33 - EVALUATION OF BODY FLEXIBILITY AND FUNCTIONAL INDEPENDENCE IN INDIVIDUALS WITH SPINAL CORD INJURY: BASKETBALL ON WHEELS

LETÍCIA LEIDENS
CRISTINA HAMERSKI ROMERO
Faculdade Assis Gurgacz-FAG, Cascavel-PR, Brasil
Letynha_89@hotmail.com

INTRODUCTION

According to World Health Organization – (WHO), 10% of the population carries some form of physical, mental or sensory impairment. In Brazil, the number of disabled people is over thirteen million. Research shows that the number of disabled in Brazil results from violence and accidents at work, and the disabilities caused by spinal cord injury committed locomotion, in whole or in part, and focus on the spine, injuring it and causing loss function and may cause the individual to be a quadriplegic or paraplegic (STOKES, 2000).

The loss of functional capacity or ability can be defined as any restriction or loss of ability to perform daily tasks or activities considered normal for human daily life. It is characterized by a deficiency in the performance of an activity or conduct, may be temporary or permanent, reversible or irreversible, progressive or not (BORGES, 2006).

Field-Fote (2000), noted that the proposed treatment of individuals with motor spinal cord injury should change, because the marrow suffers neuroplasticity. Thus, Sampaio et al. (2001) reported that the therapeutic process started to be complemented by physical activity, noting significant increases in strength, aerobic power, coordination, cardiopulmonary function, balance and flexibility.

Spinal cord injury rehabilitation requires a carrier of your lifestyle and limitations that physical therapy can be minimized by giving it more independence to these patients (SOUZA, 1994).

As a means of rehabilitation, treatment and recreation, sport has helped patients with spinal cord injuries in the restoration and maintenance of physical and mental activity and confidence. The sport has adapted to the poor has become a fun and enjoyable alternative, contributing thus to the rehabilitation of the physically disabled person (GUTTMANN, 1981).

The sport also seems suited to contribute to the development of new functional skills, it requires a good body control and agility movements, thus promoting flexibility and therefore better functional independence due to a better control of body muscles. The objective of this study is to assess body flexibility and functional independence in patients with spinal cord injury before and after basketball practice on wheels.

MATERIALS AND METHODS

The present study is to be cause-effect, longitudinal and exploratory. The population consisted of 8 male patients suffering from traumatic spinal cord injury complete or incomplete, wheelchair users, the project participants "In Action" (Basketball on Wheels), which happens in the gym FAG - Faculdade Assis Gurgacz.

Inclusion criteria were: Patients diagnosed with Spinal Cord Injury and Neurological physiotherapy diagnosis of paraplegia, regardless of etiology and medical clearance for physical exercise; Patients who undertook to sign a consent form Clarification Free unpaid and so for voluntary participation in research.

Exclusion criteria were: Do not sign a consent form Free Enlightenment, and patients who do not have medical clearance for physical activity.

This study was conducted from April 2011 to October 2011. The group responsible for this research was composed of the responsible researcher and collaborator Cristina Romero, academic course of Physical Therapy, responsible for collecting and survey data. The project is with the last academic year of Physical Therapy and the researcher responsible. Participants were evaluated at the beginning of the activities and after six months of completion of the games, totaling 24 meetings. Two important factors were evaluated, and they, flexibility of the upper body, through the ING brand an inclinometer, which measures the movements of right lateral flexion, lateral flexion left, and bilateral body rotation in sitting posture, with knees at 90° and flexion and extension of the upper body posture in bed, as well as by the functional independence scale (MIF) originated and expanded by the Department of Rehabilitation Medicine, State University of New York-Buffalo, and validated into Portuguese by a group of medical researchers, physiatrists, Division of Rehabilitation Medicine at HC FMUSP, in an article published by Riberto et al. (200I) in the journal Acta physiatry, Volume 8, Number 1, April 2001. Project activities took place once a week (Wednesday, 9:00 to 11:00).

Active exercises were performed for stretching and strengthening exercises, training techniques with the rules of the game and the game specifically with the division of the respective teams. It was part of the training activities also balance and coordination, and training on how to fall and get up during the games.

RESULTS

According to the proposed methodology evaluated the patients responded to the question of scale items MIF (functional independence scale) translated and validated in Brazil by a group of researchers physiatrists (2001), used in order to assess the functional independence. Below is the results table, with items numbered 1 (a) their assessment before the practice of sport (April 2011) and the numbered items with two (2) their assessment after practice sports adapted (October, 2011).

Table 1: Results of the evaluation of functional independence scale before (1) and after (2) practicing basketball on wheels:

Feedinf 2	0	0	0	0	0	0	8 (100%)	0
Personal Hygiene	0	0	0	0	0	3 (37,5)	5 (62,5)	0
Personal Hygiene 2	0	0	0	0	0	8 (100%)	0	0
Bath 1	0	1 (12,5%)	0	0	4 (50%)	3 (37,5%)	0	0
Bath 2	0	0	0	0	0	0	8 (100%)	0
Dress met. Sup. 1	0	0	0	3 (37,5%)	4 (50%)	1 (12,5%)	0	0
Dress met. Sup. 2	0	0	0	0	0	3 (37,5%)	5 (62,5%)	0
Dress met. Inf. 1	0	0	0	4 (50%)	3 (37,5%)	1 (12,5%)	0	0
Dress met. Inf.2	0	0	0	0	0	4 (50%)	4 (50%)	0
Use the Toilet. 1	2 (25%)	0	0	0	2(25%)	4(50%)	0	0
Use the Toilet. . 2	0	0	0	0	0	1 (12,5%)	7 (87,5%)	0
Urine Control 1	8 (100%)	0	0	0	0	0	0	0
Urine Control 2	8 (100%)	0	0	0	0	0	0	0
Stool Control 1	8 (100%)							
Stool Control 2	8 (100%)	0	0	0	0	0	0	0
Transf. To bed to chair 1	1(12,5%)	0	0	0	2 (25%)	3 (37,5%)	2 (25%)	0
Transf. To bed to chair 2	0	0	0	0	0	1(12,5%)	7 (87,5%)	0
Transf. bathtub/shower 1	0	0	0	2 (25%)	2 (25%)	3 (37,5%)	1 (12,5%)	0
Transf. bathtub/shower 2	0	0	0	0	0	0	2 (25%)	6 (75%)
Wheelchair mobility 1	0	0	1 (12,5%)	1(12,5%)	1 (12,5%)	4 (50%)	1 (12,5%)	0
Wheelchair mobility 2	0	0	0	0	0	1 (12,5%)	7 (87,5%)	0
Mobility in ramps 1	0	0	0	2 (25%)	1 (12,5%)	2 (25%)	3 (37,5%))	0
Mobility in ramps 2	0	0	0	0	0	2 (25%)	6 (75%)	0
Understending 1	0	0	1(12,5%)	2 (25%)		1 (12,5%)	4 (50%)	0
Understending 2	0	0	0	0	0	3(37,5%)	5 (62,5%)	0
Expression 1	0	0	0	0	0	0	8 (100%)	0
Expression 2	0	0	0	0	0	0	8 (100%)	0
Social Interaction 1	0	0	0	0	1 (12,%)	6 (75%)	1 (12,5%)	0
Social Interaction 2	0	0	0	0	0	0	8 (100%)	0
Problem Solving. 1	0	0	0	0	2(25%)	3(37,5%)	3 (37,5%)	0
Problem Solving. . 2	0	0	0	0	0	0	8 (100%)	0
Memory 1	0	0	0	0	0	1	7 (87,5%)	0
Memory 2	0	0	0	0	0	0	8 (100%)	0

The following tabulated results were analyzed by the Wilcoxon test of significance, which should present the results to lower values (<0.05) to prove significance. The following are the results:

Feeding (1.00), personal hygiene (0.083), bath (0.010), dressing the upper body (.010), dressing the lower body (.010), use of toilet (0.017), urine control (1.00), control feces (1.00), transfer to bed / chair (0.041), transfer to tub / shower (0.016), locomotion in a wheelchair (0.014), locomotion on slopes (0.038), communication / comprehension (.066), communication / expression (1.00), social interaction (0.11), problem solving (0.38), memory (0.31).

According to the proposed methodology evaluated the patients also underwent evaluation of body flexibility, which was measured with the aid of an inclinometer brand Sany that measured the active range of motion of patients, and tabulated in SPSS 15.0. Below is the results table, with items numbered 1 (one) their assessment before the practice of sport (April 2011) and the numbered items with 2 (two) their assessment after practice sports adapted (October, 2011).

Table 2: Results of the evaluation of functional independence

	AVERAGE 1	AVERAGE 2	DESVIO PADRÃO 1	DESVIO PADRÃO 2
Lateral Flexion Left	12,3°	17,6°	4,3	4,5
Lateral Flexion Rigth	11,3°	15,2°	4,5	5,8
Extension	3,0°	6,1°	2,5	3,1
Flexion	15,2°	22,7°	11,9	13,3
Rotation Left	7,2°	12,6°	5,7	4,0
Rotation Rigth	7,0°	11,3°	3,8	4,8

After tabulating the data was performed using the Wilcoxon test of significance, which analyzed the significance of the data (<0.05) and showed the following results:

Left lateral flexion (0.012), right lateral flexion (0.028), length (0.010), flexion (0.018), left rotation (0.018), right rotation (0.017). Thus, it may be noted that in assessing the flexibility to meet 100% of significance.

DISCUSSION

The expectations of the patient in the treatment process beyond their perceptions of this specific moment, Ferraz (l990) and Rigolin (2001) pointed out that the patient's expectations are directed to achieve a recovery which means the effective realization of their different daily activities. The recovery of functional capacity means the expectation functional independence in the patient wants to achieve after the treatment period (BORGES, 2006). In this article we can see great satisfaction with the social reintegration and competitive spirit in the group, as well as confidence and potential, which has given them self esteem and pleasure in activities in a more independent and functional.

In a similar study conducted Marta Peres and Carlos Alberto Gonsalves (2001), in a study on the dance practice in patients with spinal cord injury found that dancing provides several benefits such as prevention of joint stiffness, muscle stimulation and coordination, physical endurance, reduction of contractures, also acts on the circulation by increasing blood flow, venous and lymphatic systems, improving the cardio-respiratory function, besides the speed gains in the management of the

wheelchair and balance and trunk flexibility . The gains and the flexibility of the trunk were similar to the proposal of basketball on wheels.

MEDOLA, (2010) states that the sport has a key role in rehabilitation: complements and extends the alternatives, encourages and develops the physical, psychological and social functional independence and favors as a whole. This study also observed favorable results in the three aspects mentioned, and there were improvements in trunk flexibility, improved social interaction of the individual participants and greater functional independence in activities of daily living.

Recent studies show that the causes of death in spinal cord injuries are approaching those of the general population with increased prevalence of cardiovascular and other diseases associated with inactivity. The effects of inactivity, such as the decrease in aerobic endurance, muscular strength and flexibility, coupled with disabilities, leading to a loss of functional capacity and independence could be partially avoided. Thus the sport has a positive impact in this group more evident and critical than in normal individuals. (GHORAYEB, 1999). Thus it was observed across this article on wheels that basketball is a means of preventing disease by immobility, bringing many benefits such as improved muscle strength, flexibility, and trunk control and consequently greater functional independence.

According to Greve, Casalis and Barros Filho (2001), unlike exercise, which requires a local or generalized effort toward physical fitness and, more importantly, the physical activity that requires the organization of series of exercises aimed at combating sedentary lifestyles and maintenance of functional independence, the movement focused on sport or athletic activity that requires overcoming the pre-requisite coordination, functional status, cardiovascular fitness and to prepare muscle join. In this study the items were not observed cardiovascular coordination and preparation, but the other items mentioned were analyzed and showed positive results.

In a study GATTI, et al (2009) shows favorable results in the issue of flexibility in individuals with spinal cord injury practicing basketball on wheels compared to the sedentary, which tested the authenticity of a scientific test of agility and flexibility, and achieve significant results. On the issue of flexibility, the group of athletes showed very significant results when compared with the sedentary group.

And SALVADOR and TARNHOVI (2002) mentioned that in relation to functional capacity, physical and social aspects, it is clear that physical activity improves independence in activities of daily living, self-esteem, decreases the negative psychological reactions, such as isolation improved mood and social as well as improved self-image, confidence, and intensifies social contacts. Many of these benefits could be analyzed in the proposed sample for basketball on wheels.

SAMPAIO et al. (2001), states that: the rehabilitation process has as one of its goals to contribute to improved self-image, self-confidence and therefore to social inclusion. Further noted that the sport leads to improved psychosocial condition, facilitating their access to regular activities in the community. Moreover, there is no physical activity without social interaction, so the sport as part of the rehabilitation process, intensifies social contacts, increasing participation in society, accelerating the social integration of patients with spinal cord injury. Thus, with the sport, the image of the injured spinal cord is modified to be associated with the potential and ability and not disability. Being one of those issues analyzed in this study across the range of functional independence (FIM) was social interaction, also with favorable outcome.

FINAL CONCLUSION

From the presented study showed that patients with spinal cord injury have limitations in performing activities of daily living a result of complications secondary to immobility and lack of trunk control.

Thus, it can be seen from this study that adapted sports promotes positive results as the functional independence of its practitioners, and in assessing the scale of functional independence was found significant results in the degree of independence in performing activities in bathroom items , dress of the upper half, lower half of dress, use toilet, making transfers to bed / wheelchair, transfer to tub / shower, walking in a wheelchair, walking on ramps, social interaction, problem solving and memory .

In the trunk flexibility, we found significant results in all movements analyzed, ie, we obtained an increase in degrees range of motion in flexion, extension, bilateral flexion and bilateral trunk rotation.

The physical changes and psychological-motor directly interfere with the functional independence of individuals with spinal cord injury. Aiming to restore or adapt partially or fully functional independence of these patients appeared showing the sport adapted to be effective in treatment, contributing to improved independence in activities of daily living participants in the sample.

Endereço para correspondência:
Rua: Felipe Henz,244, Bairro: centro, Guarujá do sul – Santa Catarina- Brasil.
CEP: 89940-000. Telefone para contato:49 -36420041/ 45-88084675.
Email: letynha_89@hotmail.com.

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EVALUATION OF BODY FLEXIBILITY AND FUNCTIONAL INDEPENDENCE IN INDIVIDUALS WITH SPINAL CORD INJURY: BASKETBALL ON WHEELS

SUMMARY

Introduction: Patients with spinal cord injury of different etiologies may have functional limitations and difficulties in carrying out their daily activities due to low trunk control and flexibility, immobility and psychological changes as a result of acceptance and reintegration. The adapted sports physical therapy along with acts intended to reduce or mitigate these limitations, the most redeeming the independence of these patients. The adapted sports shows high rates of acceptance, pleasurable activities become practitioners and to improve self-esteem, the instinct of competition, social interaction and functional capacity of these individuals. Objective: To evaluate the flexibility of the trunk and functional independence in patients with spinal cord injury before and after basketball practice on wheels. Methodology: The study consisted of 8 male patients diagnosed with neurological complete and incomplete spinal cord injury. To assess the functionality of the scale was used functional independence measure (FIM) validated in Brazil in 2001. To assess trunk flexibility, we used an inclinometer that measures brand Sany active range of motion of the patient. Results: Through this study we analyzed the results by using SPSS 15.0, and could be seen that the application of the scale (FIM) were not seen significant results only in the items: food, personal hygiene, control of urine control feces, comprehension and expression, the other items, were significant when subjected to the Wilcoxon test (<0.05). Already flexibility all items were significant. Conclusion: Through this study it can be said that the adapted sport acting in conjunction with physical therapy provided benefits in relation to functional independence and flexibility of the trunk in patients in the sample.

KEYWORDS: Basketball adapted, functional independence; flexibility.

EVALUATION DE LA FLEXIBILITE DU TRONC ET L'INDEPENDANCE FONCTIONNELLE CHEZ LES INDIVIDUS ATTEINTS DE LESION MEDULLAIRE AVANT ET APRES LA PRATIQUE DE SPORTS ADAPTES: BASKET-BALL SUR ROUES.

RÉSUMÉ

Introduction: Les patients atteints de lésions de la moelle épinière des étiologies différentes peuvent avoir des limitations fonctionnelles et des difficultés dans l'exercice de leurs activités quotidiennes à cause de contrôle du tronc bas et la flexibilité, l'immobilité et les changements psychologiques à la suite de l'acceptation et à la réinsertion. La thérapie adaptée sport physique avec les actes destinés à réduire ou d'atténuer ces limites, la plupart rédempteur de l'indépendance de ces patients. Les sports adaptés montre un taux élevé d'acceptation, des activités agréables devenir des praticiens et d'améliorer l'estime de soi, l'instinct de compétition, l'interaction sociale et la capacité fonctionnelle de ces individus. Objectif: évaluer la flexibilité du tronc et l'indépendance fonctionnelle chez les patients avec lésion de la moelle épinière avant et après la pratique de basket-ball sur roues. Méthodologie: L'étude se composait de huit patients de sexe masculin diagnostiqué avec neurologiques lésion de la moelle épinière complets et incomplets. Pour évaluer la fonctionnalité de l'échelle a été utilisée la mesure d'indépendance fonctionnelle (FIM) a validé au Brésil en 2001. Afin d'évaluer la flexibilité du tronc, nous avons utilisé un inclinomètre qui mesure large de la marque Sany active de mouvement du patient. Résultats: Grâce à cette étude nous avons analysé les résultats en utilisant SPSS 15.0, et pourrait être considéré que l'application de l'échelle (FIM) n'ont pas été vus des résultats significatifs que dans les articles: nourriture, hygiène personnelle, le contrôle de contrôle de l'urine matières fécales, de compréhension et d'expression, les autres éléments, sont importants lorsqu'il est soumis à l'épreuve de Wilcoxon (<0,05). Déjà tous les éléments de flexibilité étaient significatives. Conclusion: A travers cette étude, on peut dire que le sport adapté en liaison avec la thérapie physique procuré des avantages par rapport à l'indépendance fonctionnelle et la flexibilité du tronc chez les patients de l'échantillon.

MOTS-CLÉS: basket-ball adapté, d'une indépendance fonctionnelle, la flexibilité.

EVALUACIÓN DE LA FLEXIBILIDAD DEL TRONCO Y LA INDEPENDENCIA FUNCIONAL EN PERSONAS CON LESIÓN MEDULAR ANTES Y DESPUÉS DE LA PRÁCTICA DE DEPORTES ADAPTADOS: BALONCESTO SOBRE RUEDAS.

RESUMEN

Introducción: Los pacientes con lesión de la médula espinal de diferentes etiologías pueden tener limitaciones funcionales y las dificultades para llevar a cabo sus actividades diarias debido a la baja el control del tronco y la flexibilidad, la inmovilidad y cambios psicológicos como resultado de la aceptación y la reintegración. El deporte adaptado de terapia física, junto con las actuaciones dirigidas a reducir o mitigar estas limitaciones, la mayoría de redimir a la independencia de estos pacientes. El deporte adaptado muestra altos índices de aceptación, las actividades placenteras convertirse en practicantes y mejorar la autoestima, el instinto de la competencia, la interacción social y la capacidad funcional de estas personas. Objetivo: Evaluar la flexibilidad del tronco y de la independencia funcional de los pacientes con lesión medular antes y después de la práctica de baloncesto sobre ruedas. Metodología: El estudio consistió en 8 pacientes masculinos diagnosticados con daño neurológico médula espinal completas e incompletas. Para evaluar la funcionalidad de la escala de medida utilizada fue la independencia funcional (FIM), validado en Brasil en 2001. Para evaluar la flexibilidad del tronco, se utilizó un inclinómetro que mide la distancia de la marca Sany activa del movimiento del paciente. Resultados: A través de este estudio se analizaron los resultados mediante el uso de SPSS 15.0, y se podía ver que la aplicación de la escala (FIM) no se observaron resultados significativos sólo en los artículos siguientes: alimentos, higiene personal, control de control de la orina las heces, la comprensión y expresión, los otros elementos, fueron significativas cuando se someten a la prueba de Wilcoxon (p <0,05). Ya todos los elementos de flexibilidad fueron significativas. Conclusión: A través de este estudio, se puede decir que el deporte adaptado actuando en conjunto con terapia física proporcionan beneficios en relación con la independencia funcional y la flexibilidad del tronco en pacientes de la muestra.

PALABRAS CLAVE: baloncesto adaptado, independencia funcional y la flexibilidad.

AVALIAÇÃO DA FLEXIBILIDADE DE TRONCO E INDEPENDÊNCIA FUNCIONAL EM INDIVÍDUOS COM LESÃO MEDULAR: BASQUETE SOBRE RODAS.

RESUMO

Introdução: Pacientes com lesão medular de diferentes etiologias podem apresentar limitações funcionais como dificuldades para realizar suas atividades de vida diária em decorrência de baixo controle de tronco e flexibilidade, imobilismo e alterações psicológicas em decorrência de aceitação e reinserção social. O esporte adaptado juntamente com a fisioterapia atua com a intenção de diminuir ou amenizar tais limitações, resgatando ao máximo a independência desses pacientes. O esporte adaptado apresenta altos índices de aceitação, as atividades tornam-se prazerosas aos praticantes e melhoram a auto-estima, o instinto de competição, a interação social e a capacidade funcional desses indivíduos. Objetivo: Avaliar a flexibilidade de tronco e independência funcional em pacientes com lesão medular antes e após a prática de basquete sobre rodas. Metodologia: O estudo foi composto por 8 pacientes do sexo masculino com diagnóstico neurológico de lesão medular completa e incompleta. Para avaliar a funcionalidade foi utilizado a escala de independência funcional (FIM) validada no Brasil em 2001. Para avaliar a flexibilidade de tronco, foi utilizado um inclinômetro da marca Sany que mensura amplitudes de movimento ativas do paciente. Resultados: Através do presente estudo analisou-se os resultados por meio do programa SPSS 15.0, e pôde se constatar que na aplicação da escala (FIM) não foram observados resultados significativos apenas nos itens: alimentação, higiene pessoal, controle de urina, controle de fezes, compreensão e expressão, os demais itens, apresentaram significância quando submetidos ao teste de Wilcoxon (<0,05). Já na flexibilidade todos os itens apresentaram significância. Conclusão: Através desse estudo é possível afirmar que o esporte adaptado atuando em conjunto com a fisioterapia proporcionou benefícios em relação a independência funcional e flexibilidade de tronco nos pacientes da amostra.

PALAVRAS CHAVE: basquete adaptado, independência funcional, flexibilidade.