terms used in the database were ("Workplace Physical Activity Intervention Programs" OR "Ginástica Laboral" OR "gimnástica laboral" OR "Workplace exercise"). This strategy was permuted in all bases, with an integrated search in the fields title, abstract, and subject of each database.

### Eligibility criteria

The following inclusion criteria were adopted: (1) original articles; (2) articles investigating workplace physical activity intervention programs; (3) full texts published in English, Spanish and Portuguese. There were no restrictions on the date of publication.

Criteria for exclusion were: (1) review articles, (2) articles without the workplace physical activity intervention, and (3) published papers with only English, Spanish and Portuguese abstracts but without full texts in English, Spanish and Portuguese.

## Data extraction

We extracted data from included studies (differences were resolved by consensus), analysis all resulting titles and abstracts and reviewed full texts of articles that met our predetermined inclusion and exclusion criteria.

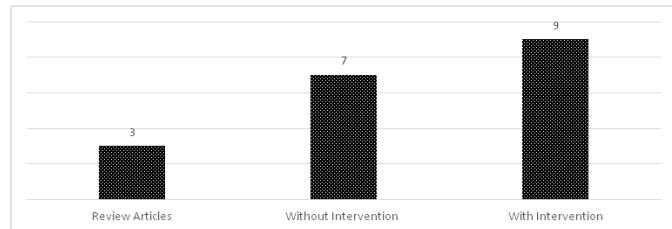
For bibliometric analysis and discussion, we defined the following categories and extracted the following data: year of publication, type of intervention and outcomes.

## Statistical analysis

Data analysis describable was conducted using "Statistic Package for the Social Sciences" (SPSS) for Windows version 21.0.

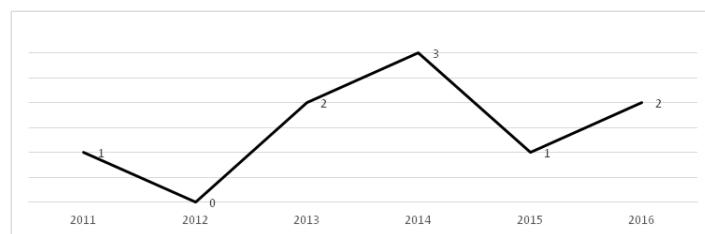
## Results

We found 19 articles with the search in SciELO with the terms "Workplace Physical Activity Intervention Programs" OR "Ginástica Laboral" OR "gimnástica laboral" OR "Workplace exercise" (Figure 1). We identified 15.8% of literature review articles, 36.8% without intervention with Workplace Physical Activity and 47.4% with Workplace Physical Activity. The nine articles that fit the inclusion criteria were analyzed.



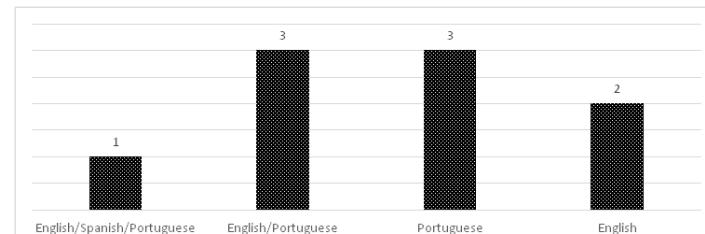
**Figure 1** Search results in the Scielo SciELO.

Data The author



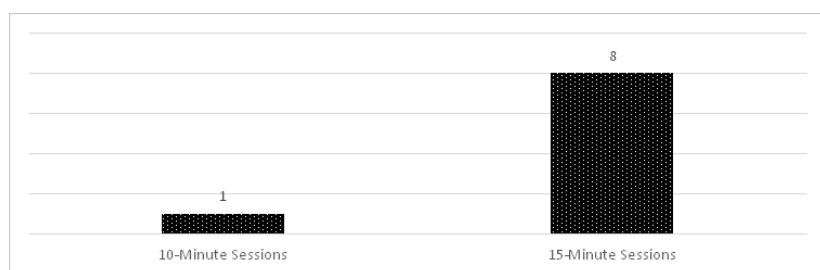
**Figure 2** Distribution of publications with Workplace Physical Activity Intervention Programs for years.

Data The author



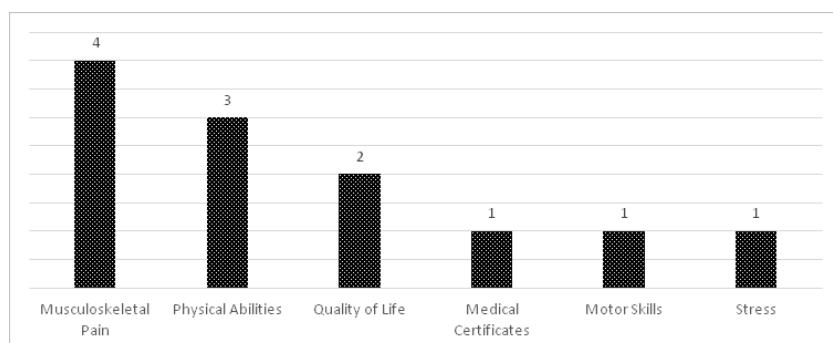
**Figure 3** Languages of the publications about workplace physical activity intervention programs.

Data The author



**Figure 4** Duration of the sessions of the workplace physical activity intervention programs.

Data The author



**Figure 5** Outcomes of articles reviewed

Data The author

## Discussion

When investigating and analyzing the scientific production related to workplace physical activity intervention programs through a bibliometric analysis we observed that the first study was done by Candotti, Stroschein e Noll,<sup>6</sup> which the objective of study was verifying the Labor Gymnastic's effect on the low back pain and on postural habits of workers who stay for long periods in the sitting position, the results demonstrate this intervention helped to diminish intensity and frequency of the referred pain in the workers from experimental group as well as changed their postural habit in workplace.

In the articles with outcomes about the pain, it stands out the study of Freitas-Swerts et al.<sup>7</sup> with to assess the effect of a compensatory workplace exercise program on workers with the purpose of reducing work-related stress and musculoskeletal pain, the results demonstrate there was no reduction in the scores of work-related stressful events after undergoing Workplace Exercise, but there was a pain reduction in the neck, cervical, upper, middle and lower back, right thigh, left leg, right ankle and feet. In the study of Machado-Matos et al.<sup>8</sup> with the to evaluate the impact of a workplace exercise program on neck and shoulder pain and flexibility in office workers observed improvements in pain reduction and increased flexibility. And the study of Martins, Zicolau et al.<sup>9</sup> that investigated the effect of a stretch break program (labor gymnastics program) on the flexibility, strength and musculoskeletal complaints of storage and administrative sector workers and verified that program was able contribute to improve flexibility and musculoskeletal complaints in the regions that are affected by higher rates of work-related injuries.

In the articles about physical abilities, we observe the studies of Machado-Matos et al.<sup>8</sup> and Martins et al.<sup>9</sup> cited above. About that capacities, Grande et al.<sup>10</sup> in your study with the purpose to investigate

the effectiveness of workplace exercise for employee health by means of health-related physical activity components and verified the variables in the study not changed with intervention.

The studies that was evaluated quality of life are of Grande et al.<sup>11</sup> and Grande et al.<sup>12</sup> respectively for the purpose of to investigate determinants of quality of life after three months of workers' health promotion programs and of to compared different strategies to improve occupational health and evaluated their impact on some quality of life domains. Both studies were verified that programs positively influence the quality of life of the works.

Another variable studied in the articles with workplace physical activity intervention programs is the amount of medical certificates, according to Laux et al.<sup>3</sup> in their research with the purpose of analyze the influence of a labor gymnastics program in reduction the amount of certificates of industrial in the city of Chapecó-SC, no qual verificou que the results show a decrease in the total amount of certificates (51.52%), for systemic diseases (43.48%) and musculoskeletal diseases (55.56%) in the period of development on the intervention.

Already related to the psychology of the sport, two studies were found, one of them with motor capacities of Mezzomo et al.<sup>13</sup> with the objective of verifying the effect of Labor Gymnastics on the perceptual-motor abilities, reaction time and global motor coordination, of bus drivers, in which an overall motor coordination improvement was observed and the same did not occur with the time of simple reaction and choice. And Freitas et al.<sup>7</sup> study cited above.

In the analysis, we observed a greater number of studies with outcomes in muscular pains and physical abilities, but few studies with psychological variables that can influence decisions and avoid injuries.<sup>14</sup>

## Limitations

This systematic review was limited to analysis of the bibliometric data on scientific production about workplace physical activity intervention programs. Data from instruments, quality of studies, number of citations in Web of Science (WoS), networks cited by the studies selected for review, the total number of references cited in each article and others variables need to be analyzed in future investigations.

## Conclusion

In our results for 9 analyses of publications it was verified that the oldest article dates from 2011 and the most current one was published until November 2017 is from 2016. In 2014 it was the year with the greatest publication on the subject. Articles are usually published in English/Portuguese or in Portuguese only. The type of intervention most used was traditional, predominantly with stretching exercises and lasting 15 minutes per session. The studies emphasize the outcomes in the physical part of the employee, predominating studies related to musculoskeletal pain and physical abilities.

We suggest new studies about workplace physical activity intervention programs with outcomes in the field of sports psychology, since these elements can increase productivity, improve mental health and avoid psychological illnesses.

## Acknowledgements

None

## Conflict of interest

The authors declare no conflicts of interest.

## References

1. Martins CO, Michels G. Programs of promotion of saúde do trabalhador: examples of success. *Rev bras cineantropom.* 2003;5(1).
2. Laux RC, Corazza ST, Andrade A. Workplace physical activity program: an intervention proposal. *Revista Brasileira de Medicina do trabalho.* 2018;(24):3.
3. Rafael LC, João VEJ, Sara TC, et al. Labor gymnastics program and reduction of medical certificates. *Ciencia & trabalho.* 2016;18(56).
4. Laux RC. Efeitos da intervention com physical exercícios no environment of work on or tempo of reação e or humor. Dissertação de mestrado em Educação Física, Universidade Federal de Santa Maria, Santa Maria, Brazil; 2016.
5. Branco AE. Labor gynastics: prerogative of professional of physical education. 1st ed. Confef. Rio de Janeiro; 2015.
6. Candotti CT, Stroschein R, Noll M. Efeitos gives work gynastic na dor nas costas and we habits are not adotados environment of work. *Rev Bras Ciênc Esporte Porto Alegre.* 2011;33(3):699–714.
7. Freitas SFCT, Robazzi MLCC. The effects of compensatory workplace exercises to reduce work-related stress and musculoskeletal pain. *Rev Latino-Am Enfermagem.* 2014;22(4):629–636.
8. Machado MM, Arezes PM. Impact of a workplace exercise program on neck and shoulder segments in office workers. *Dyna,* 2016;83:63–68.
9. Martins PFO, Zicolau EAA, Cury BMF. Stretch breaks in the work setting improve flexibility and grip strength and reduce musculoskeletal complaints. *Motriz rev educ fis.* 2015;21(3):263–273.
10. Grande AJ, Silva V, Parra SA. Effectiveness of exercise at workplace in physical fitness: uncontrolled randomized study. *Einstein (São Paulo).* 2014;12(1):55–60.
11. Grande AJ, Valter S, Luciane M, et al. Determinants of quality of life at workplace: cluster-randomized controlled trial. *Rev Bras Med Esporte.* 2013;19(5):371–375.
12. Grande AJ, Silva V, Manzatto L, et al. Comparison of worker's health promotion interventions: cluster randomized controlled trial. *Rev bras cineantropom desempenho hum.* 2013b;15(1):27–37.
13. Mezzomo SP, Cardozo PL, Katzer JI, et al. A influência da ginástica laboral na coordenação motora global e no tempo de reação de condutores de autocarro. *Motri.* 2014;10(4):27–34.
14. Wilkerson GB, Simpson KA, Clark RA. Assessment and training of visuomotor reaction time for football injury prevention. *Journal of Sport Rehabilitation.* 2016;26(1):26–34.