

27 - THE IMPACT OF THE LABOR GYMNASTICS PROGRAM IN THE INCREASE OF THE FLEXIBILITY - A STUDY REGARDING THE PROGRAM TO PUT IN PRACTICE WITH GARBAGE COLLECTORS OF NITEROI

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INTRODUCTION

Flexibility is the ability of the tissues that move the joint (muscle), connective tissue and skin to stretch so that they can perform everyday tasks functional as well as occupational and sporting activities, this requires a range of motion without restrictions and pain (Polachini, 2005). Since the range of motion of a given joint is compromised the performance of daily activities of an individual may also suffer some limitation (Almeida, 2006). Stretching exercises tend to re-establish satisfactory levels of joint mobility and reduce muscle tension, resulting in better joint mechanics (Marchand, 2008).

One of the problems in the companies is increasing the involvement of the health of their workers, causing changes in its workforce, by temporary or permanent removal of an employee for work-related diseases, causing it to miss days of work, thus compromising its goals and objectives (Militão, 2001). This meant that large corporations to turn their discussions of quality of life programs and disease prevention. These discussions have become even more necessary as they are observed the positive influence and benefits of investment in health and quality of life of the professional with the growth objectives of the company, assuring, therefore, quality service and products, in the production and implementation of services (Verderi, 2001).

Found a way to minimize these losses was the establishment of a regular activity acting in the prevention of specific diseases of the muscular system in the workplace, leading the implementation of the Programme of labor gymnastics. Held at the workplace itself, aims to give the employee a better use of their functional capacity by stretching exercises and relaxation focusing on combating specific problems (Lima, 2003).

With respect to specific stretching exercises of labor gymnastics, aimed at improving flexibility, causing an increase in the mechanical capacity of the muscles, joints and allowing a more economical use of energy during exercise. However, labor gymnastics lacks specific studies on the actual influence of their training on increasing flexibility and the consequent rehabilitation of osteo-articular muscle

Therefore, the objective of the study was to determine whether the Program of labor gymnastics is an effective tool in improving flexibility, quality of life and productivity of garbage collectors in the state of Rio de Janeiro. Considering the active profile of the collectors which are submitted in their working day, we can say that within the definition of physical fitness, they have a desirable degree of strength and muscular endurance.

METHODOLOGY

This study was done on company Vital Environmental Engineering, responsible for collection, transport and fate of residential, commercial, industrial and hospital waste in the city of Niteroi, Rio de Janeiro. All company employees were instructed about the study and answered a questionnaire about their regular physical activity and leisure outside the workplace, beyond indicating possible locations of constant pain.

Before the implementation of labor gymnastics program in business, information was collected regarding the type, nature and conditions of the workplace, examining the movements performed during the journey, the function performed by each employee and work rate. Through this analysis were diagnosed muscle groups most active and antagonistic muscle groups for compensation and formulation exercises.

Initially 85 subjects were selected, of whom 32 did not perform any physical activity outside of work and all had at least one point of pain throughout the body, these workers were invited and encouraged to participate in the labor gymnastics program employee at the company. All were informed about the procedures and objectives of the study were asked to sign a term commitment. Of the total, 21 completed the study collectors.

Individuals, mean (Standard Deviation) 35.3 (9.6) years, 170.9 (5.2) cm in height and 66.3 (9.6) kg body mass, performed the sit test -reach, and after one week of data collection, initiated the labor gymnastics program. The activities were carried out in-house, 15 minutes before the working day, every day of the week (5 days per week). The protocol consisted of static stretching passive and active, with small variations in its execution. In the first 30 days of the program were conducted exercises with basic movements and adaptive in order to promote body awareness before starting work a muscle more specific.

After the initial period of adaptation, the labor gymnastics program was divided into specific stretching, according to initial analysis of the job of collecting, preparing regions of the body of higher demand during the workday. Every three months two muscle groups were specifically crafted, but during this period other muscles were also requested in class. After 12 months of activity pain all company employees answered the same questionnaire indicating locations of constant pain and a measurement the testing sit-reach was redone.

Statistical analysis consisted of testing for normality of data. Then we used the t test - paired samples to compare means of test-sit reach, with significance level $\alpha = 0.05$.

RESULTS

Table I is the average amplitude and the demographics of the sample.

Table I - Mean (standard deviation) and range of variables: age (years), height (cm) and weight (kg)

N = 21	Age (years)	Height (cm)	Body weight (kg)
Mean (SD)	35,3 (9,6)	170,9 (5,2)	66,3 (9,6)
Magnitude	23 – 61	162 – 180	51 – 94

There was a significant reduction in the amount of points of pain throughout the body (66.7%) and lumbar (55%) of survey research I for II (Table II).

Table II - Relationship of pain perception

	Search I	Search II	Difference (%)
Points of pain	33	11	66,7
Lumbar	11	5	55

According to the protocol used in the Wells sit and reach test, the average before the study (24.31) is classified as weak and after the study (27.9), regular. There was a statistical difference between the means (Table III).

Table III - Value of flexibility in the sit and reach test

	Search I	Search II	Value - p
Mean (SD)	24,31±10,4	27,9±9,1	0,008

DISCUSSION

The Wells sit and reach test or test Wells bench measure the flexibility of hamstring muscles and the extensors of the spine, especially in the lumbar region (Cardoso, 2007). Possible problems and injuries can be caused by the change in flexibility. Furthermore, lesions of other muscles leading to biomechanical changes and consequent postural deviations and also provide low back pain. There are indications that the problem of pain in the lumbar region is associated with loss of flexibility, and biomechanical changes posture. The increased flexibility of the sample (Table III) reduction associated with high percentage of the points of pain (Table II) confirm the above statements, indicating a possible inverse relationship between these two parameters.

Analyzing the results, we observed a significant improvement in the flexibility of these individuals. It is worth noting that, although classified as a sample of non-practicing regular physical activity, their daily work is strenuous. Some charge daily more than 1500 kilogram of all types of materials using positions totally out of appropriate ergonomic standards, with significant bending of the spine, lateral bending with rotation, among others. Flexibility training is competing with many discomforts, strains and stiffness of the body that, several times, disrupted the training. Therefore, although the difference between the means is not as significant to the time proposed by the study, we consider these results promising.

Training based on the labor gymnastics program, with only 15 minutes a day, proved to be effective for increasing flexibility and reduction of pain points. With the results of this study, we believe that the labor gymnastics program can help improve quality of life of individuals within their work environments, mainly by preventing problems and degenerative diseases caused by repetition of moves (Lima 2003).

Some limitations in the study include not using a control group and the measurement data with only one year of work. The lack of specific work with respect to the labor gymnastic program is another problem. We hope this work will encourage professionals who work with the labor gymnastic program to research skills and improvements that are always present in our day to day, but are not cataloged in the form of research.

CONCLUSION

Flexibility training based on the labor gymnastic program increased significantly the motion of the lumbar spine and hamstrings, and dramatically decreases pain points reported by the study sample.

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**THE IMPACT OF THE LABOR GYMNASIAC PROGRAM IN THE INCREASE OF THE FLEXIBILITY
 A STUDY REGARDING THE PROGRAM TO PUT IN PRACTICE WITH GARBAGE COLLECTORS OF NITEROI
 ABSTRACT:**

This study takes as a principal focus the checking of the increase of the flexibility as tool in the improvement of the quality of life of waste collectors in the city of Niterói, Rio de Janeiro inside his environments of work, through to labor gymnastic program. Possible dysfunctions and injuries can be caused by the alteration of the flexibility. Besides injuries of other muscles lead to alterations biomechanics and consequent diversions postural, providing also pain. The used methodology went to the application of questionnaires and of the physical test; to sit and to reach, used in the evaluation of the flexibility of the lumbar column and of the hamstrings muscles. The lack of specific works regarding to labor Gymnastics is one of the problems found. The statistical analysis consisted of the use of the test t – gauged tuns samples, to compare the averages of the test of seating to reach, with level of signification $\alpha = 0,05$. Analyzing the results, we can observe a significant improvement of the flexibility of these individuals after training based on the labor gymnastics.

KEYWORDS: Labor gymnastic, flexibility, training

**L'IMPACT DU PROGRAMME DE GYMNASTIQUE SUR L'AMELIORATION DE LA SOUPLESSE
 UNE ÉTUDE CONCERNANT L'APPLICATION DU PROGRAMME GYMNASTIQUE AUX ÉBOUEURS DE
 NITERÓI**

RÉSUMÉ:

Cette étude a pour theme principal la vérification de l'augmentation de la souplesse grace au programme de gymnastique, comme moyen d'améliorer la qualité de vie des éboueurs de la ville de Niteroi (dans l'Etat de Rio de Janeiro) au sein de leur cadre de travail. Les problèmes possibles et les blessures peuvent être causés par l'alteration de la souplesse. En outre, les lésions des autres muscles conduisent à des modifications biomécaniques et par conséquent à des déviations posturales, entraînant également la douleur. La méthodologie qui a été utilisée est basée sur des questionnaires et des tests physiques - la flexion du dos - utilisé pour évaluer la souplesse de la colonne lombaire et des muscles ischio-jambiers. Le manque d'exercice gymnastique spécifique est l'un des problèmes rencontrés. Une analyse statistique par le test T - échantillons appariés pour comparer les moyennes du test de flexion du dos, avec un niveau de signification $\alpha = 0,05$. En analysant les résultats, nous avons pu observer une amélioration significative de la souplesse de ces personnes après la formation de base sur la gymnastique.

MOTS-CLÉS: gymnastique, entraînement, souplesse

**EL IMPACTO DE TRABAJO DEL PROGRAMA GIMNASIA EN MAYOR FLEXIBILIDAD
 UN ESTUDIO SOBRE EL PROGRAMA PARA PONER EN PRÁCTICA CON LOS RECOLECTORES DE BASURA
 DE NITEROI**

RESUMEN:

Este estudio se centra principalmente en la verificación del aumento de la flexibilidad como una herramienta para mejorar la calidad de vida de los recolectores de residuos en la ciudad de Niteroi, Río de Janeiro, dentro de sus ambientes de trabajo, a través del programa de Gimnasia. Posibles problemas y las lesiones pueden ser causadas por el cambio de la flexibilidad. Además, las lesiones de otros músculos que producen cambios biomecánicos y los consiguientes desviaciones posturales y también proporcionan el dolor. La metodología se basó en cuestionarios y pruebas físicas, sentarse y alcanzar, para evaluar la flexibilidad de la columna lumbar y los músculos isquiotibiales. La falta de trabajo específicas con respecto a La gimnasia es uno de los problemas encontrados. Análisis estadístico mediante la prueba de t - muestras pareadas para comparar las medias de la prueba-se sienta llegar, con un nivel de significación $\alpha = 0,05$. Analizando los resultados, se observó una mejoría significativa en la flexibilidad de estos individuos después de la capacitación basada en Gimnasia.

PALABRAS CLAVE: gimnasia, entrenamiento de la flexibilidad

**O IMPACTO DO PROGRAMA DE GINÁSTICA LABORAL NO AUMENTO DA FLEXIBILIDADE
 UM ESTUDO QUANTO À APLICABILIDADE DO PROGRAMA PARA COLETORES DE LIXO DO MUNICÍPIO DE
 NITERÓI**

RESUMO:

Este estudo tem como foco principal a verificação do aumento da flexibilidade como ferramenta na melhora da qualidade de vida dos coletores de resíduos do Município de Niterói, Rio de Janeiro, dentro de seus ambientes de trabalho, através do programa de Ginástica Laboral. Possíveis disfunções e lesões podem ser causadas pela alteração da flexibilidade. Além disso, lesões de outros músculos levam a alterações biomecânicas e conseqüentes desvios posturais, proporcionando também dor. A metodologia utilizada foi à aplicação de questionários e do teste físico; sentar e alcançar, utilizado na avaliação da flexibilidade da coluna lombar e dos músculos Isquiotibiais. A carência de trabalhos específicos com relação à Ginástica Laboral é um dos problemas encontrado. A análise estatística consistiu da utilização do teste t – amostras pareadas, para comparar as médias do teste de sentar-alcançar, com nível de significância $\alpha = 0,05$. Analisando os resultados, podemos observar uma melhora significativa da flexibilidade destes indivíduos após treinamento fundamentado na Ginástica Laboral.

PALAVRAS-CHAVE: Ginástica Laboral, Flexibilidade, Treinamento