129 - FISIOMOTRICITY OF ADEQUATE INTENSITY THE PAIN THRESHOLDS: EFFECTIVENESS ON THE PIMÁX AND PEMÁX OF AGED WOMEN WITH OSTOPOROSIS.

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INTRODUCTION

The presence of chronic pain in the life of an individual is beyond the symptoms. It is a disease in itself, which persists after the healing of the injury or, most often, is intrinsically linked to chronic disease processes (Pimentel, 2001). With regard to preventing the evil of pain, few are the intentions formally organized concerning the motivation to learn to work with it interactional and integrated towards the prevention and treatment of functional disability in older people.

By derivation, several strategies can be identified and the physical exercise can be thought of as being one of the main options, as a failure inactiveness and the dependence stand out as the major villains causing major adversities, mainly in the process of aging and the loss of bone mass (MATSUDO; MATSUDO; BARROS NETO, 2000; CUNHA, 2007). Meanwhile, one of the most treacherous consequences of pain, in addition to disability osteomioarticular progressive is the correlation with dyspnea and respiratory complications which are related to decreased muscle strength (MORENO, 2004; CADER, 2007).

According to Lin et al. (2001), the use of isometric exercises, and free active and contra-resistance, added to the relaxation of strained structure, are able to promote the relief of pain and minimization of functional disability, as movements applied under custom criterion may help the desensibilization of painful areas through exteroception stimulation if they are appropriate to the capacity of each individual. It as a factor of decreased skeletal functional activity is related to the "fear" to feel pain. These statements are enriched by Silva and Lage (2006), to argue that integrative practices such as yoga, which uses postures stable and comfortable, diaphragmatic breathing with slow expirations, without excessive effort during the muscle contractions, can promote the inhibition of activity of brain areas related to pain, and intensify the respiratory muscle tonus.

Thus, this study aims to evaluate the effects of a fisiomotriz cinesioterapeutic method of low impact/movement and slow changes, in the minimization of joint pain and increase in Pimáx and Pemax of osteoporotic elderly.

MATERIAL AND METHODS

This study was carried out respecting the rules laid down in Resolution 196/96 of the National Health Council, 10/10/1996 (Brazil, 1996) with regard to the Implementation of Research in Human Beings, with the number of protocol 0075/2008 UCB/VREPGPE /COMEP / PROCIMH. All the participants signed a Statement of Free and Informed Consent.

The universe was composed of women with senescent loss of bone mass, chronic pain and functional limitation. In this universe, we are, in the form of convenience, (THOMAS and NELSON , 2002) a sample group that formed the basis for experimental research. All were linked to the sector of the physiotherapy clinic where the study was conducted. Characterizing the randomization process was the fact that women attended this center came from various parts and districts of the city of São Luis, Maranhão. The sample consisted of 29 women suffering from osteoporosis and/or osteopenia in the following sites (the femur, lumbar spine), aged between 65 and 70 years, sedentary at least six months, expressing characteristic of chronic pain in their body segments.

It was considered an exclusion criterion, any individual that presented any condition that impossible to achieve in full the exercise program or, that could jeopardize the pre-existing framework of health problems along the intervention. Still, those who have not obtained a frequency of 80% in the intervention process, participants of any other type of physical activity that was not the program, or who had a standard deviation (SD) below 1.0. It also prevented the inclusion, any of the patients who were using analgesic or hormone replacement therapy.

The intervention was made through three evaluative stages. Being:

First stage: evaluation of context. With the aim of homogenization of the sample was held a session of pre-testing. This was implemented as follows: Interview for presentation and explanation of the study and signing of a consent form; implementing the test of pain by visual analog scale of eleven points; Manuvacuometria for evaluation of inspiratory and expiratory muscle strength; registry of the values of bone densitometry for the current year's assessment of bone mass, all made in the SDO-SERVICE Bone Densitometry, together with their medical reports.

Second stage: intervention. At this stage the sample was divided into two groups considering the criteria of more pain, values above 5 on visual analogue scale and less pain, values below 5 in the same scale. Here was implemented a program of low-impact exercises and graduated in intensity, appropriate to the level of pain for each participant in a progressive nature. The program, defined by the term, Fisiomotriz, was developed in a similar manner, for the two groups. The period of duration was fo 16 weeks, with attendance of three times a week for 50 minutes per session. The exercises that represented the Level I (1st to 5th meeting) were to the practice of body awareness, coupled with the understanding physiologically appropriate breathing patterns. The Level II (6th to 15th session) composed of light exercises, with movements of minimal magnitude, according to the assumptions inherent in The Melzack's theory, with subtle local isometric contraction. At level III (16th to 30th session), in conducting exercises, light, involving movements of small-scale, global isometric contraction (light) associated with isotonic contraction free (no weight). For level IV (30th session onwards) the exercises demanded a large-scale movements with global maximum isometric contraction and/ or isotonic with weight, followed by a change in the level of complexity of the implementation.

Third stage: Consisted of evaluation of the intervention. After 16 weeks of the intervention was conducted a post-test to get the final data related to the realized intervention. It was done by use of the same tools, as used for the pre-test section.

The data were analyzed using the SPSS 16.0 for Windows, which the statistical inference being done an analysis of variance with the Kruskal Wallis Chi-square index of independence (Chi^2). In all tests, the level of significance set to the hypothesis of the study testing was ALPHA ± 5%. It was also used instruments of the descriptive statistics, searching for information that would clarify, the understanding about the data arinsing from the manipulation of the independent variable, upon the dependent one.

RESULTS AND DISCUSSION

The chronic pain is a complex factor that is escaping the biomedical paradigm, but that has driven changes and adjustments to fill gaps and generate new opportunities in the health care, especially among the elderly. Stressing that this can be pain for those elderly, a limiting factor in their functional capacity, one of the tools used in this sense is it the practice of activities that minimize the symptoms rather than a better functional capacity. All older who met the criteria for inclusion agreed to participate in the study. It was originally obtained the participation of 30 women, one was excluded during the clinical history because it can not meet the criteria for attendance. Thus, the sample consisted of twenty-nine women divided into two groups, selected according to the level of pain expressed by each of its members. Group 1 was composed of 15 aged between 65 and 70 years, all expressing pain below the level at 5.0 and Visual Analog Scale, group 2, formed by 14 elderly in the same age group, with pain over 5.0 points, the same Visual Analog Scale. There was no withdrawal or abandonment as a result of the exclusionary factors, along the intervention process.

Table 1. Distribution of frequency of pain in elderly patients with loss of bone mass, before and after intervention with the method cinesioterapeutic Fisiomotriz.

	SAI		SDI		
ID / Situaÿÿo	**f**	**%**	**f**	**%**	**(P)**
< 1 SD	-	-	04	13,8	
1 a 2,5 NBD	02	6,9	07	24,2	
2,5 a 5 NMD	08	27,6	13	44,8	0,0006
5 a 7,5 NAD	08	27,6	05	17,2	
7,5 a 10 DS	11	37,9	-	-	
Total	29		100		

Legend: IP = Pain Index; SD= no pain; Np= low level of pain; LLP= moderator level of pain; MLP= high level of pain; HLP= strong pain = situation befor intervention; **SBI** = Situation after intervention.

Table 1, results reveal that there was a reduction in 10, with (N = 11; 37.9%) SAT, for (n the ID program Fisiomotriz, between 7.5 = 0; 0%) SDT; as well as an increase to the ID / SDT <1 with (N = 04; 13.8%). On the other hand was defined as the number of cases of SAT with ID variable 5 (N = 10, after the program, presented ID reduced between 2.5 between 1 7.5 (N = 5; 17.2%) and 2.5 (N = 07; 24.2%); 5 13, 44.8%); between 1 <1 (N = 04; 13.8%). Statistically it was determined, applying the Chi-square test, a p = 0, 0006, less than 0, 05, condition which apply for the null hypothesis rejection. This fact may provide a basis for assuming that the decrease in the ID depends on the Fisiomotriz program that was given to group of women that were indicated as having loss of bone mass.

The prominence on that table is, the fact, that the situation before the implementation of the Program (IAS), none of the elderly no longer expressed themselves as not in a state of pain. Comparing the scores of the two groups, as compared to the pre- and post-intervention, there was a significant decrease in pain post-intervention. In a way, the reduction, in pain, above reported is in agreement with the thought of Lin et al. (2001), which formalizes the idea that the use of isometric exercises, in the form free, and also, counter-resistance are possible to minimize pain status. These concepts also apply to the work of Silva and Lage (2006) who show that , years of imagery training, incorporated with stable and comfortable postures may promote the inhibition of certain pathways of pain, limiting the channels of pain and, consequently, minimizing it. In a related line, studies have explained the benefits of physical exercise for osteoporotic individuals, minimizing drug dosages, increased mobility for the body and increased bone mass (NAVEGA and OISHI, 2007).

Table 2. Frequencies distributions for respiratory strength, with an interval of IP and PE in elderly patients with bone mass loss and pain over 5 on the visual analogue scale, before and after the conjugated method of cinesioterapeutic and Fisiomotriz exercises.

FR/ST		PI				PE			
IFR		SAI		SDI		(p)	SAI	SDI	(p)
		f	%	f	%		f %	F %	
20	**40**	01	7,1	01	7,1		- -	- -	
40	**60**	06	42,8	-	-		05 35,7	01 7,1	
60	**80**	04	28,6	05	35,7	0, 1183	06 42,8	06 42,8	0, 2276
80	**100**	02	14,3	04	28, 6		02 14,3	04 28,6	
100	**120**	01	7,1	03	21, 6		01 7,1	03 21,6	
>120		-	-	01	7,1		- -	- -	
Total		14		100			14	100	

BP = breathing power (IP = Inspiration Pressure; EP= Expiration Pressure); ST = Situation (SAT = Situation before intervention; SAI = Situation after intervention; IFR = Interval of strong breathing

Table 2 results showed that in relation to PI 100 and and PE in IAS, in the range that includes a respiratory rate of 80 120, respectively with (N = 02; 14.3%) there was a gain in respiratory 100 strength of two and three times more in SDI. Statistically it was set to IP, in Chi-square a "p" = 0, 1183 and for PE 0, 2276, both greater than 0, 05, so we can say that the gain of force breathing, the movements of inspiration and expiration between SDI and the SAI, regardless of the method cinesioterapeutic conjugated to the Fisiomotriz one relieved pain levels to the investigated patients.

Moreno (2004) says that among the main consequences of pain and respiratory complications are the osteomioarticular progressive disability. Regarding the results of Table 2, the pain proved to be a determining factor for IP and EP, certainly this factor is related to the "fear" to feel pain, causing a limitation in the chest expansion and consequent decrease in lung compliance. Somehow you can think about the concepts derived from traditional behavioral therapy, which includes the belief that pain is part of a system leak, and the understanding that can operate under this feature, often, not even in because of adverse events. But, only interpreted as being so.

Table 3 - Distribution of frequency of respiratory strength, with an interval of IP and PE in elderly patients with loss of bone mass and pain below 5 in the visual analogue scale before and after the method cinesioterapeutic Fisiomotriz.

FR/ST / IFR	PI					PE				
	SAT		SDT		(p)	SAT		SDT		(p)
	f	%	f	%		f	%	f	%	
20 | 40	04	26,7	-	-		01	6,6	-	-	
40 | 60	07	46,6	02	13,3		10	66,7	01	6, 6	
60| 80	03	20,0	07	46,6	0,0161	03	20,0	03	20,0	0,0018
80| 100	01	6,7	04	28,7		01	6, 6	04	26,7	
100| 120	-	-	02	13,3		-	-	07	46,6	
>120	-	-	-	-		-	-	-	-	
Total	15		100			15		100		

BP = breathing power (IP = Inspiration Pressure; EP= Expiratio Pressure); ST = Situation (SAT = Situation before intervention; SAI = Situation after intervention; IFR = Interval of strong breathing.

Table 3, the results showed that in relation to PI and PE of the SAI SDI, in the range that includes a respiratory rate of 60 120, respectively with (N = 07; 46 , 6%, N = 04; 100 and 100 80, 80 28.7, N = 02; 13.3) (N = 04; 26.7, N = 07; 46.6%), with a gain in strength from four to seven breathing times more on SDI. Statistically it was set to IP, in Chi-square a "p" = 0, 0161 and for PE 0, 0018, both less than 0, 05, so we can say that the gain of force breathing, the movements of inspiration and expiration between SDI and the SAI, depends on the method cinesioterapeutic Fisiomotriz relieved to patients investigated. For Mattos and Farinatti (2007), elderly with low functional capacity, similar to the older study, gain on cardiopulmonary capacity, with a low-intensity exercise, as for some of these authors may well provide the pain relief. Studies like that of Vasconcelos et al. (2004) showed a correlation moderate but positive relationship between the muscle strength and functional autonomy, which may justify the fact the older of the sample complained of functional limitation at the beginning of intervention. The findings also indicated an improvement in autonomy Functional elderly undergo a training of inspiratory muscle strength. This is why according to Cader et al. (2007b) one of the key issues that limit the exercise is the performance of inspiratory muscles, recognized and decreased with aging. Our study corroborates this effect because none of the elderly, who were sedentary before because of the pain, was limited to finalize the protocol that included progressive levels of difficulty.

CONCLUSION

It is concluded from this study that the investigated conjugated Fisiomotriz program was effective in minimizing the pain, as well as improving respiratory muscle strength as demonstrated by the positive changes verified on MIP and MEP. Meanwhile, the apex of the study was set up on the finding that the pain should not be regarded as exclusionary factor, but an alert for a more effective attention, and for raising the search not only for the resolution of the signs and symptoms, but also, to the understanding of its cause . Thus, generating the possibility, that the eradication of the main complaints and, the consequent prevention of relapses may provide a mean for this type of person having a very active and productive social condition at old ages, in all types of formal attempt for achieving a good way of life.

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FISIOMOTRICITY OF ADEQUATE INTENSITY THE PAIN THRESHOLDS: EFFECTIVENESS ON THE PIMÁX AND PEMÁX OF AGED WOMEN WITH OSTOPOROSIS.

SUMMARY:

OBJECTIVE: to compare the level of pain, Pimáx and Pemáx in aged womem with osteoporosis before and after the application of a fisiomotriz program. **METHODOLOGY**: sample consisting of 29 aged womem, between 65 and 70 years of age, sedentary, with pain and functional limitation, divided in two groups, in accordance with a diagnosis of pain of low intensity/ pain of high intensity. The variable had been pain, Pimáx and Pemáx. For the pain evaluation it was used analogical Escala visual e, manuvacuometro for the mensury of Pimáx and Pemáx. Later they had entered a fisiomotriz program, that used four gradual levels of exercises during 16 weeks. The data before and after-program had been studied through descriptive statistics and inferencial with index it has limited for acceptance/negation settled in ALPHA ± 0.05. An Analysis of Variance of Kruskal Wallis with its respective index was used independence Qui-square (c2). **RESULTS:** It was verified changes in the improvement of the pain of all the integrant ones with significant difference, having it as resulted, the Chi2 value = 0,0006, with 1 (gl), p< 0.05. In reference to the question Pimáx Pemáx in the group of lesser pain statistical was definite for PI, in Qui-Square test a "p" = 0, 1183 and for FOOT 0, 2276, both greater that 0, 05, no longer group of lesser pain statistical was definite for PI, in Qui-Square test a "p" = 0, 0161 and for FOOT 0, 0018, both minor who 0, 05. **CONCLUSION**: the analyzed fisiomotriz program revealed all effective in the improvement of pain in the amostral group, already the answers of Pimáx and Pemáx had been significant only in the group of lesser pain.

FISIOMOTRICITÉ D'INTENSITÉ APPROPRIÉE À DES SEUILS DE DOULEUR: EFFICACITÉ SUR LE PIMÁX ET PEMÁX DE PERSONNES ÂGÉES OSTEOPORÓTICAS

RÉSUMÉ:

OBJECTIF: comparer le niveau de douleur, Pimáx et Pemáx dans des personnes âgées osteoporóticas avant et après l'application d'un programme fisiomotriz **MÉTHODOLOGIE**: échantillon constitué de 29 personnes âgées, entre 65 et 70 ans d'âge, sédentaires, avec douleur et limitation fonctionnelle, divisés dans deux groupes, conformément à un diagnostic de douleur de basse intensité douleur de haute intensité. Les variables ont été douleur, Pimáx et Pemáx. Pour l'évaluation de douleur s'utilise Escala analogique visuelle et, manuvacuometro pour la mensuration de Pimáx et Pemáx. Ultérieurement adentraram un programme fisiomotriz, qui a englobé quatre niveaux progressifs d'exercices pendant 16 semaines. Les données pré et pós-programa ont été étudiées à travers statistique descriptive et inferencial avec indice limite pour acceptation/négation fixée dans ALPHA ± 0.05. S'est utilisée une Analyse de Variance de Kruskal Wallis avec son respectif indice Qui-quadrado d'indépendance (c2). **RÉSULTATS**: Il s'est vérifié des changements à l'amélioration de la douleur des tous intégrants avec significative différence, en ayant comme en résultant, la valeur Chi2 = 0,0006, avec 1 (gl), p< ; 0.05.Quanto à la question Pimáx Pemáx dans le groupe de plus grande douleur a statistiquement été définie pour PI, à essai Qui-Quadrado un « p » = 0, 1183 et pour PIED 0, 2276, tous les deux plus grand que 0, 05, déjà dans le groupe de moindre douleur statistiquement a été défini pour PI, à essai Qui-Quadrado un « p » = 0, 0161 et pour PIED 0, 0018, tous les deux mineurs qui 0, 05. **CONCLUSION**: le programme fisiomotriz analysé s'est montré de l'argent liquide dans l'amélioration de la douleur dans tout le groupe amostral, déjà les réponses de Pimáx et Pemáx ont été significatif seulement dans le groupe de moindre douleur.

FISIOMOTRICIDAD DE INTENSIDAD ADECUADA LOS UMBRALES DEL DOLOR: EFICACIA EN EL PIMÁX Y EL PEMÁX DEL ENVEJECIDO DE LOS OSTEOPORÓTICAS.

RESUMEN:

OBJETIVO: para comparar el nivel del dolor, de Pimáx y de Pemáx en osteoporóticas envejecidos antes y después el uso de una metodología del programa del fisiomotriz. **METODOLOGÍA:** muestree consistir en 29 envejeció unos, entre 65 y 70 años de la edad, de sedentario, con el dolor y la limitación funcional, divididos en dos grupos, de acuerdo con una diagnosis del dolor del dolor de la intensidad reducida de la intensidad alta. El 0 variable había sido dolor, Pimáx y Pemáx. Para la evaluación del dolor era Escala analógico usado e visual, manuvacuometro para el mensuração de Pimáx y Pemáx. Más adelante ellos adentraram un programa del fisiomotriz, ese englobou cuatro niveles graduales de ejercicios durante 16 semanas. El pago diario y el después-programa de los datos habían sido estudiados con estadística descriptiva e inferencial con índice que se ha limitado para la aceptación/la negación colocadas en el ± 0.05 de la ALFA. Un análisis de la variación de Kruskal era Wallis usado con su Qui-cuadrado respectivo de la independencia del índice (c2). **RESULTADOS**: Cambios verificados uno en la mejora del dolor todos los integrant con la diferencia significativa, teniendo sí mismo según lo resultado, el valor Chi2 = 0.0006, con 1 (gl), el p< 0.05.Quanto a la pregunta Pimáx Pemáx en el grupo de un dolor más grande estadístico era definido para el pi, en prueba del Qui-Cuadrado un "p" = 0, 1183 y para el PIE 0, 2276, ambos mayores ese 0, 05, el grupo de menos dolor estadístico era no más definido para el pi, en prueba del Qui-Cuadrado un "p" = 0, 0161 y para el PIE 0, 0018, ambos el menor de edad que 0, 05. **CONCLUSIÓN:** el programa del fisiomotriz analizado reveló todos eficaces en la mejora del dolor en el grupo amostral, ya las respuestas de Pimáx y Pemáx había sido significativo solamente en el grupo de poco dolor.

FISIOMOTRICIDADE DE INTENSIDADE ADEQUADA A LIMIARES DE DOR: EFICÁCIA SOBRE A PIMÁX E PEMÁX DE IDOSAS OSTEOPORÓTICAS

RESUMO:

OBJETIVO: comparar o nível de dor, Pimáx e Pemáx em idosas osteoporóticas antes e depois da aplicação de um programa fisiomotriz **METODOLOGIA**: amostra constituída de 29 idosas, entre 65 e 70 anos de idade, sedentárias, com dor e limitação funcional, divididas em dois grupos, de acordo com um diagnóstico de dor de baixa intensidade/ dor de alta intensidade. As variáveis foram dor, Pimáx e Pemáx. Para a avaliação de dor utilizou-se a Escala analógica visual e, manuvacuometro para a mensuração de Pimáx e Pemáx. Posteriormente adentraram um programa fisiomotriz, que englobou quatro níveis progressivos de exercícios durante 16 semanas. Os dados pré e pós-programa foram estudados através de estatística descritiva e inferencial com índice limite para aceitação/negação fixado em ALFA ± 0.05. Utilizou-se uma Análise de Variância de Kruskal Wallis com o seu respectivo índice Qui-quadrado de independência (c2). **RESULTADOS**: Verificou-se mudanças na melhora da dor de todas as integrantes com significativa diferença, tendo-se como resultado, o valor Chi2 = 0.0006, com 1 (gl), p< 0.05.Quanto ao quesito Pimáx Pemáx no grupo de maior dor estatisticamente ficou definido para PI, em teste Qui-Quadrado um "p" = 0, 1183 e para PE 0, 2276, ambos maior que 0, 05, já no grupo de menor dor estatisticamente ficou definido para PI, em teste Qui-Quadrado um "p" = 0, 0161 e para PE 0, 0018, ambos menor que 0, 05. **CONCLUSÃO**: o programa fisiomotriz analisado mostrou-se efetivo na melhora da dor em todo o grupo amostral, já as respostas de Pimáx e Pemáx foram significantes apenas no grupo de menor dor.