16 - PROPOSAL OF PHYSICALTHERAPY PREVENTIVE INTERVENTION TO THE OSTEOMUSCULAR DISTURBANCES RELATED TO THE WORK

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1. Introduction

The lesions for repetitive efforts (LRE) or the osteomuscular disturbances related to the work (ODRT) have been constituting in a great problem of public health, and in many industrialized countries characterized by the occurrence of several concomitant symptoms or not, as the pain, parestesy, weight sensation, fatigue, generally in the superior members, of insidious appearing, but could also attack the inferior members (INSS, 2003).

A program of prevention of LRE/ODRT in a company begins for the criteriosly identification of the factors of risk presents in real situation of work. Frutuoso (2006) it mentions that the hard-working carrier of ODRT presents muscular pains, difficulties of accomplishing movements, could present low self-esteem, depression, mental waste, besides being, discrimination object on the part of the work colleagues, that don't understand the gravity of its symptoms. Observing those aspects, the exercises work (EW) it can be an activity used for prevention of that dysfunction type (Longen, 2003; Lima, 2003; Mendes and Leite, 2004; Bergamaschi and Polito, 2003; Pinto, 2003).

Therefore, the action of the benefits promoted by the exercises works and its effectiveness in the improvement of the symptomatic aspects in the workers attacked by this problem, they are objective of investigation in this study, seeking to improve the life quality in the work atmosphere, through the action promoted by the preventive physiotherapy.

2. Materials and Methods

For the accomplishment of this work we used employees of the Faculdade União das Américas in the period of May, three to July, twenty-four of 2006. Employees of several sections of the ability were selected, in a sample of fourteen individuals (to aid of administrative general, auxiliary services, operator, keeper's boss, box, to aid of laboratory and library assistant), that they wanted to participate voluntarily of the research, selected through the schedule of entrance in the work (7h30), being six men and eight women, with age group of nineteen to fifty two years.

The following analyses were accomplished:

¡¤ Amplitude of movement of the right and left shoulder; flexibility, extension, abduction and aduction. Flexibility and extension of the elbows and flexibility and extension of the hip;

¡¤ Intensity of the pain before and after the accomplishment of the exercises you work;

¡¤ Benefacts obtained after the accomplishment of the exercises.

Before the beginning of the research there was accomplishment of a lecture to the participants, informing them about the project and the relevance of its participation.

2.1. Evaluation

They were made evaluations before the beginning and in the end of the execution of the project through:

•Climbs Similar Visual, to evaluate the pain, with scale varying of zero for ten. Where zero means without pain and ten the worst imaginable pain;

•A questionnaire to evaluate the effects that the exercises brought to improve the quality of the participant's life in its work atmosphere

•Measures through the flexibility (apparel used to measure the width of movements), with the accomplishment of three measures in each group to muscle-articulate, the largest degree reached among the tests being registered, Abdallah (1997).

•The appraised widths of movements were: flexibility, extension, abduction and aduction of the shoulder, flexibility and extension of the elbow and flexibility and extension of the hip.

All the participants were before appraised and after the execution of the exercises you work, independently of the frequency, even an individual, that had frequency zero.

The participants signed a consent term before beginning the research, authorizing the author of the research to use the obtained data when if does necessary, including the popularization of the same ones, always preserving the privacy.

The sessions of exercises work they had duration of ten minutes, initially, arriving at fifteen minutes in the end, assisting the participants' solicitation, three times a week, in a period of approximately three months, constituting in a total of thirty-five sessions. Composed by a series of global lengthenings and a series of specific exercises, actives, in agreement with the activities work of the participants. The exercises were varied, and once some recreational activity was accomplished a week and sometimes massage with tennis balls in the posterior area of the log. All the sessions were accomplished with music. Being the exercises accomplished fifteen minutes before the beginning of the file.

Some orientations were accomplished the participants on forms of preventing LRE/ODRT, as correct postures that should be adopted during the activities you work, pauses and compensatory exercises and the importance of cultivating healthy habits.

In elapsing and in the end of the execution of the project they were made quantitative and qualitative analyses. For the quantification of the results the average of the obtained results was used.

3. Results

The variables collected before and after the physical therapy preventive intervention to the osteomulcular disturbances related to the work and the effects of the activity were observed even before the end of the experimental research, as improvement in the width of movement of the fist (flexion/extension), motor coordination, relationship among the colleagues and in the disposition for the work. The most cheerful participants during the dynamics and during the execution of the exercises they told that had reduction of pains.

The graph 1, illustrates the average of the collected results of the intensity of the pain, before and after the accomplishment of the exercises you work, in 5 participants of the group 1, that had a frequency of superior participation at 70%.

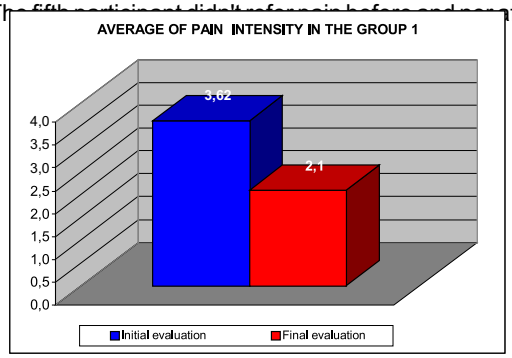
A participant told pain in the head without marking the intensity, pain in the knee with intensity 6, in the foot with intensity 4 and in the lumbar with intensity 5. After the accomplishment of the exercises she only told pain in the knee, with intensity 6.

The second participant declared to be with pain in the knee with intensity 5, in the foot with intensity 4 and in the lumbar with intensity 10. After the accomplishment of the exercises you work he/she declared to be with pain in the shoulder and knee with intensity 5 and lumbar with intensity 8.

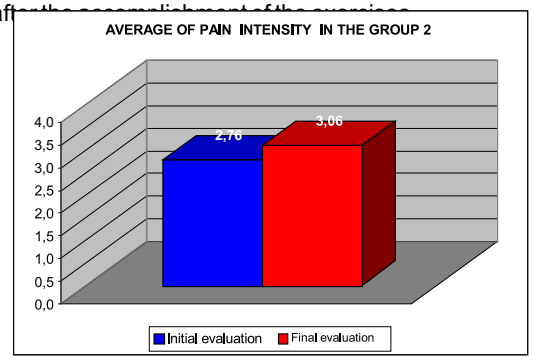
The third participant told pain in the lumbar area with intensity 3 and after the accomplishment of the exercises she referred intensity 4. Having a contradiction in its reports during the sessions, where she affirmed to have decreased the pain after the accomplishment of the exercises.

The fourth participant had pain in the foot with intensity 8, in the cervical with intensity 5 and in the thoracic with intensity 3, before the accomplishment of the exercises. After the exercises he/she told that was not feeling any pain.

The fifth participant didn't refer pain before and nor after the accomplishment of the exercises.



Graph 1. Average of the intensity of the pain before and after the accomplishment of the work exercises with group 1, that had frequency of larger participation than 70%.



Graph 2. Average of the intensity of the pain before and after the accomplishment of the work exercises of the group 2, that had frequency of smaller participation than 50%.

The graph 2 illustrates the average of the collected results of the intensity of the pain, before and after the accomplishment of the work exercises, in 9 participants, group 2, that had a frequency of inferior participation at 50%.

A participant declared not to feel pain in the initial evaluation and in the final evaluation declared to feel pain in the thoracic area with intensity 4 and calf with intensity 5.

The second participant declared, in the initial evaluation, to feel in the head with intensity 9, elbow and fist with intensity 7, cervical, thigh and calf with intensity 6 and lumbar with intensity 5 and in the final evaluation she declared to feel pain in the head, shoulder fist calf and ankle with intensity 7, foot with intensity 8 and cervical, thoracic and lumbar with intensity 9.

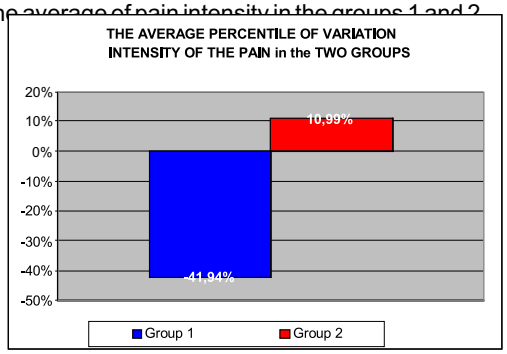
The third participant referred to feel pain in the initial evaluation, in the shoulder and in the fist with intensity 6 in the thigh and calf with intensity 3, and in the final evaluation she referred pain in the shoulder and calf with intensity 7.

The fourth participant referred to feel pain in the shoulder, in the thoracic, with intensity 6 and in the fist with intensity 7, in the initial evaluation. In the final evaluation he/she referred pain in the shoulder with intensity 2, fist with intensity 6 and thoracic with intensity 3.

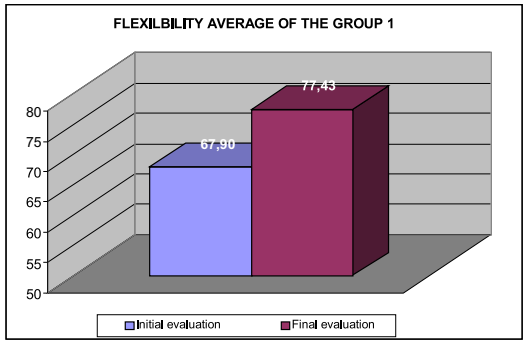
The fifth participant referred to feel pain, in the initial evaluation, in the head, in the shoulder and in the cervical with intensity 10, elbow with intensity 5, knee and lumbar with intensity 8 and in the thigh, calf and ankle with intensity 2, thoracic with intensity 7. In the final evaluation she referred pain in the shoulder, elbow, fist, cervical, thoracic and lumbar with intensity 8, in the knee with intensity 7 and in the head with intensity 9.

The sixth participant told to feel pain in the head with intensity 9, shoulder, elbow and fist with intensity 5 and knee with intensity 4, in the initial evaluation. In the final evaluation he/she referred to feel pain in the head, knee and shoulder with intensity 3, shoulder with intensity 6, elbow with intensity 4 and fist with intensity 5.

Three participants declared not to feel pain in the initial and final evaluation. The graph 3 illustrates the percentile of variation of the average of pain intensity in the groups 1 and 2.

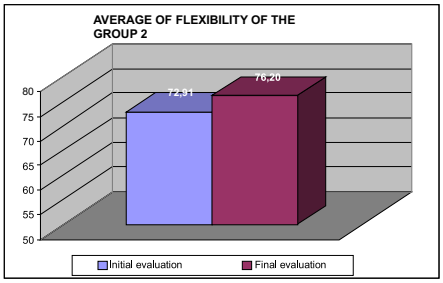


Graph 3. Percentile of variation of the average of intensity of the pain in the groups 1 and 2.

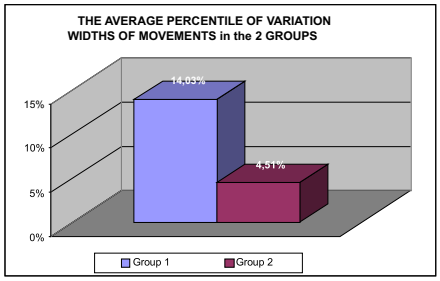


Graph 4. Average of the flexibility of the group 1, before and after the accomplishment of the work exercises.

The graphs 4 and 5 present the results of the averages of the values of the width of movements of the shoulder, elbow and hip, collected before and after the accomplishment of the work exercises, showing the differences between the two groups. The graph 6 illustrates the variation of the average of the widths of movements collected before and after the accomplishment of the work exercises showing the differences between the two groups.



Graph 5. Average of the flexibility of the group 2, before and after the accomplishment of the work exercises.



Graph 6. Percentile of variation of the average of the widths of movements in the 2 groups, before and after the accomplishment of the work exercises.

The participants answered in the questionnaire that felt the following benefits after the accomplishment of the work exercises: improved its disposition for the work, the posture, reduced the anxiety, increased the sensation of well to be general, helped to decrease the pains in the body, improved the relationship and the integration with the work colleagues, decreased the tensions accumulated during the day of work, decreases the physical and mental stress, prevents LRE/ODRT and they would like that the sessions of exercises continued.

The table 1 show the percentile variation happened among the two groups, the widths of movement of the appraised articulations.

ALTERATIONS OF THE WIDTH OF MOVEMENT in the TWO GROUPS			
	Group 1	**Group 2**	**Gain of the Group 1**
ulder			
t flexion	3,45%	1,44%	239,55%
flexion	7,14%	2,03%	352,65%
t extension	108,51%	16,88%	642,93%
extension	12,24%	-6,98%	375,51%
t abduction	9,32%	7,80%	119,52%
abduction	18,54%	9,85%	188,19%
t aduction	6,82%	-14,73%	146,30%
aduction	9,86%	-20,05%	149,18%
ow			
t flexion	21,48%	11,78%	182,34%
flexion	22,64%	11,69%	193,64%
t extension	-50,00%	-10,00%	-500,00%
extension	-0,20%	-167,16%	-0,12%
on	9,47%	14,74%	-64,27%
ension	-23,40%	11,28%	-207,43%

Table 1. Percentile of the alterations in the average of the width of movement of the evaluations initial and final, in the two groups.

5. Discussion

During the accomplishment of this work the some employees' reduced assiduity went a great difficulty to the obtaining of the results, mainly for the difficulty of changing the people's habits, still plus, when the understanding of the current problems of the work activities is not had, that can produce incapable factors for the prevention lack. Fact this confirmed by Franche et al. (2006) that show the muscle-skeletal disorders have a significant impact in the worn-out time of the workers' activity, overloading its occupational activities, as well as, influencing the social aspects.

Rosenman et al. (2000) accomplished a research with 1598 workers to verify they presented or not some type of dysfunction skeletal muscle related to the work, and they observed that 25% of the employees didn't just present any problem species. In our study we verified that about 28% of the employees didn't present any occupational problem. Evans; Mayer; Gatchel (2001) and Morse et al. (1998) relate the occupational problems at the individual's socioeconomic level and of the demographic factors, mainly with people with financial difficulty. Results that confirm them observed in our study, in terms individuals' function with different social levels and of instruction, what influenced the adoption of inadequate postures directly, providing pain pictures accentuated.

Although we don't have associated ergonomic analyses in our results, Vernaza and Sierra (2005) verified that the biomechanical positioning inadequate provides an increase in the risk factors in the development of muscle-skeletal lesions, doing the worker adopts compensation postures favoring the increase of the pathological picture. This favored the employee's of its occupational activities removal, what was also evidenced by the employees' report in our work.

In our research was outstanding that the pain intensity decreased 41,94% in the group that had a frequency of superior participation at 70%, that it is the group 1, demonstrating that the exercises brought an improvement in the quality of those employees' life in its work atmosphere, because the same ones told relief of pains during the sessions of work exercises. That can be observed in the studies accomplished by Ortis et al. (2003) investigating muscle-skeletal dysfunctions in computer users, because the individuals that participated of the program of ergonomic adaptation for a lingering time presented better-related results the posture, the pain and the performance in the work. In the group 2 that had inferior frequency at 50%, there was an increase of 10,99% of intensity of the pain, that should be related with the interruption of the execution of the program of exercises.

In relation to the individuals' flexibility there was an increase of 14,03% in the average of movement width in the group 1, that had frequency of superior participation at 70%. In the group 2, that had a smaller frequency than 50%, there was an increase of 4,51% in the average of movement width. That improvement has been told in the literature as a change in the guided individuals' behavior and participants of the programs of preventive adaptation (Ijzelenberg et al. 2004; Derebery, 2006; June, 2006).

Besides, during execution of the program of work exercises we observed improvement on motor coordination, in the width of the movements accomplished by the participants and an increase in the disposition of the same ones, what was soon

visible in the first sessions. Another quite positive aspect was the improvement of the inter-personal relationship. Factors as the occupational stress told by Schierhout et al. (1995) they are decisive to expose the employees to factors of occupational risk, as we observed in individuals' groups that presented significant pain pictures in a stress work ambient work. The reduction of the stress promoted in the employees a change not only in related factors the pain in the inter-personal behavior. Therefore, problems related to the apparel skeletal muscle could be forewarned and avoided with a preventive program based on work exercises.

6. Conclusion

The lesions for repetitive efforts (LRE) or the osteomuscular disturbances related to the work (ODRT) are today a problem of public health, taking the employee to the temporary removal of the work and sometimes to permanent, due to the prevention lack and that worker's adapted attendance. With that bringing damages for the own worker, as pain, insecurity, decrease of the productivity, fear of losing the employment, psychosocial and financial problems, as well as, for the employers and for the Union.

That research comes to highlight that in spite of the gravity of the problem, preventive, simple attitudes, as information and preparatory exercises before beginning the workday, bring many benefits for the worker's health. Not only physical benefits, as improvement of the width of movements, in the flexibility, in the reduction of pains, but also improvement in the psychological and social aspects.

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PROPOSAL OF PHYSICALTHERAPY PREVENTIVE INTERVENTION TO THE OSTEOMUSCULAR DISTURBANCES RELATED TO THE WORK

Abstract

The occupational disturbances are nowadays a problem of public health, taking the employee to the temporary removal of the work and sometimes to permanent. The prevention lack and attendance adapted the worker bring damages as the pain, the insecurity, fear of losing the employment, psyco-social and financial problems, besides damages for the employer and for the Union. Therefore, the objective of this work went verify a preventive program of preparatory exercises for the work day it facilitates benefits the worker's health. We used a preparatory program of exercises in 14 employees of the Faculdade União das Americas of Foz do Iguaçu, PR, Brazil, and we analyzed aspects as: width of shoulder movement, elbow, knee and hip; pain

intensity before and after the accomplishment of the exercises and effects after the accomplishment of the program. We verified an improvement of 41,94% in the pain and 14,03% in the movement width in the individuals that accomplished the program frequently of superior participation at 70%, it improves coordination and in the inter-personal relationship. We can conclude that a preventive program of exercises can promote benefits the worker's health, minimizing painful pictures, improving flexibility and posture, besides developing the inter-personal relationships.

Key words: LRE / ODRT, preventive, exercises work

PROPOSITION D'INTERVENTION RELATIVE À LA PHYSIOTHÉRAPIE PREVENTIVE DES PROBLÈMES OSTÉOMUSCULAIRES DU TRAVAIL

RÉSUMÉ

Les problèmes rencontrés dans l'exercice d'une profession sont aujourd'hui des problèmes de santé, causant l'arrêt de l'activité du travailleur, arrêt temporaire voire parfois définitif. Le manque de prévention et de traitement adéquat du travailleur entraîne des conséquences : la douleur, l'insécurité, la peur de perdre l'emploi, des problèmes physio-sociaux et financiers tant pour le travailleur que pour l'État. L'objectif de cette étude a donc été de vérifier si un programme préventif d'exercices préparatoires à la journée de travail apporte à la santé du travailleur des bénéfices. Un programme d'exercices effectués avant le travail a été élaboré et mis en œuvre par 14 employés de la Faculté Union des Amériques de Foz do Iguaçu (État du Paraná) ; son objectif a été l'analyse de divers aspects portant sur l'amplitude du mouvement (épaule, coude, genou et hanches), l'intensité de la douleur avant et après les exercices ainsi que les effets en fin de réalisation du programme. Nous avons constaté une amélioration de 41,94% concernant la douleur et 14,03% concernant l'amplitude des mouvements des individus qui ont réalisé avec une fréquence supérieure à 70% le programme qui a eu aussi pour effet d'améliorer la coordination motrice et les relations sociales. Nous pouvons conclure qu'un programme d'exercices préventifs apporte des bénéfices quant à la santé des travailleurs, réduisant la douleur, améliorant la flexibilité et posture corporelles ainsi que un développement des relations sociales.

Mots clefs : LER/DORT, prévention, exercices des travailleurs

PROPUESTA DE INTERVENCIÓN FISIOTERAPEUTICA PREVENTIVA A LOS DISTURBIOS OSTEOMUSCULARES RELACIONADOS A LO TRABAJO

RESUMEM

Los distúrbios ocupacionales son hoy en día un problema de salud pública, llevando al empleado a apartarse temporalmente del trabajo y a veces permanente. La falta de prevención y atención adecuado al trabajador trae perjuicios como dolor, la inseguridad, miedo de perder el empleo, problemas psico-sociales y financieros, y hasta perjuicios para el patrón y para la Unión. Portanto, el objetivo de este trabajo fué verificar si un programa preventivo de ejercicios preparatorios para la jornada de trabajo posibilita beneficios a la salud del trabajador. Utilizamos un programa preparatorio de ejercicios en 14 empleados de la Faculdade União das Américas de Foz do Iguaçu, PR, y analizamos aspectos como: amplitud de movimiento de hombro, codo, rodilla y la cadera; intensidad del dolor antes y después de la realización de los ejercicios y efectos después de la realización del programa. Encontramos una mejora de 41,94% del dolor y 14,03% en la amplitud de movimiento en los indivíduos que realizan el programa con frecuencia de participación superior a 70%, mejora en la coordenación motora y en el relacionamiento inter-personal. Podemos concluir que un programa de ejercicios preventivo puede promover beneficios a la salud del trabajador, minimizando cuadros dolorosos, mejorando flexibilidad y postura, además de desenvolver los relacionamientos inter-personales.

Palabras-llaves: LER/DORT, prevención, ejercicios laborales

PROPOSTA DE INTERVENÇÃO FISIOTERAPÊUTICA PREVENTIVA AOS DISTÚRBIOS OSTEOMUSCULARES RELACIONADOS AO TRABALHO

RESUMO

Os distúrbios ocupacionais são hoje em dia um problema de saúde pública, levando o funcionário ao afastamento temporário do trabalho e às vezes até permanente. A falta de prevenção e atendimento adequado ao trabalhador traz prejuízos como a dor, a insegurança, medo de perder o emprego, problemas psico-sociais e financeiros, além de prejuízos para o empregador e para a União. Portanto, o objetivo deste trabalho foi verificar se um programa preventivo de exercícios preparatórios para a jornada de trabalho possibilita benefícios a saúde do trabalhador. Utilizamos um programa preparatório de exercícios em 14 funcionários da Faculdade União das Américas de Foz do Iguaçu, PR, e analisamos aspectos como: amplitude de movimento de ombro, cotovelo, joelho e quadril; intensidade de dor antes e após a realização dos exercícios e efeitos após a realização do programa. Verificamos uma melhora de 41,94% na dor e 14,03% na amplitude de movimento nos indivíduos que realizaram o programa com freqüência de participação superior a 70%, melhora na coordenação motora e no relacionamento inter-pessoal. Podemos concluir que um programa de exercícios preventivos pode promover benefícios a saúde do trabalhador, minimizando quadros dolorosos, melhorando flexibilidade e postura, além de desenvolver os relacionamentos inter-pessoais.

Palavras-chaves: LER/DORT, prevenção, exercícios laborais.