91 - IMPLEMENTATION OF A PROGRAMME OF PILATES EXERCISES IN SOIL IN PARKINSONIAN

CASSIO HARTMANN;
MARIANE DUARTE NEVES;
MAYRA MELO ROLIM;
ARNALDO TENÓRIO DA CUNHA JÚNIOR;
LUÍS CARLOS BARBOSA;
JOÃO CARLOS LOPES BEZERRA;
Universidade Potiguar, Mossoró, Rio Grande do Norte
jclbezerra@gmail.com

INTRODUCTION

Parkinson's disease (PD), first described in 1817 by Dr. James Parkinson, affects mostly elderly and males. The peak incidence occurs between 50 and 70 years old, but may also be present early on before age 40. It is estimated an average of 15-20 cases per 100 000 inhabitants per year, and that in 2020 the world will have 40 million people with the disease. (RUBERT; KINGS; Esteves, 2007; STICK; MEDEIROS; STRIEBEL, 2011; Massano, 2011; ANDRADE; SILVA; CORSO, 2010) .

This consists of a neurodegenerative disease and idiopathic where the black substance in the brain undergoes a progressive loss of dopaminergic cells, affecting the production of the neurotransmitter dopamine, which leads to damage of the modulation movement. The disease is characterized by motor frequent disorders such as bradykinesia, hypokinesia, rigidity, resting tremor, orthostatic instability, and in some cases affects cognition. The etiology is unknown, but studies say could be related to stress, genetics, exposure to infectious and toxic environments, and aging. (RUBERT; KINGS; Esteves, 2007; STICK; MEDEIROS; STRIEBEL, 2011; Massano, 2011; Neres; RODRIGUES; AVERSI - FERREIRA, 2009).

Among the variety of treatment methods used in the treatment of PD, Pilates stands showing beneficial results. This method was devised by German Joseph Hubertus Pilates, and works the mind and body through physical exercises that teach the practitioner to respect and know your body. Pilates can be used in conditioning, prevention and rehabilitation providing postural control, strength, flexibility, muscle balance, awareness and perception of body movement. (Lima et al, 2009; Borragine et al , 2010) .

The symptoms of PD directly influence the flexibility, mobility, strength and balance leading to frequent falls, difficulty socializing, inactivity, reduced muscle strength, tendency to immobility and inability to orthostatism decreasing the quality of life of this population. Faced with this problem, the Pilates method in soil is needed in the rehabilitation of these individuals. From the foregoing, the following question is raised: what are the purposes of Pilates on the ground in PD?

The present study has as main objective to analyze the applicability of the Pilates method on the ground in individuals with PD. The specific objectives of the study are: (a) evaluate the flexibility of PD before and after application of the Pilates method in soil , (b) assess the quality of life before and after application of the Pilates method in soil, (c) measure the strength in PD before and after applying the Pilates method in soil, and (d) assess the balance of PD before and after application of the Pilates method in soil.

METHODOLOGY

Descriptive study comprised a convenience sample of 8 individuals registered at the Clinical School Campus UnP Mossley , inserted in the inclusion criteria was performed: medical diagnosis of Parkinson's disease, performing gait orthosis without assistance or prosthesis, no change in speech that would prohibit communication, lack of change in cognition, agree to the terms of consent. The enrolled patients were excluded on the following exclusion criteria: missing four days in a row to care; present underlying diseases, musculoskeletal, metabolic and hemodynamic changes that preclude the achievement of the proposed exercises, and submit a score less than 24 points on the Mini-Mental State Examination (MMSE), with 1 individual excluded from the study according to the exclusion criteria relating to absences. Thus the survey totaled 7 individuals, males and 5 females with a mean age of 62.

The study was approved by the Ethics and Research University of Rio Grande do Norte , under number 248/2010 opinion , in compliance with Resolution 466/12 of the Ministry of Health and the declaration of Helsinken 1975.

Volunteers were presented to the term of free and informed consent (IC) containing the research objectives as well as their risks and benefits, they agreed and signed. Initially, a kinetic- functional evaluation was performed by applying an evaluation form and the following questionnaires and tests: Mini - Mental State Examination (MMSE) Stages Modified Hoehn and Yahr (see Annex D) PDQ - 39 (Parkinson's Disease Questionnaire -39) (see Annex E), time Up and Go (TUG), turnover time of 360 º, sit and reach test, elbow flexion in 30 seconds, up from a chair in 30 seconds test, one-leg support . Then a program of Pilates exercises on the ground at the Clinical School UNP Campus Mossley was applied during the period from March 18 to May 22, 2013, on Mondays and Wednesdays, totaling 20 calls with 1 hour duration each between 08:00 and 09:00.

At the end of the study the patients were reassessed respecting the same criteria as the initial assessment and the results were analyzed to describe the effects of the Pilates method in soil. For the safety of participants during the study, it had a defibrillator and professional rescuers in case of any complication during the exercises. Survey participants were benefited as the physical and functional performance, quality of life and perform daily life activities.

The MMSE is a 19 -scale tests that assesses orientation to time and space, attention, memory , calculation, language and ability to copy a drawing . The maximum score is 30 points, 30-24 points suggests the absence of cognitive impairment, the average 23-18 points suggests cognitive impairment and severe cognitive impairment 17-0. (MOTA; PINTO; BEZERRA, 2011).

The questionnaire Internships Modified Hoehn and Yahr evaluates the overall condition of PD from a scale that describes the clinical dysfunctions of PD. In this evaluation the severity of the disease is achieved through the signs and symptoms indicating the degree of disability of an individual that will be rated in the following stages: 1-3 mild to moderate disability, severe disability 4-5. (MOTA; PINTO; BEZERRA, 2011).

The PDQ -39 is a questionnaire that assesses the quality of life in Parkinson's through 39 questions being fragmented into 8 categories, constituting 10 items on mobility, 6 items on activities of daily living, 6 items on emotional well-being, about 4 items stigma, 3 items about social support, 4 items on cognition, communication, and 3 items on 3 items about bodily discomfort. The questionnaire presents 5 answer choices which represent a specific score (0 - never, 1 - occasionally, 2 - sometimes, 3 - often 4 or always impossible for me). (MOTA; PINTO; BEZERRA , 2011; NAVARRO - PETERNELLA ; MARCON 2012) .

The TUG assesses balance, risk of falls and functional mobility. Will be timed and recorded the time it takes the individual to stand up from a chair with arm movements, wandering along a distance of 3 meters with speed and normal shoes,

turn around and return to the same sitting chair. It is also counted the number of steps, so long as they are proportionate to the risk of falls. A score of 10 seconds is normal for healthy individuals between 11 and 20 seconds is within normal limits for frail elderly or individuals with disabilities and more than 20 seconds indicates impaired functional mobility and high risk of falls. Finally it was time to be timed 360 ° turn. (CANDIDO et al, 2012; CHRISTOFOLETTI et al, 2012; MOTA; PINTO; BEZERRA, 2011).

The sit and reach test (sit-and -reach test) aims to measure the flexibility of the hamstring muscles and the muscles of the lumbar region . This test can be performed on the bank of Wells where the individual is positioned sitting on the floor with the soles of your feet in contact with the front edge of the seat, the extended knees and hips flexed. Then the therapist asks the individual to perform a trunk flexion by moving the scalimeter to its maximum limit, which will retrieve a value expressed in centimeters (cm). (PETREÇA; BENEDETTI and Silva, 2011).

Elbow flexion test in 30 seconds to assess the strength of upper limbs performed with the dominant limb , starting with the elbow in extension and flexion with performing dumbbell 2kg to 4kg for men and women writing down how many reps patient can perform at a time 30 seconds. Of rising from a chair in 30 seconds to assess the strength of the lower limbs , out of a chair with your feet flat on the floor and arms folded against his chest trial enrolls the patient performs many reps in 30 seconds. (SANTOS; Rabelo, 2008).

One foot in the test is performed a tag to 2 meters from the patient at the time of their eyes. The patient is asked to put his hands on her waist and raise one leg by flexing the knee. It should be timing the maximum time of thirty seconds in that position or until the patient off balance , noting the best value achieved in each Member after the test three times on each leg. (REBELATTO et al, 2008).

The program of Pilates exercises performed solo with patients includes active stretching of the upper trapezius for 30 seconds; cervical warming, arms arcs (scapular heating), bent knee fallout ; bridg evolved to bridg with scroll feet and one leg crossed ; open the book evolved with the use of elastic bandage on hands; side kick in extension, abduction and adduction; lift side; swan dive evolving to the swan-dive; quadruped with opposing forces stretching cross side chain; spine stretch with Swiss Ball; spine twist; mermaid; fortalecimeno triceps with elastic band or halter, active stretching of hamstrings in standing position, squat parallel and external rotation with Swiss ball. All exercises were performed in a series of ten repetitions. (SALGADO; CUNHA; Carneiro, 2007).

Swiss Gymnic Ball, Thera - Band, Dumbbells, Roller Cone large plastic tape measure, stethoscope and Premium Tensiometer: to practice the tests and calls the use of the following materials purchased by the authors and the administration requested the school clinic UNP took bank, Wells Cardiomed.

After the completion of the application subjects were reassessed and the converted data grouped statistics in tables presented as mean and standard deviation. Applying the test of Shapiro-Wilk normality, to a value of P = 0.05, data were homogenous being applied in the Student paired t test.

In all statistical tests was considered a significance level of α 0.05. To prepare the database as well as for statistical analysis the Statistical Package for Social Science (SPSS), Chicago, IL, USA, version 20.0 software was applied.

RESULTS AND DISCUSSION

The study sample had a mean of 26.42 points on the MMSE representing an absent cognitive impairment, and disease stage with an average of 2.75 according to the Stages Modified Hoehn and Yahr being classified as mild to moderate.

Paired Samples Test

	Paired Differences					t	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
PDQ391 - PDQ392	4,285	25,506	9,640	-19,303	27,875	,445	,672
TUG1 - TUG2	-7,614	31,471	11,895	-36,720	21,492	-,640	,546
NumPass1 - NumPass2	2,428	4,157	1,571	-1,416	6,273	1,545	,173
Flex1 - Flex2	-7,214	6,466	2,444	-13,195	-1,233	-2,952	,026*
TGir1 - TGir2	1,282	1,424	,538	-,034	2,599	2,384	,055
EquiD1 - EquiD2	-5,600	7,622	2,881	-12,649	1,449	-1,944	,100
EquiE1 - EquiE2	-3,942	4,458	1,685	-8,066	,180	-2,340	,058
ForMS1 - ForMS2	-2,714	2,497	,944	-5,024	-,404	-2,875	,028*
ForMI1 - ForMI2	-2,571	1,988	,751	-4,410	-,732	-3,422	,014*

Source: Survey data *p<0.05

In the analysis of the PDQ-39 study group average shows improvement as the perception of their quality of life, although it has not shown significant results (p = 0.672). But the study of RC et al (2007) where the same questionnaire was

applied in PD, reports that they have a lower quality and life as dimensions related to physical aspects of the disease such as mobility and ADLs. (KEYS; MITRE; LIBERATO 2011) evaluated the quality of life of PD patients who underwent a physiotherapy program group through questionnaires PDQ - 39 and PSN, which showed significant results only in the PSN (Notthingham Profile of Health), the author states that despite the PDQ -39 to be specific to PD, it has a greater degree of difficulty in their understanding of the issues hindering the participant may be low schooling .

Regarding the TUG group presented results of p = 0.546 at the time of the route of the march and p = 0.173 for the number of steps and do not represent significant values . But the group had improvements as in the study of CHRISTOFOLETTI et al (2010) who applied exercises for balance, strength, coordination, flexibility and cognition, presenting important beneficial results on the balance, rated by TUG. In the study by KEYS, MITRE; LIBERATO (2011) where a physical therapy program was conducted in PD, there was a statistically significant improvement between the initial and final average TUG after the program.

As the flexibility of the hamstring muscles of the patients experienced significant results (p = 0.026), improving performance in the sit and reach the bank of Wells test. The results corroborate LIMA et al (2009) reports that the Pilates back flexibility as benefits in PD patients, facilitating the realization of their functional activities for as long as possible. MIRANDA; MORAL (2009) applied the Pilates method in healthy female subjects with improvement of the flexibility of the hamstrings over a similar application to the present study. MEDEIROS et al (2009) also conducted a study of Pilates over a similar application, focusing on the flexibility of the hamstring muscles of patients with lumbar disc herniation and found statistically significant improvements in form, and the results of this research.

The turnover time of 360° did not reach statistical significant results, but getting approached since p = 0.055, showing improvements in the balance as well as in support of uniopodal test. KEYS, MITRE; LIBERATO (2011) applied the TDFM (Physical Performance Test Modified) in parkinsonian before and after a program of physiotherapy and one of the tasks that constitute it rotate 360°, after the implementation of the program was not obtained significant result found , as with the present study . In relation to support right -leg test there was a better, but not significant (p = 0.100). As for the left leg support also was not significant (p = 0.058), but group improved test performance on revaluation of that member. Unlike this study, MAYER; LOPES (2011) claim that there was significance in balance found in the leg stance test, after application of the Pilates method in elderly. The same author reports that in his study, the results were more evident in the left lower limb, which agrees with the present study. The benefits found in these tests agree with the study by Santos (2011) which states that Pilates benefits back into balance through muscle strengthening, proprioceptive stimulation, flexibility and postural stabilization, and these factors are related to loss of balance.

As the strength this study achieved significant improvements p = 0.028 in the elbow flexion test in 30 seconds and p = 0.014 in rising from a chair in 30 seconds test. The sample consists of elderly parkinsonian where Pedrinelli; GARCEZ - HELM, Noble (2009) argue that the elderly population has a reduced mass, muscle strength and power by selective loss of type II fibers, making it difficult to performing basic activities as getting up from a chair. "The present study has shown itself capable of promoting strength gain through the Pilates method even in participants with this profile. MAYER; LOPES (2011) claim that there were significant improvements in strength upper and lower limbs, after applying the Pilates method in elderly as well as the results of the present study .

According to Lima et al (2009) a program of Pilates for patients with Parkinson's should contain scapular humeral rhythm exercises integrating the mobility of the spine, hip and spine mobilization, and exercises that challenge balance and coordination, agreeing with the exercise program the Pilates method in applied soil in the present study group.

FINAL

The study was effective in applying a repertoire of Pilates exercises on the ground for PD, showing significant results in terms of flexibility and muscle strength in research participants, and the benefits of static and dynamic balance acquired and improved quality of life.

Further research is needed on the Pilates method in PD due to lack of literature on this subject, suggesting a larger sample.

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Rua José Lourenço de Albuquerque nº 515 apto 905
Bairro: Jatíúca
Maceió/Alagoas
CEP: 57035-630

IMPLEMENTATION OF A PROGRAMME OF PILATES EXERCISES IN SOIL IN PARKINSONIAN

ABSTRACT

Parkinson's disease (PD) is a neurodegenerative disease affecting the substantia nigra, affecting the production of the neurotransmitter dopamine, damaging the modulation of movement. The disease is characterized by bradykinesia, hypokinesia, rigidity, resting tremor, postural instability and in some cases affects cognition. The prevalence is higher in older people and males. The present study shows the functional changes of PD and discusses the Pilates method, intending to analyze the effects of this method on the ground in flexibility, quality of life , strength and balance in PD. The study was composed of 7 individuals with PD, which underwent a review before and after the implementation of a program of Pilates exercises on the ground. The questionnaires wer: MMSE, Internships Modified Hoehn and Yahr and PDQ -39. The tests applied were: TUG, time 360°, sit and reach, elbow flexion in 30 seconds, up from a chair in 30 seconds and one foot. The study proved to be very effective in implementing the Pilates method in PD, obtaining significant statistical results as strength and flexibility, as well as to balance the benefits and quality of life.

KEYWORDS: Parkinson's Disease, Exercise, Flexibility, Strength.

MISE EN ŒUVRE D'UN PROGRAMME DE PILATES EXERCICES DANS LE SOL EN PARKINSONIENS

RÉSUMÉ

La maladie de Parkinson (PD) est une maladie neurodégénérative qui affecte la substance noire, ce qui affecte la production de la dopamine, un neurotransmetteur, d'endommager la modulation de mouvement. La maladie est caractérisée par la bradykinésie, hypokinésie, la rigidité, des tremblements au repos, une instabilité posturale et dans certains cas affecte la cognition. La prévalence est plus élevée chez les personnes âgées et les hommes. La présente étude montre les changements fonctionnels de PD et discute de la méthode Pilates, avec l'intention d'analyser les effets de cette méthode sur le terrain de la flexibilité, de la qualité de la vie, la force et l'équilibre dans la M. L'étude était composée de 7 personnes avec PD, qui a subi un examen avant et après la mise en œuvre d'un programme d'exercices de Pilates sur le terrain. Les questionnaires étaient: MMSE, Stages de modification Hoehn et Yahr et PDQ-39. Les tests utilisés étaient: TUG, le temps à 360°, s'asseoir et d'atteindre, la flexion du coude en 30 secondes, d'une chaise en 30 secondes et un pied. L'étude s'est avérée très efficace dans la mise en œuvre de la méthode Pilates dans la MP, l'obtention des résultats statistiques significatifs que la force et la souplesse, ainsi que d'équilibrer les avantages et la qualité de vie .

MOTS-CLÉS: maladie de Parkinson, l'exercice, Souplesse, Force.

IMPLEMENTACIÓN DE UN PROGRAMA DE EJERCICIOS PILATES EN SUELO EN PARKINSONIANOS

RESUMEN

La enfermedad de Parkinson (EP) es una enfermedad neurodegenerativa que afecta a la sustancia negra, que afecta a la producción de la dopamina, un neurotransmisor, dañando la modulación de movimiento. La enfermedad se caracteriza por la bradicinesia, hipocinesia, rigidez, temblor de reposo, inestabilidad postural y en algunos casos afecta la cognición. La prevalencia es mayor en las personas de mayor edad y los machos. El presente estudio muestra los cambios funcionales de la EP y discute el método Pilates, con la intención de analizar los efectos de este método sobre el terreno en la flexibilidad, la calidad de vida, fuerza y equilibrio en la EP. El estudio se compone de 7 personas con la EP, que se sometió a un examen antes y después de la implementación de un programa de ejercicios de Pilates en el suelo. Los cuestionarios fueron: MMSE, Internships de Hoehn y Yahr Modificado y PDQ- 39. Las pruebas aplicadas fueron: TUG, tiempo de 360°, y llegar a sentarse, la flexión del codo en 30 segundos, levantarse de una silla en 30 segundos y un pie. El estudio demostró ser muy eficaz en la aplicación del método de Pilates en la EP, la obtención de resultados estadísticos significativos como fuerza y flexibilidad, así como para equilibrar los beneficios y calidad de vida.

PALABRAS CLAVE: Enfermedad de Parkinson , Ejercicio, Flexibilidad, Fuerza

APLICAÇÃO DE UM PROGRAMA DE EXERCÍCIOS DE PILATES EM SOLO EM PARKINSONIANOS

RESUMO

A Doença de Parkinson (DP) é uma doença neurodegenerativa que compromete a substância negra, afetando a produção do neurotransmissor dopamina, prejudicando a modulação do movimento. A patologia é caracterizada por bradicinesia, hipocinesia, rigidez, tremor de repouso, instabilidade postural e em alguns casos afeta cognição. A prevalência é

maior em pessoas idosas e do sexo masculino. O presente estudo mostra as alterações funcionais da DP e discute sobre o método Pilates, pretendendo analisar os efeitos desse método em solo na flexibilidade, qualidade de vida, força e equilíbrio de parkinsonianos. O estudo foi composto por 7 indivíduos portadores de DP, os quais foram submetidos a uma avaliação antes e após a aplicação de um programa de exercícios do método Pilates em solo. Os questionários aplicados foram: MEEM, Estágios Modificados de Hoehn e Yahr e PDQ-39. Os testes aplicados foram: TUG, tempo de giro de 360°, sentar e alcançar, flexão de cotovelo em 30 segundos, levantar de uma cadeira em 30 segundos e apoio unipodal. O estudo mostrou-se bastante eficaz na aplicação do método Pilates em parkinsonianos, obtendo resultados estatísticos significativos quanto a força e flexibilidade, além dos benefícios quanto ao equilíbrio e a qualidade de vida.

PALAVRAS-CHAVE: Doença de Parkinson; Exercício; Flexibilidade; Força.