DOI: 10.1590/1809-2950/e23002324en

SYSTEMATIC REVIEW

Labor gymnastics in health professionals: a systematic review

Ginástica laboral em profissionais de saúde: uma revisão sistemática

Gimnasia laboral para profesionales de la salud: una revisión sistemática

Lara Maria Camilato Lima Costa[1], Isadora Caroline Pimenta[2], Erika Moreira Sales[3], Alessandra Paiva de Castro Vidal[4], Lisandra Vanessa Martins[5]

ABSTRACT | This aimed to systematically review randomized controlled trials and compare the effectiveness of labor gymnastics with that of no intervention, minimal intervention or other types of intervention in healthcare workers, in relation to musculoskeletal pain, stress, physical disability, and absence from work. A search was carried out in the PUBMED, Pedro, EMBASE, CENTRAL, CINAHAL, PSYCHINFO, NIOSHTIC-2, SPORT DICUS, SCIELO, and LILACS databases. In total, 3,598 articles were found, seven of which were eligible for the study. There was a statistical difference in musculoskeletal pain in favor of labor gymnastics after 5, 10 and 12 weeks (MD: −0.63; 95%, CI: −1.17; −0.08) and 6, 9 and 12 months of intervention (MD: −0.74; 95% CI: −1.43; −0.05). There was also a statistical difference in favor of labor gymnastics in terms of time off work (MD: −3.26; 95% CI: −6.28; −0.25) and stress (SMD: −0.35; 95% CI: −0.67; −0.03) in studies in which interventions were carried out for 5 and 10 weeks. Labor gymnastics can contribute to the physical and mental health of healthcare professionals. However, more randomized controlled studies with a larger sample size and aimed at this professional category are needed.

Keywords | Worker's health; Health professionals; Cumulative traumatic disorders; Labor gymnastics.

RESUMO | Este estudo tem como objetivo revisar sistematicamente ensaios randomizados controlados e comparar a eficácia da ginástica laboral com nenhuma intervenção, intervenção mínima ou outros tipos de intervenção em trabalhadores de saúde, em relação à dor musculoesquelética, estresse, incapacidade física e afastamento do trabalho. Foram realizadas buscas nas bases de dados PUBMED, PEDro, EMBASE, CENTRAL, CINAHAL, PsycINFO, NIOSHTIC-2, SPORTDicus, SCIELO e LILACS. Foram encontrados 3598 artigos, sendo sete elegíveis. Houve diferença estatística para dor musculoesquelética a favor da ginástica laboral após 5, 10 e 12 semanas (MD: −0,63; 95%, CI: −1,17; −0,08) e 6,9 e 12 meses de intervenção (MD: −0,74; 95% CI: −1,43; −0,05). Também foi verificada diferença estatística a favor da ginástica laboral para o afastamento no trabalho (MD: −3,26; 95% IC: −6,28; −0,25) e para redução do estresse (SMD: −0.35; 95% IC: −0,67; −0.03) nos estudos que realizaram intervenção por 5 e 10 semanas. A ginástica laboral pode contribuir para a saúde física e mental do profissional de saúde, no entanto, mais estudos randomizados controlados voltados para essa categoria profissional, e com maior valor amostral, são necessários para confirmação dessa hipótese.

Descritores | Saúde do trabalhador; Profissionais de saúde; Transtornos traumáticos cumulativos; Ginástica laboral.

RESUMEN | Este estudio tuvo por objetivo realizar una revisión sistemática de los ensayos aleatorizados controlados y comparar la efectividad de la gimnasia laboral con ninguna intervención, con intervención mínima

[1]Universidade Federal do Espírito Santo (UFES). Vitória (ES), Brazil. E-mail: laraprofissional1@gmail.com. ORCID: 0000-0001-5702-5514
[2]Universidade Federal do Espírito Santo (UFES). Vitória (ES), Brazil. E-mail: isadorapimenta16@gmail.com. ORCID: 0000-0002-3952-5192
[3]Universidade Federal do Espírito Santo (UFES). Vitória (ES), Brazil. E-mail: erikafisioterapeuta10@gmail.com. ORCID: 0000-0002-8543-2421
[4]Universidade Federal do Espírito Santo (UFES). Vitória (ES), Brazil. E-mail: alessandrapaiva2@yahoo.com.br. ORCID: 0000-0001-7497-6020
[5]Universidade Federal do Espírito Santo (UFES). Vitória (ES), Brazil. E-mail: lisandravanessa@yahoo.com.br. ORCID: 0000-0002-5734-6569

Corresponding address: Lisandra Vanessa Martins – Av. Marechal Campos, 1468 – Bonfim – Vitória (ES), Brazil – ZIP Code: 29047-105 – E-mail: lisandravanessa@yahoo.com.br –
Finance source: nothing to declare – Conflict of interests: nothing to declare – Presentation: Feb. 09th, 2023 – Accepted for publication: Dec. 05th, 2023. – Approved by the Research Ethics Committee: CAAE No. 47635121.3.0000.5404.

u otros tipos de intervención en los profesionales de la salud con relación a dolor musculoesquelético, estrés, incapacidad física y baja laboral. Se realizaron búsquedas en las bases de datos PUBMED, PEDro, EMBASE, CENTRAL, CINAHAL, PsycINFO, NIOSHTIC-2, SPORTDicus, SciELO y LILACS. Se encontraron 3.598 artículos, de los cuales siete fueron elegibles. Hubo una diferencia estadística para el dolor musculoesquelético a favor de la gimnasia laboral después de 5, 10 y 12 semanas (MD: −0,63; 95% CI: −1,17; −0,08) y 6,9 y 12 meses de intervención (MD: −0,74; 95% CI: −1,43; −0,05). También hubo una diferencia estadística a favor de la gimnasia laboral para el tiempo de baja laboral (MD: −3,26; 95% IC: −6,28; −0,25) y la reducción del estrés (SMD: −0,35; 95% IC: −0,67; −0,03) en los estudios que realizaron la intervención entre cinco y diez semanas. La gimnasia laboral puede contribuir a la salud física y mental de los profesionales de la salud, sin embargo, son necesarios más estudios aleatorizados controlados dirigidos a esta categoría profesional y con un mayor tamaño muestral para confirmar esta hipótesis.

Palabras clave | Salud ocupacional; Profesionales de la salud; Trastornos traumáticos acumulativos; Gimnasia laboral.

INTRODUCTION

Health promotion is part of the model of care that seeks to ensure the population's quality of life in a global manner, prompting the need for actions aimed at the various areas of healthcare, including those developed in the sphere of hospital institutions[1]. In the hospital environment, some strategies are considered effective for workers' health, including better guidance on the risk factors of the hospital environment and the activities carried out in it; encouraging the use of personal protective equipment; and the ergonomic suitability of physical spaces and furniture[1].

Musculoskeletal disorders can have serious physical implications, causing pain and even influencing the psychosocial state of those affected by them[2]. These disorders have been identified as the second most common cause of disability worldwide, with back pain being the main symptom[3]. These injuries are closely related to work activities and compromise the musculoskeletal system and its physiological functioning. The condition has a negative impact on the performance of occupational activities and its main symptoms are pain, paresthesia, a feeling of heaviness and fatigue[4]. Some actions aimed at improving workers' health include guidance on how to adopt healthy lifestyle habits and encouragement to do gymnastics at work[5].

Labor gymnastics (LG) is a sequence of exercises that can provide physical and mental well-being and promote workers' health. It can contribute to a healthier lifestyle and improve physical and mental conditions, as well as social relationships[6]. According to the literature, the greater the ergonomic risk, i.e. the greater the frequency of adoption of inappropriate posture, repetitiveness, load, force, mechanical compression, pressure at work, continuous vigilance, evidence of absence and illness at work, the greater the negative impact on workers' health and, therefore, the greater the need to implement labor gymnastics[7].

Although LG is widely used, there are still no systematic reviews in the literature evaluating the effectiveness of these exercises in health workers, specifically. Thus, this study aimed to systematically review randomized controlled trials comparing the effectiveness of LG with no intervention, minimal intervention (control group) and other types of intervention in healthcare workers in relation to musculoskeletal pain, stress, inability to work and absence from work.

METHODOLOGY

This is a systematic review using the PICOT strategy, an acronym for Population (health professionals), Intervention (labor gymnastics), Comparison (any intervention or minimal intervention), Outcomes (pain, stress, disability, time off work) and Time (short, medium and long term). The review was registered in the international prospective register of systematic reviews (PROSPERO, CRD42020215463) and described according to the guidelines for declaring Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Prisma).

The inclusion criteria were randomized controlled studies with health professionals, assessing musculoskeletal pain and/or stress and/or time off work and/or inability to work; and studies in which participants performed labor gymnastics, compared with no intervention or minimal intervention, such as health guidelines or other types. There were no restrictions

on language or date of publication. Articles that did not state whether the exercise program was carried out during working hours were excluded.

The search was carried out in the PUBMED, PEDro, EMBASE, CENTRAL, CINAHAL, PsycINFO, NIOSHTIC-2, SPORTDicus, SCIELO and LILACS databases. The terms used in the search were words related to gymnastics, health professionals and randomized clinical trials. The search was adjusted for each of the databases, given the difference between their search engines. Thus, three search strategies were used: (1) (randomized controlled trial) OR (controlled clinical trial) OR (comparative study) OR (comparative study) OR (clinical trial) OR (randomised) OR (placebo) OR (randomly) OR (trial) OR (groups); (2) (health* worker*) OR (health care worker*) OR (health* professional*) OR (health care professional*) OR (hospital employee*) OR (hospital staff) OR (healthcare staff) OR (health care provider*) OR (healthcare provider*) OR (health* personnel) OR (health care personnel); (3) (Worksite Physical Activity) OR (Worksite Physical Fitness) OR (Labor gymnastics) OR (Labor gymnastics program) OR (Labor exercises) OR (Laboral kinesiotherapy) OR (training program) OR (workplace exercises) OR (workplace exercise).

The search was carried out from August to November 2022, but the authors received monthly notifications with possible articles related to the review, as the search strategy was registered on Pubmed. A thorough search was also carried out in the references of the articles included. The first analysis was carried out by three independent reviewers based on the information provided by the title, abstract and keywords.

Figure 1 shows the flowchart with the stages of collection and selection of the studies used in this systematic review. During the article identification phase, 3598 records were found. After removing the duplicates, 3,246 articles were left for the analysis of titles and abstracts. After the analysis, 23 articles were selected for full evaluation by the independent reviewers. Of these, seven were selected for the review.

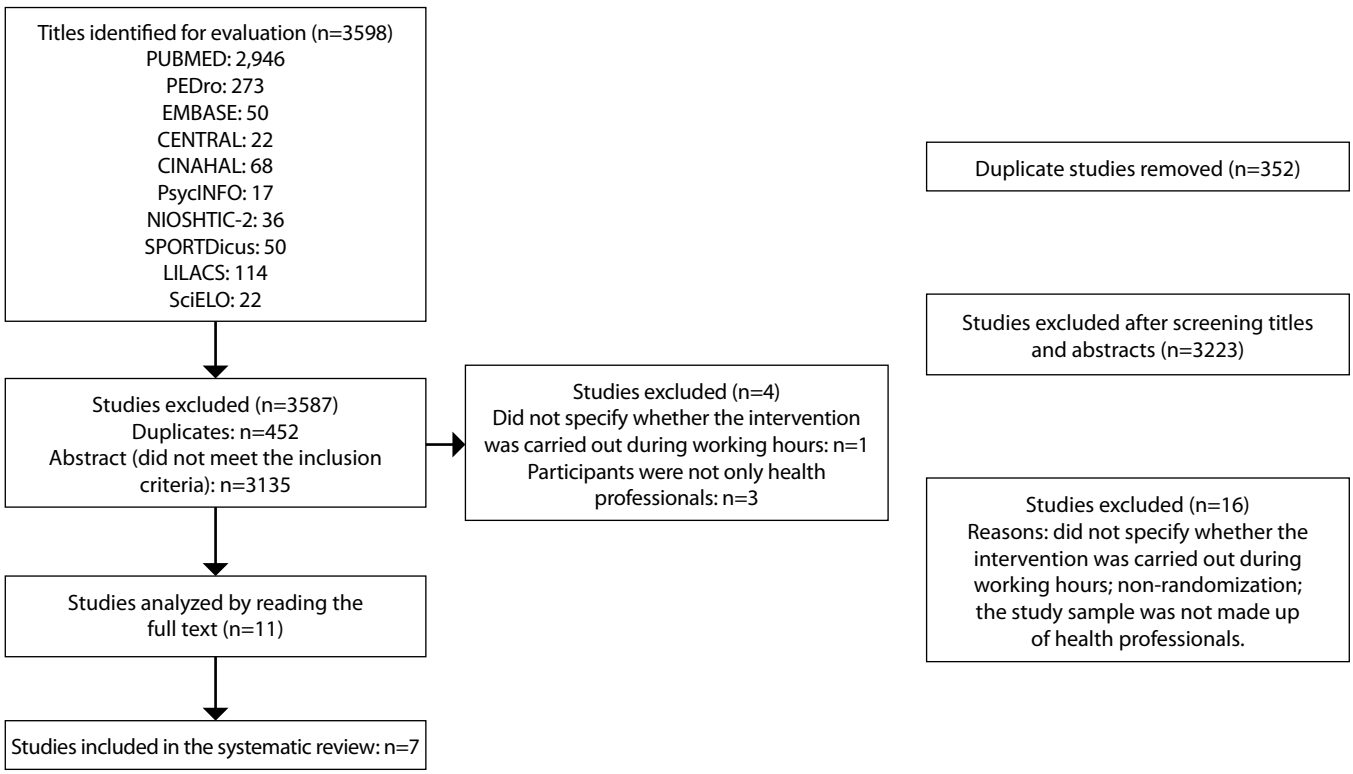

Figure 1. Selection process for the studies included in the analysis

The methodological quality and statistical description of the studies were measured using the PEDro quality scale[8,9] (available in the underlying documents). This scale has 11 items and is used to rate the methodological quality (internal validity and statistical information) of randomized clinical trials. As the first

item (eligibility criteria) is not scored, the total score range is 0 to 10 points.

To obtain the meta-analyses, the statistical program Review Manager Version 5.4 (The Nordic Cochrane Center, Copenhagen, Denmark) was used. Two independent reviewers extracted the data from the included articles, representing the mean and standard deviation of the experimental and control groups at each time point. Post-intervention data were extracted to estimate the effect of the intervention, using the difference between the standardized means with a 95% confidence interval. The critical value for rejecting the null hypothesis for all results was set at 0.05 (two-tailed).

When outcomes were reported in different units of measurement, the standardized mean difference (SMD) was adopted. Sensitivity analyses were carried out using the same program to identify studies with a high level of statistical heterogeneity. When the values were statistically homogeneous (I^2<50%), the mean effects (difference between the weighted means) were calculated using a fixed-effect model. When the values were statistically heterogeneous (I^2>50%), estimates of the mean effects were obtained using a random-effect model.

To check the quality of the evidence for each meta-analysis, the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system was used[10]. In the GRADE system, the quality of evidence is classified into four levels: high, moderate, low and very low. The factors used to assess the level of evidence are methodological limitations (risk of bias), inconsistency, indirect evidence, imprecision and publication bias[10]. The evidence would initially be considered high level and downgraded by one level if one of the following criteria was present: low methodological quality (most of the studies in the meta-analysis scored below 5 on the PEDro scale); the grouping of studies was not possible or there was inconsistency in the estimates between the grouped studies (I^2>50%); non-specificity between participants or imprecision (meta-analysis <400 participants for each outcome). Two reviewers assessed the quality of evidence using the GRADEpro GDT program: GRADEpro Guideline Development Tool [Software].

RESULTS

From the selection, seven articles were included and data related to the characteristics of the participants (age, sex, profession), the interventions (frequency, types of exercise, duration) and the control group (no intervention, minimal intervention) were extracted, as well as the outcomes of musculoskeletal pain, inability to work, stress and time off work, as shown in Table 1. All the studies found compared LG with no or minimal intervention. No articles comparing LG with other types of intervention were found. In general, most participants in the articles included were female; with a mean age of 40.44 years; worked as nurses, nursing technicians, doctors, surgeons or laboratory technicians; and carried out their activities in hospitals and nursing homes for older adults.

Table 1. Characteristics of the articles selected for the study

Author	Participants	Workplace	Intervention	Outcome and assessment tool	Main results
Aryurek et al. 2020[11]	**IG:** n=15 (33.53±13.67 years), female, nurse **CG:** n=15 (41.47±9.39 years), female, nurse	Hospital	**IG:** relaxation, postural and breathing exercises and guidance on ergonomics at work. Twice a week for five weeks, 35 minutes each **CG:** participants remained in a room resting for 40 minutes, and during this time they could read.	Pain (VAS), fatigue (VAS) and stress (VAS)	After five weeks of intervention and one year of follow-up, there was a reduction in the intensity of pain, fatigue and stress in the IG.
Brox; Frøystein 2005[12]	**IG:** n=65 (mean age 42.5 years), **CG:** n=64 (mean age 42.5 years) **Profession**: nurses and nursing assistants. **Sex:** Female (over 96% and male)	Community nursing home.	**IG:** Weekly 1-hour group exercise sessions and guidance for participants for six months. **CG:** No intervention.	Sick leave, health-related quality of life (Co-operation-World Organization of Colleges Academics)	There was no difference between the intervention and control groups in terms of absence and quality of life.

(continues)

Table 2. Continuation

Author	Participants	Workplace	Intervention	Outcome and assessment tool	Main results
Giagio et al. 2019[13]	**GI:** n=65 (35.5±10.9 years) **CG:** n=76 (37.7±12.1 years) **Profession:** Surgeons **Sex:** both sexes	Medical center	**IG**: Education for patients on ergonomics and physical exercise before and after surgical procedures for six months. **CG:** no intervention.	Pain (VAS) Quality of life (SF-36). Evaluation after three and six months of intervention	There was no difference between the groups after three months of intervention. After six months, there was a statistically significant improvement in pain symptoms.
Gundewall et al. 1993[14]	**IG:** n=28 (mean age 37.7 years) **CG:** n=32 (mean age 37.3 years) **Profession:** Nursing professionals **Sex:** both sexes	Geriatric hospital	**IG:** physical exercise for 20 minutes, six times a month, for 13 months. **CG:** no intervention.	Sick leave, intensity of lower back pain and lower back muscle strength	There was a reduction in absenteeism due to pain complaints in the IG compared to the CG.
Jakobsen et al. 2015[15]	**IG:** n=111 (40±12 years) **CG:** n=89 (44±10 years) **Profession:** Healthcare professionals **Sex:** Female	Hospital	**IG:** physical exercise for 10 minutes, five times a week for 10 weeks, as well as guidance on ergonomics. **CG:** guidance on ergonomics, and physical exercise at home for 10 minutes, five times a week.	Pain (VAS), muscle strength and use of analgesics	The IG showed an improvement in pain, muscle strength and a reduction in the use of medication compared to the CG.
Jay et al. 2015[16]	**IG:** n=56 (45.5±9.0 years) **CG:** n=56 (47.6±8.2 years) **Profession:** Laboratory technicians. **Sex:** Female	Pharmaceutical company laboratory.	**GI:** physical, cognitive and mindfulness exercise for 10 weeks. **CG:** no intervention.	Pain (VAS) stress (Stress Perception Scale)	There was a reduction in the intensity of musculoskeletal pain in the IG compared to the CG. There was no difference between the IG and CG in relation to stress.
Tveito; Eriksen 2008[17]	**IG:** n=19 **CG:** n=21 **Profession:** Nurses/nursing assistants **Sex:** Female	Nursing home for older adults.	**IG**: Physical exercise, stress management technique, health guidelines and workplace assessment for one hour, three times a week, for nine months. **CG:** No intervention.	Pain and stress (Subjective health complaints inventory – SHC) and time off work	There was no statistically significant difference between the IG and CG in terms of time off work and stress. There was a reduction in pain complaints in the IG compared to the CG.

Caption: IG: intervention group. CG: control group. VAS: visual analog scale.

Musculoskeletal pain

Figure 2 shows the comparison of labor gymnastics for the outcome of musculoskeletal pain in the control group (minimal or no intervention). Five trials[11,13,15-17] assessed musculoskeletal pain using the numerical analog scale (1 to 10 points). The trials were divided into two groups according to the duration of the intervention. In the first group, four trials were analyzed, in which the interventions were carried out for five[11], 10[15,16] and 12 weeks[13]. Akyurek et al.[11] performed relaxation, postural and breathing exercises and guidance on ergonomics at work twice a week, each session lasting 35 minutes, on female health professionals. In the study by Jay et al.[16], physical, cognitive and meditation exercises were carried out for 10 weeks. The participants in the study by Jakobsen et al.[15] performed physical exercises and received ergonomic guidance five times a week, also for 10 weeks. In the study by Giagio et al.[13], the intervention group received ergonomic guidance and performed physical exercise before and after performing surgical procedures, twice a week for six months, and this meta-analysis only compared the results after three months of intervention. No interventions were carried out in the control groups of the studies by Giagio et al.[13] and Jay et al.[16]; while in the studies by Akyurek et al.[11] and Jakobsen et al.[15], minimal interventions were carried out (reading breaks and guidance on ergonomics and physical activities to be done at home, respectively). There was a statistically significant difference between the two groups (p=0.02, MD: –0.63; 95%, CI: –1.17; –0.08) and moderate quality of evidence was verified, due to inconsistency (high variability of effect estimates).

The second group shows the comparison of three articles that evaluated the outcome of musculoskeletal pain after six[13], nine[17] and 12[11] months of intervention with the control group. In the study by Tveito and

Eriksen[17], the intervention group was given a physical exercise program, stress management techniques, health guidelines and a workplace assessment for one hour three times a week for nine months, while the control group received no intervention. There was a statistically significant difference between the groups (p=0.04, MD: −0.74; 95% CI: −1.43; −0.05) in favor of the intervention group. The quality of the evidence was considered moderate due to the small number of participants.

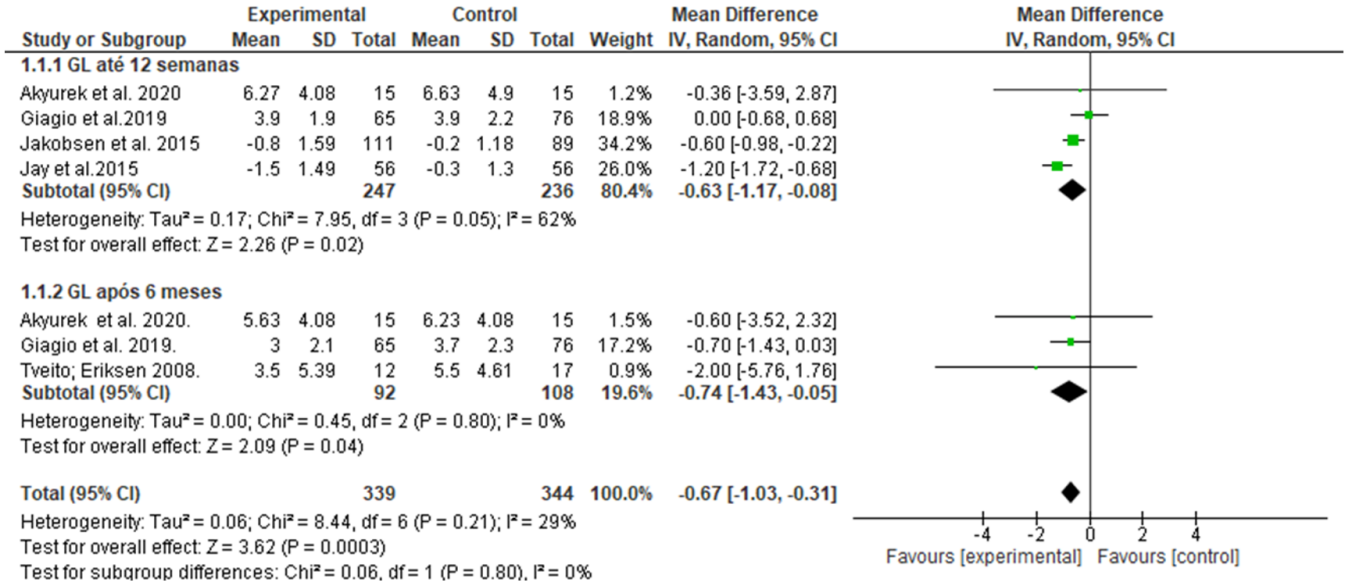

Figure 2. Mean of the differences in the effect of gymnastics on musculoskeletal pain intensity (0-10 points)

Absence from work

Regarding days off work (Figure 3), three articles[12,14,17] were included, with a total of 219 participants. Brox and Frøystein[12] applied weekly physical exercise sessions and guidance on nutrition and stress management for six months. The control group did not receive any interventions. In the study by Gundewall et al.[14], a physical exercise program was applied for 13 months. The intervention by Tveito and Eriksen[17] was described above. There was no intervention in the control groups of the articles in this meta-analysis. There was no statistically significant difference between the intervention and control groups (p=0.37; SMD: −0.12 95% CI: −0.39; 0.15) and the quality of the evidence was considered moderate due to the small sample size.

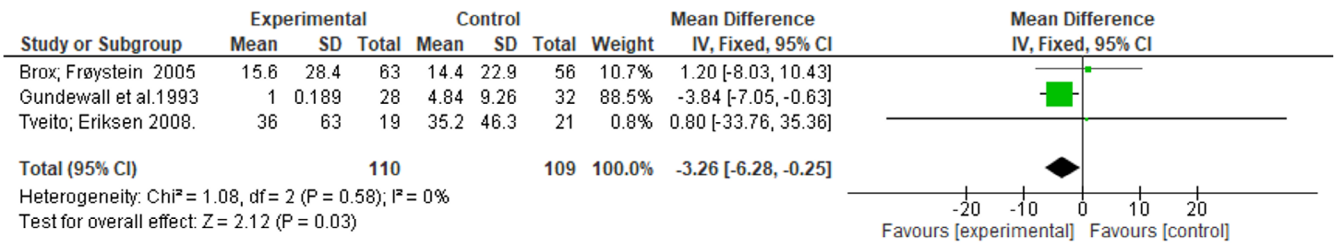

Figure 3. Mean of the differences in the effect of gymnastics on time off work (number of days off work)

Stress at work

Regarding stress at work, the tests were grouped based on how long the participants spent performing labor gymnastics, as shown in Figure 4. The trials used the numerical analog scale[11], the perceived stress scale[16] and the Subjective Health Complaints (SHC) inventory[17] to assess stress levels. In the first group, two articles[11,13] were

included, with a total of 152 participants, and the effect of labor gymnastics on them was compared with the outcomes of the control group after five and 10 weeks of intervention, respectively. There was a statistically significant difference (p=0.03; SMD: –0.35; 95% CI: –0.67; –0.03) in favor of the group that performed gymnastics compared to the control with no other intervention[13] or with minimal intervention (rest break and/or reading, in the study by Akyurek et al.[11]). After analysis, a moderate level of evidence was found, justified by the low sample size of the studies.

The second group in Figure 4 shows a comparison between two studies that evaluated the effect of gymnastics on stress after nine months and one year of intervention (Akyurek et al.[11] and Tveito and Eriksen[17], respectively), with a total of 59 participants. No statistical difference was found between the control groups (minimal intervention and no intervention) (p=0.10; SMD: –0.44, 95% CI: –0.96; 0.08), and the quality of the evidence was considered low due to the small sample size of the studies.

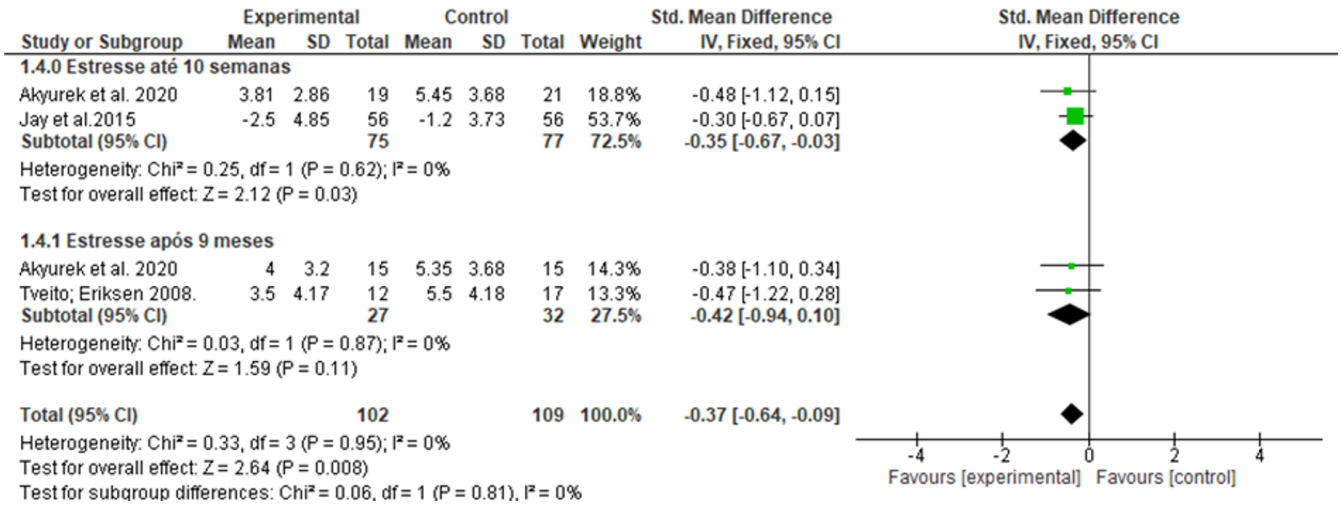

Figure 4. Difference in standardized means of the effect of labor gymnastics on stress levels

Inability to work

This review did not find any randomized trials evaluating inability to work after a labor gymnastics program for healthcare professionals.

DISCUSSION

Based on the analysis of the results, this systematic review presents moderate quality evidence that labor gymnastics can reduce musculoskeletal pain and the number of days taken off work by healthcare professionals. It was also found, with low quality of evidence, that labor gymnastics can contribute to reducing stress in healthcare professionals.

Proper and van Osstrom[18] found, in most of their reviews, positive results when evaluating the effect of labor gymnastics on musculoskeletal disorders and symptoms compared to other interventions. The studies evaluated, however, had different study designs (randomized or not, cohorts, among others), different professionals as participants and interventions of varying durations. Moreira-Silva et al.[19] also found moderate quality evidence in favor of performing labor gymnastics for reducing musculoskeletal pain in workers. In this review, intervention programs of varying lengths were also compared. According to the authors, although the effects can be generalized for each workplace, the review did not evaluate subgroups of workers.

This review only included health professionals as participants and observed that labor gymnastics, when performed for six months, can be used to reduce musculoskeletal pain in these professionals. Although there are several studies on labor gymnastics in the literature, there are few randomized controlled trials dealing exclusively with healthcare professionals. Even the surveys carried out in hospitals or health centers had a sample made up mostly of workers in the administrative, cleaning or catering sectors, and there was no specific data on healthcare professionals. It was also observed that many articles proposed the practice

of some physical activity as an intervention, but it had to be practiced outside of working hours, which makes it uncharacteristic of labor gymnastics.

The use of labor gymnastics by healthcare professionals was superior to the control in terms of reducing days off work. In the review study of randomized clinical trials by Tarro et al[20], in which various types of workers took part, it was found that labor gymnastics can be a strategy for reducing days off work. Physical activity, counseling and more individualized interventions were more effective in reducing absence due to illness. In this review, despite the fact that two articles included in the meta-analysis used gymnastics and other activities as interventions (guidance on health, nutrition, stress management and workplace assessment), the total number of participants was small and, therefore, more studies are needed to determine the effects of labor gymnastics on days off work in healthcare professionals.

Stress reduction was evaluated in separate meta-analyses, considering the duration of gymnastics from five to 10 weeks and from nine to 12 months in healthcare professionals. In both cases, the sample size of the articles was small, contributing to the low quality of the evidence. Stanulewicz et al.[21] investigated the effects of interventions carried out in the workplace, such as physical activity, relaxation, meditation, educational counseling to reduce stress and body composition, among others, on nursing professionals. In relation to stress, 66 articles were included and most of them (74%) showed that the workers experienced an improvement in stress levels. Despite the number of articles found, most also had a small sample size. In addition, randomized and non-randomized, controlled and uncontrolled studies were used.

The low participation of health professionals in studies on labor gymnastics can be explained by the fact that they do not enjoy this type of intervention and/or have little free time[22]. In view of this, creating opportunities (such as practicing at different times and in different shifts) and designing activities that are interesting for healthcare professionals and that meet their main demands can be strategies to encourage adherence. Thus, offering workers a gymnastics program that is not restricted to the treatment of musculoskeletal disorders can be an important tool for improving their health[5].

With regard to the types of activities carried out, most studies selected in this review used physical exercise in general, health guidance and relaxation practices. According to Scholz et al.[23], there is no definition of what types of activity should be offered during working hours and what different results can be found, considering the individuality of each worker and the specificities of the tasks performed in the workplace. In addition, some authors indicate the need for labor gymnastics to be carried out in conjunction with ergonomic programs, taking into account the organizational, physical and cognitive aspects of the specific job, individualized assessment of the worker and occupational risks[24,25].

This systematic review only evaluated randomized, controlled articles carried out with healthcare professionals. However, the characteristics of the interventions varied in terms of intensity, types of activity and duration, which may contribute to the limitations of the study. In addition, it is important to be careful about generalizing the results, since there is a high degree of specificity of activities among healthcare professionals, as well as physical and organizational characteristics specific to each occupational environment, which can influence the outcomes.

CONCLUSION

Overall, the results of this review show that labor gymnastics, compared to no intervention or minimal intervention, can contribute to reducing musculoskeletal pain, the number of days off work and the level of stress in healthcare professionals; and support the need for future randomized, controlled studies with a larger sample size.

The activities proposed by labor gymnastics, combined with other intervention programs, can be an important strategy for improving workers' health, since the state of health of employees can reflect on the quality of the service provided to the population.

REFERENCES

1. Leal LA, Camelo HH, Rocha FLR, Vegro TC, Santos FC. A promoção de saúde da equipe de enfermagem no âmbito hospitalar. Rev Rene. 2015;16(5):762-72. doi: 10.15253/2175-6783.2015000500019
2. Martinez MC, Fischer FM. Psychosocial factors at hospital work: experienced conditions related to job strain and effort-reward imbalance. Rev Bras Saúde Ocup. 2019;44:1-12. doi: 10.1590/2317-6369000025918
3. AlNekhilan AF, AlTamimi AM, AlAqeel BY, AlHawery AA, AlFadhel SF, et al. Work-related musculoskeletal disorders among clinical laboratory workers. Avicenna J Med. 2020;10(1):29-34. doi: 10.4103/ajm.ajm_67_19

4. Lelis CM, Battaus MRB, Freitas FCT, Rocha FLR, Marziale MH, et al. Work-related musculoskeletal disorders in nursing professionals: an integrative literature review. Acta Paul Enferm. 2012;25(3):477-82. doi: 10.1590/S0103-21002012000300025
5. Santos CM, Ulguim FO, Pohl HH, Reckziegel MB. Change in habits of workers participating in a Labor Gymnastics Program. Rev Bras Med Trab. 2020;18(1):66-73 doi: 10.5327/Z1679443520200498
6. Baú LMS. Fisioterapia do Trabalho: Ergonomia, Legislação, Reabilitação. Curitiba: Cladosilva; 2002.
7. Olay CD, Kanazawa FK. Análise Ergonômica do Trabalho: prática de transformação das situações de trabalho. São Paulo: Andreoli; 2016.
8. Macedo LG, Elkins MR, Maher CG, Moseley AM, Herbert RD, et al. There was evidence of convergent and construct validity of Physiotherapy Evidence Database quality scale for physiotherapy trials. J Clin Epidemiol. 2010;63(8):920-5. doi: 10.1016/j.jclinepi.2009.10.005
9. Moseley AM, Herbert R, Maher CG, Sherrington C, Elkins MR. PEDro scale can only rate what papers report. Aust J Physiother. 2008;54(4):288. doi: 10.1016/s0004-9514(08)70017-5
10. Guyatt G, Oxman AD, Akl EA, Kunz R, Vist G, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. J Clin Epidemiol. 2011;64(4):383-94. doi: 10.1016/j.jclinepi.2010.04.026
11. Akyurek G, Avci N, Ekici G. The effects of "Workplace Health Promotion Program" in nurses: A randomized controlled trial and one-year follow-up. Health Care Women Int. 2020;43(9):980-96. doi: 10.1080/07399332.2020.1800013
12. Brox JI, Frøystein O. Health-related quality of life and sickness absence in community nursing home employees: randomized controlled trial of physical exercise. Occup Med (Lond). 2005;55(7):558-63. doi: 10.1093/occmed/kqi153
13. Giagio S, Volpe G, Pillastrini P, Gasparre G, Frizziero A, et al. Preventive program for work-related musculoskeletal disorders among surgeons: outcomes of a randomized controlled clinical trial. Ann Surg. 2019;270(6):969-75. doi: 10.1097/SLA.0000000000003199
14. Gundewall B, Liljeqvist M, Hansson T. Primary prevention of back symptoms and absence from work. A prospective randomized study among hospital employees. Spine (Phila Pa 1976). 1993;18(5):587-94. doi: 10.1097/00007632-199304000-00011
15. Jakobsen MD, Sundstrup E, Brandt M, Jay K, Aagaard P, et al. Effect of workplace- versus home-based physical exercise on musculoskeletal pain among healthcare workers: a cluster randomized controlled trial. Scand J Work Environ Health. 2015;41(2):153-63. doi: 10.5271/sjweh.3479
16. Jay K, Brandt M, Hansen K, Sundstrup E, Jakobsen MD, et al. Effect of individually tailored biopsychosocial workplace interventions on chronic musculoskeletal pain and stress among laboratory technicians: randomized controlled trial. Pain Physician. 2015;18:459-71
17. Tveito TH, Eriksen HR. Integrated health programme: a workplace randomized controlled trial. J Adv Nurs. 2009;65(1):110-9. doi: 10.1111/j.1365-2648.2008.04846.x
18. Proper KI, van Oostrom SH. The effectiveness of workplace health promotion interventions on physical and mental health outcomes - a systematic review of reviews. Scand J Work Environ Health. 2019;45(6):546-59. doi: 10.5271/sjweh.3833
19. Moreira-Silva I, Teixeira PM, Santos R, Abreu S, Moreira C, et al. The effects of workplace physical activity programs on musculoskeletal pain: a systematic review and meta-analysis. Workplace Health Saf. 2016;64(5):210-22. doi: 10.1177/2165079916629688
20. Tarro L, Llauradó E, Ulldemolins G, Hermoso P, Solà R. Effectiveness of workplace interventions for improving absenteeism, productivity, and work ability of employees: a systematic review and meta-analysis of randomized controlled trials. Int J Environ Res Public Health. 2020;14;17(6):1901. doi: 10.3390/ijerph17061901
21. Stanulewicz N, Knox E, Narayanasamy M, Shivji N, Khunti K, et al. Effectiveness of lifestyle health promotion interventions for nurses: a systematic review. Int J Environ Res. Public Health. 2020;17(1):17. doi: 10.3390/ijerph17010017
22. Santos BB. O uso da ginástica laboral na promoção à saúde do agente comunitário de saúde. APS em revista. 2021;3(2):110-6. doi: 10.14295/aps.v3i2.140
23. Scholz A, Ghadiri A, Singh U, Wendsche J, Peters T, et al. Functional work breaks in a high-demanding work environment: an experimental field study. Ergonomics. 2018;61(2):255-64. doi: 10.1080/00140139.2017.1349938
24. Friedenberg R, Kalichman L, Ezra D, Wacht O, Alperovitch-Najenson D. Work-related musculoskeletal disorders and injuries among emergency medical technicians and paramedics: A comprehensive narrative review. Arch Environ Occup Health. 2022;77(1):9-17. doi: 10.1080/19338244.2020.1832038
25. Mota ACF, Silva AFR, Vieira MCA, Araújo CLO. Benefícios da ginástica laboral em ambiente hospitalar: uma revisão integrativa. Rev Recien. 2020;10(29):3-12. doi: 10.24276/rrecien2358-3088.2020.10.29.3-12