Change in habits of workers participating in a Labor Gymnastics Program
Mudança nos hábitos de trabalhadores participantes de um programa de ginástica laboral

Carine Muniz dos Santos¹, Fernanda Oliveira Ulguim², Hildegard Hedwig Pohl³, Miriam Beatrís Reckziegel³

ABSTRACT | Background: Demands as to productivity transform the work environment more and more stressful, and negatively impact on the motivation of workers and the performance of their work activities. Initiatives seek to consolidate advances in policies for comprehensive care for workers health, with actions to prevent injuries and promote health. Offering workers a Labor Gymnastics Program (PGL), which is not restricted to attention to musculoskeletal disorders, becomes a tool to encourage change in habits. Aim: To identify possible changes in workers habits after the implementation of a PGL. Method: 41 workers in the administrative area and support from a teaching hospital in the municipality of Santa Cruz do Sul answered the questionnaire. The questionnaire includes variables on eating habits, displacement and physical activity, applied before and after intervention. The sessions were held during the workday, with frequency of three times a week, for 4 months, composed of physical activities and information on dietary reeducation, postural education, body awareness and the importance of regular physical activity. Results: There is a predominance of females (61.0%), and age of 33.5±10.2 years. Changes in some habits were identified: increase in the number of workers who practice regular physical activity (p=0.01), increase in the duration and frequency of activity (p=0.04), and maintenance / reduction in the frequency of consumption of “Embedded” (p=0.03). Conclusion: It was possible to identify positive changes in workers habits after the implementation of the PGL, suggesting that it is an important strategy in the field of health promotion. Keywords | occupational health; health behavior; physical activity; food habits.

RESUMO | Introdução: Exigências quanto à produtividade tornam o ambiente de trabalho cada vez mais estressante e impactam negativamente na motivação dos trabalhadores e no desempenho de suas atividades laborais. Iniciativas buscam consolidar avanços nas políticas de atenção integral à saúde do trabalhador, com ações de prevenção de agravos e promoção da saúde. Oferecer ao trabalhador um programa de ginástica laboral (PGL), que não se restringe a atenção às disfunções musculoesqueléticas, torna-se uma ferramenta de incentivo à mudança de hábitos. Objetivo: Identificar possíveis mudanças de hábitos dos trabalhadores com a implantação de um PGL. Método: Respondem ao questionário 41 trabalhadores da área administrativa e de apoio de um hospital de ensino no município de Santa Cruz do Sul (RS). O questionário contemplava variáveis sobre hábitos alimentares, deslocamentos e prática de atividade física e foi aplicado anterior e posteriormente à intervenção. As sessões foram realizadas durante a jornada de trabalho, com frequência de três vezes na semana, em dias alternados, durante quatro meses, compostas de atividades físicas e informações sobre reeducação alimentar, educação postural, consciência corporal e importância da prática regular de atividade física. Resultados: Observou-se predominio do sexo feminino (61,0%) e idade de 33,5±10,2 anos. Identificaram-se alterações em alguns hábitos: aumento do número de trabalhadores que praticam atividade física regularmente (p=0,01), da duração e da frequência da atividade (p=0,04) e manutenção/redução da frequência do consumo de embutidos (p=0,03). Conclusão: Foi possível identificar alterações positivas nos hábitos dos trabalhadores após a implantação do PGL, sugerindo que essa seja uma estratégia importante no âmbito de promoção da saúde no trabalho. Palavras-chave | saúde do trabalhador; comportamentos saudáveis; atividade física; hábitos alimentares.

¹Universidade de Santa Cruz do Sul – Santa Cruz do Sul (RS), Brazil.
²Universidade Católica de Pelotas – Pelotas (RS), Brazil.
³Department of Physical Education and Health, Universidade de Santa Cruz do Sul – Santa Cruz do Sul (RS), Brazil.
DOI: 10.5327/21679443520200498
INTRODUCTION

Technological advances introduced considerable changes in work processes worldwide, resulting in a novel relationship between people and work that requires from workers greater ability to adapt to innovations\(^1\). Productivity demands are increasingly making the workplace more stressful, with negative impact on workers’ motivation and performance. To this one should add excessive working hours, ergonomic and anthropometric factors, awkward posture and psychological factors which impair the workers’ health, safety and quality of life\(^2\,^3\).

Some initiatives are seeking to consolidate advances brought by integrated workers’ health care policies, including care delivery, surveillance, health promotion and prevention of occupational diseases\(^4\). Strategies to encourage physical activity in the workplace to enhance the quality of life of workers and minimize the cost of sick leave or early retirement are well accepted\(^2\). Workplace fitness programs—i.e. exercising in the workplace to improve the physical health of employees—represents a relevant strategy against occupational diseases\(^1\).

Health care workers require special attention for being continuously exposed to occupational diseases and/or accidents. Reasons include unfavorable factors in the workplace and the characteristics of jobs\(^5\). Hospital work exposes employees to physical, physiological, biological, chemical, mental and mechanical hazards, which all together make the work environment unhealthy\(^6\,^7\). Hospitals also awaken emotional reactions and conflict\(^8\) and are associated with high workloads\(^6\).

Fitness programs reaching beyond musculoskeletal disorders may serve to promote lifestyle changes. To achieve profound changes in individuals, in addition to exercising such programs should include health promotion, disease prevention and surveillance actions\(^9\). Affording workers health promotion programs in and outside the workplace based on exercising and healthy habits—wellness—helps them acquire and maintain a healthy lifestyle. This goal demands raising awareness on the required daily behaviors, eliminating negative ones and help workers see themselves as able to change\(^10\,^11\).

The aim of the present study was to identify lifestyle changes among employees of a teaching hospital following the implementation of a workplace wellness program (WWP).

METHODS

The present quasi-experimental study was performed with employees of a teaching hospital in Santa Cruz do Sul, Brazil, who enrolled in a WWP. The present is part of a larger research project on the state of health of hospital workers. We complied with all ethical requirements, including approval by a research ethics committee, ruling no. 1,557,937.

The study sample comprised administrative and support employees from either sex who worked in the morning and afternoon shifts. All employees in these departments were invited to participate in the study and received the due information. Inclusion criteria were: age 18 or above, agreement to participate, and signing an informed consent form. Temporary employees, those with temporary or permanent disability hindering them to exercise and pregnant workers were excluded. Therefore, from 74 eligible subjects 65 were included at baseline.

Data collection involved administration of an ad hoc questionnaire on dietary habits and leisure time physical activity and sports adapted from Nahas and Barros\(^13\). This self-report questionnaire with open- and closed-ended questions also investigated sex, age, department and shift. Dietary habits were investigated through questions on frequency of intake of definite categories foods on a regular week; response options were never, once, 2–3 times, more than 3 times a week, or every day. For analysis, responses were categorized as ≤3 or >3 times a week. Questions on physical activity and sports were clustered in two sections: one for passive leisure, i.e. daily time spent watching television, reading, listening to music, talking with friends, resting and learning; active leisure—dancing, playing with the children, sports, cycling; work; household chores; and sleep. The second section focused on regular physical activity and commuting.

The WWP included workout, distribution of health education materials and meetings chaired by physical educators and nutritionists to discuss regular physical activity and healthy eating. There were 51 sessions in total, held at the workplace during the working hours, three times a week on alternate days, lasting up to 15 minutes each. Several studies indicate that some benefits are perceptible after 36 sessions\(^14\,^15\). We decided to restrict sessions to 51 to avoid dropouts.
Workout included stretching, postural and resistance training, ludic and relaxation activities, being individual, with a partner or in circuit, with music and props as per need (resistance bands, balloons, sticks, tennis and spiky balls, dumbbells) and the available furniture (desks and chairs) (Chart 1). The participants also received information (small-group lectures) on healthy eating, postural reeducation, body awareness and relevance of regular physical activity. After the end of intervention, the participants were requested to respond the questionnaire again.

Statistical analysis was performed with software Statistical Package for the Social Sciences version 23.0. We calculated absolute and relative frequencies, mean and standard deviation to characterize the sample. Categorical variables were compared by means of the χ² and McNemar’s tests, and quantitative variables with the Wilcoxon test, since the Shapiro-Wilk test showed distribution was not normal. The significance level was set to p<0.05.

RESULTS

The initial sample comprised 65 participants who responded the questionnaire on dietary habits and leisure time physical activity and sports. However, some of them were lost along the study period due to changes in shifts and termination of employment. As a result, 41 participants were considered for analysis, whose characteristics are described in Table 1. Most of the participants were aged under 40, female and worked regular hours. Average body mass index was 26.1±4.7 kg/m² (data not shown).

The number of participants who reported to spend time in active leisure and household chores increased on final assessment by comparison to baseline, however, this difference was not statistically significant (Table 2). Differently, we found statistically significant difference (p=0.04) in the number of participants who reported regular leisure time physical activity and to spend more time in training—longer duration and higher weekly frequency (Table 3).

Also changes in processed meat intake were statistically significant (p=0.03); eight participants reported to have reduced intake to ≤3 times a week. We call the attention to the number of participants who reported to eat more fish/chicken and of those who reduced or did not increase soda intake to more than ≤3 times a week (Table 4).

Chart 1. Schedule and content of workplace wellness sessions (macro-cycle). Santa Cruz do Sul, Brazil, 2017 (n=41).
**DISCUSSION**

In the present study we analyzed lifestyle changes among employees of a teaching hospital in Santa Cruz do Sul who enrolled in a WWP that included workout and orientation on physical activity and healthy eating. The results indicate some beneficial behavioral changes, particularly a higher number of participants who engaged and spent more time in regular leisure time physical activity and reduced processed meat intake.

While workplace fitness focuses on physical activity, it affords room for multidisciplinary actions. Thus in addition to traditional intervention, the WWP implemented in the present study also included health education through in-person meetings and distribution of information materials. Our aim was to help redefine the meaning of rest breaks at work beyond their predominant concern with musculoskeletal disorders. Such breaks may also afford room for dialogue and reflection on various aspects of occupational health. For this reason, and given the scarcity of studies in Brazil with similar interventions, i.e. beyond workplace fitness, we discuss the results separately.

In a study with participants in a WWP at Federal University of Paraíba, Brazil\(^\text{16}\), the investigators found that providing information of anthropometric measurements was relevant, since it motivated them to adopt a healthier lifestyle. The same might have happened also in the present study. While this might be seen as a confounding factor, since our focus was on health education we consciously assumed the potential risk of bias.

Half of the participants in Diaz et al.'s\(^\text{17}\) study reported that workplace fitness was the main factor that encouraged them to engage in regular physical activity. Similarly, the number of participants in our study who engaged in regular leisure time physical activity significantly increased after intervention, as well as the weekly time. Rossato et al.\(^\text{2}\) reported higher rates of regular leisure time physical activity among industry workers in Rio Grande do Sul, Brazil, independently from sex. As these authors, also we believe that WWP are efficacious to raise awareness on the relevance of not only regular physical activity, but of healthy habits in general.

Yet, in spite of the increase in the weekly frequency and duration of and incentives to physical activity after intervention, our results did not meet the recommendations by the World Health Organization\(^\text{18}\) (adults: moderate-to-vigorous intensity activity 150 minutes/week). This finding points to the need to expand the scope of this type of intervention in each stage to achieve more encompassing lifestyle changes. The participants in Silva et al.'s\(^\text{16}\) study accomplished all intended stages—precontemplation, contemplation, action and maintenance. In the precontemplation stage, participants were informed of their status at baseline to raise their awareness (contemplation), improve their autonomy to change it (action) and become who they really want to be (maintenance)\(^\text{16}\).

Even when statistically nonsignificant, the participants in the present study spent more time in active leisure and household chores after intervention. We believe the reason is the same adduced by other authors, who found significant increase in walking time—and consequently of energy expenditure—among administrative employees of Tehran University by comparison to controls\(^\text{19}\).

In turn, intervention did not significantly interfere with commuting habits, since most participants still had

### Table 1. Sample characterization according to demographic and occupational variables. Santa Cruz do Sul, Brazil, 2017 (n=41).

| Variables          | n (% ) |
|--------------------|--------|
| **Sex**            |        |
| Female             | 25 (61.0) |
| Male               | 16 (39.0) |
| **Age (years)**    |        |
| <30                | 16 (39.0) |
| 30–39              | 16 (39.0) |
| ≥40                | 9 (22.0) |
| **Department**     |        |
| Administration     | 23 (56.1) |
| Support            | 18 (43.9) |
| **Working hours**  |        |
| Regular            | 28 (68.3) |
| Second shift       | 11 (26.8) |
| Rotating           | 2 (49) |

\(^*\)Mean and standard deviation.
Table 2. Time (in minutes) spent in daily activities. Santa Cruz do Sul, Brazil, 2017 (n=41).

|                          | Baseline          | After intervention | p-value* |
|--------------------------|-------------------|--------------------|----------|
|                          | N | Med(IQR) | N | Med(IQR) |          |
| Work                     | 38 | 480 (480–510) | 40 | 480 (480–480) | 0.26     |
| Passive leisure          | 37 | 180 (120–225) | 39 | 150 (120–240) | 0.60     |
| Active leisure           | 31 | 90 (30–120)   | 37 | 90 (60–120)   | 0.26     |
| Household chores         | 36 | 120 (60–180)  | 39 | 120 (60–180)  | 0.69     |
| Sleep                    | 38 | 450 (386.25–480) | 40 | 420 (390–480) | 0.44     |

N: absolute frequency; Med(IQR): median and interquartile range; *Wilcoxon test (p<0.05).

Table 3. Leisure time and commuting physical activity. Santa Cruz do Sul, Brazil, 2017 (n=41).

|                          | Baseline | After intervention | p-value |
|--------------------------|----------|--------------------|---------|
|                          | Yes | No | Yes | No |         |
| Regular leisure time physical activity | 14 | 2 | 0.01* |
| commutes | 12 | 13 |        |
| Commuting | Active | Passive | 100 |
| Active | 6 | 0 |       |
| Passive | 0 | 35 |        |
| Do you practice light-intensity physical activity in your leisure time every week? | Yes | No | 0.09 |       |
| Yes | 11 | 5 |       |
| No | 13 | 12 |       |
| Do you perform abdominal, strength or resistance exercises for at least 10 minutes twice or more times a week? | Yes | No | 0.72 |       |
| Yes | 6 | 3 |       |
| No | 5 | 27 |       |
| Do you perform stretching exercises regularly? | Yes | No/sometimes | 1.00 |       |
| Yes | 4 | 4 |       |
| No/sometimes | 3 | 30 |        |
| Do you exercise to relax when you feel tense? | Yes | No/sometimes | 0.34 |       |
| Yes | 4 | 3 |       |
| No/sometimes | 7 | 27 |        |
| Weekly time spent in physical activity (minutes)* | Baseline | 0 (0–120)** | 0.004*** |
| After intervention | 60 (0–120)** |        |       |

*McNemar’s test (p<0.05); **median and interquartile range; ***Wilcoxon test (p<0.05); *1 missing.
Table 4. Weekly dietary intake before and after intervention. Santa Cruz do Sul, Brazil, 2017 (n=41).

|                              | Baseline | After intervention | p-value* |
|------------------------------|----------|--------------------|----------|
| Rice and beans               |          |                    |          |
| ≤3                           | 8        | 5                  | 0.45     |
| >3                           | 2        | 26                 |          |
| Potatoes/pasta/bread         |          |                    |          |
| ≤3                           |          |                    | 0.38     |
| >3                           |          |                    |          |
| Green salad/vegetables       |          |                    | 0.28     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Beef/pork, offal, eggs       |          |                    | 1.00     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Fish/chicken                 |          |                    | 0.09     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Dairy                        |          |                    | 0.62     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Fatty meat/fried food        |          |                    | 0.09     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Soda                         |          |                    | 0.06     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Sweets/candy/chocolate/filled cookies | | | 0.06 |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Canned/preserved food        |          |                    | 0.62     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Processed meat               |          |                    | 0.03**   |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| Butter/margarine/cream cheese/cream | | | 0.21 |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| 5 daily portions of fruit/vegetables | | | 1.00 |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |
| 4-5 daily varied meals       |          |                    | 0.58     |
| ≤3                           |          |                    |          |
| >3                           |          |                    |          |

*McNemar’s test; **statistically significant difference (p<0.05) #1 missing; #2 missing; ###3 missing; ≤3: 3 or less times a week; >3: more than 3 times a week.
resource to passive modes of transport. Reasons not to change this habit include insecurity, distance and time required, even though several studies found improvement in self-perceived health in association with active commuting (walking, cycling)\(^{20}\).

In regard to nutrition, the Dietary Guidelines for the Brazilian Population\(^{21}\) includes health eating recommendations based on the notion that a balanced diet is one with a large variety of fresh or minimally processed vegetable and fruits, small amounts of fat, salt, sugar and processed food, with avoidance of ultra-processed food. Some participants in the present study increased their weekly fish/chicken intake and reduced that of soda and processed meat. Despite the differences in methods and outcomes with the study by Franzoni et al.\(^ {22}\)—a group intervention involving orientation on healthy eating—their and our results point to the effectiveness of dietary reeducation.

As a function of our methodological concern to avoid losses, we recruited participants by convenience sampling. As a result, the sample size was smaller and the duration of intervention shorter than those recommended, which hinder the generalization of results.

**CONCLUSION**

The short duration of intervention notwithstanding, the implemented educational actions to raise awareness on health promotion and quality of life in and outside the workplace had beneficial effects in terms of healthy eating and physical activity. On these grounds, we recommend including educational health actions in addition to fitness in WWP as a significant tool to enhance healthy behaviors. Group activities are more easily accepted and are associated with higher adherence rates. These more broader scoped initiatives afford more benefits to workers and empower them to become the main agents in lifestyle changes.

In future studies with hospital workers intervention should be longer and include follow up (cohorts) to improve our understanding of the benefits of WWP on other variables, such as anthropometric profile, self-perceived health, self-care, and work-related stress, pain and discomfort management.

**ACKNOWLEDGMENTS**

We thank the Multiprofessional Health Residency Program at Santa Cruz do Sul Hospital and the Ministry of Health.

**REFERENCES**

1. Serra MVGB, Pimenta LC, Quemelo PRV. Efeitos da ginástica laboral na saúde do trabalhador: uma revisão da literatura. Rev Pesq Fisioter. 2014;4(3):197-205. http://dx.doi.org/10.17267/2238-2704pf.v4i3.436
2. Rossato LC, Duca GFD, Farias SF, Nahas MV. Prática da ginástica laboral por trabalhadores das indústrias do Rio Grande do Sul, Brasil. Rev Bras Educ Fís Esporte. 2013;27(1):15-23. https://doi.org/10.1590/S1807-55092013000100003
3. Santos PV, Martins PES. Qualidade de vida no trabalho: contribuições dos programas de saúde e segurança no trabalho. Idealis e Inov. 2016;3(1):35-44.
4. Costa D, Lacaz FAC, Jackson Filho JM, Vilela RAG. Saúde do Trabalhador no SUS: desafios para uma política pública. Rev Bras Saúde Ocup. 2013;38(127):11-30. https://doi.org/10.1590/S0303-76572013000100003
5. Santana LL, Sarquis LMM, Miranda FMDD, Kalinke LP, Felli VEA, Mininel VA. Indicadores de saúde dos trabalhadores da área hospitalar. Rev Bras Enferm. 2016;69(1):23-32. http://dx.doi.org/10.1590/0034-716720166901041
6. Fontoura FP, Gonçalves CGO, Soares VMN. Condições e ambiente de trabalho em uma lavanderia hospitalar: percepção dos trabalhadores. Rev Bras Saúde Ocup. 2016;41:e5. https://doi.org/10.1590/2317-6369000097414
7. Silva CDL, Pinto WM. Riscos ocupacionais no ambiente hospitalar: fatores que favorecem a sua ocorrência na equipe de enfermagem. Saúde Coletiva Debate. 2012;21(1):95-105.
8. Monteiro JK, Carlotto MS. Preditores da Síndrome de Burnout em Trabalhadores da Saúde no Contexto Hospitalar. Interação Psicol. 2014;18(3):287-95. http://dx.doi.org/10.5380/psi.v18i3.28024
9. Neves RF, Araújo SPA, Magalhães LV, Lima MAG. A ginástica laboral no Brasil entre os anos de 2006 e 2016: uma scoping review. Rev Bras Med Trab. 2018;16(1):82-96. http://dx.doi.org/10.5327/Z1679443502180078
10. Schmidt DRC, Paladini M, Biato C, Pais JD, Oliveira AR. Qualidade de vida no trabalho e burnout em trabalhadores de enfermagem de Unidade de Terapia Intensiva. Rev Bras Enferm. 2013;66(1):13-7. https://doi.org/10.1590/S0034-71672013000100002
11. Silva CLV. Qualidade de vida no trabalho [MA dissertation]. Recife: Faculdade de Ciências Humanas ESUDA; 2014.
12. Nahas MV, Barros MVG, Francalacci V. O pentáculo do bem-estar: base conceitual para avaliação do estilo de vida de individuos ou grupos. Rev Bras Ativ Fis Saúde. 2000;5(2). https://doi.org/10.12820/rbafsv.5n2p48-59
13. Nahas MV, Barros MVG. Medidas da atividade física: teoria e aplicação em diversos grupos populacionais. Londrina: Midiograf; 2003.
14. Candotti CT, Stroschein GR, Noll M. Efeitos da ginástica laboral na dor nas costas e nos hábitos posturais adotados no ambiente de trabalho. Rev Bras Ciênc Esporte. 2011;33(3):699-714. https://doi.org/10.1590/S0101-32892011000300012
15. Freitas-Swerts FC, Robazzi ML. Efeitos da ginástica laboral compensatória na redução do estresse ocupacional e dor osteomuscular. Rev Latino-Am Enfermagem. 2014;22(4):629-36. https://doi.org/10.1590/0104-1169.3222.2461
16. Silva RSB, Martins CO, Rosenstiel L, Ferreira CNF, Silva AS. Influência de informações de saúde no estilo de vida de participantes de ginástica laboral. Rev Bras Promoç Saúde. 2014;27(3):406-12. https://doi.org/10.5020/18061230.2014.p406
17. Dias AG, Silva IAS, Silva VF, Beltrão FB. A contribuição de um programa de ginástica laboral para a aderência ao exercício físico fora da jornada de trabalho. Fit Fer J. 2006;5(3):325-32. https://doi.org/10.3900/fpj.5.3.325.p
18. Organização Mundial da Saúde. Atividade Física. 2014;(385).
19. Shafieinia M, Hidarnia A, Kazemnejad A, Rajabi R. Effects of a Theory Based Intervention on Physical Activity Among Femal e Employees: A Quasi-Experimental Study. Asian J Sports Med. 2016;7(2):e31534. https://dx.doi.org/10.5812%2Fasjsm.31534
20. Tassitano RM, Feitosa WMN, Tenório MCM. Fatores associados ao deslocamento ativo e indicadores de saúde em trabalhadores da indústria. Rev Bras Ativ Fis Saúde. 2013;18(4):483-92. https://doi.org/10.12820/rbafsv.38n4p483
21. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Guia alimentar para a população brasileira. Brasília: Ministério da Saúde; 2014.
22. Franzoni B, Lima LA, Castoldi L, Labrea MGA. Avaliação da efetividade na mudança de hábitos com intervenção nutricional em grupo. Ciênc Saúde Coletiva. 2013;18(12):3751-8. https://doi.org/10.1590/S1413-81232013001200031

Correspondence address: Carine Muniz dos Santos – Rua Bento Gonçalves, 1350 – Centro – CEP: 95020-412 – Caxias do Sul (RS), Brazil – E-mail: munizcarine@hotmail.com

© 2020 Associação Nacional de Medicina do Trabalho
This is an open access article distributed under the terms of the Creative Commons license.