

## 07 - ANALYSIS OF EVALUATION PROTOCOLS FOR FUNCTIONAL INDEPENDENCE IN TRANSFEMORAL AMPUTATED PATIENTS.

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### INTRODUCTION

According to Carvalho (2003), amputation is a word derived from Latin, which means the total or partial removal of one or more limbs of the body, and the amputation of limbs can occur do to etiologies related to vascular, neuropathic, traumatic, tumor, infectious and congenital processes.

The amputation is generally feared by everyone, because it brings an image of mutilation, disability, impossibility to work and perform daily activities. Such consequences are feared by individuals who will undergo an amputation. (BOCCOLINI,2000).

Amputations are classified according to the place of the body; in lower limbs (MML) the main types are: partial foot amputation, Syme, transtibial, disarticulation of knees, transfemoral, disarticulation of hips and hemipelvectomy (BOCCOLINI, 2000). Transfemoral amputation refers to every amputation between the knee and hip articulation (CARVALHO, 2003). It can be divided into transfemoral amputation in proximal, medium and distal third (BOCCOLINI, 2000).

Nowadays, there are two systems of sockets which are more frequently used for lower limb amputees to transfemoral level, which are the quadrilateral socket and CAT-CAM (Contoured Adducted Trochanteric-Controlled Alignment Method). (CARVALHO, 2003).

The objective of prosthesis use is to rehabilitate the patient to a normal life and integrate him into the society, allowing him to move using the prosthesis, inserting a higher level of function in his daily and professional activities, as a result, having a better quality of life (SAMPOL, 1997).

After the amputation, the use of prosthesis offers a normal body image, helping the person to develop more self confidence and physical abilities and enhancing his quality of life (BARAÚNA et al, 2006).

According to Carvalho (2003), the rehabilitation of an amputee will only be concluded at the moment he is adapted to the use of the prosthesis, and with control and independence in daily, professional and recreational activities.

Actually, when the rehabilitation is understood as a dynamic, creative, progressive and educative process, whose aims are directed to the optimal functional restoration of the person, his integration to the family, to the community and to the society, by means of maximum independence in his daily life, several factors need to be evaluated, among them, the presence of multiple affections, functional independence and autonomy (DIOGO, 2003 apud RING, 1994).

An amputated patient evaluation aims to define and measure the capacities and incapacities during simple and more complex activities. The amputation is obvious and it doesn't offer diagnosis difficulties, however, the most important step is to evaluate the general state of this person and his motivation for rehabilitation. (CARVALHO, 1999).

According to Chamilian and Melo (2008), functional evaluation defines the potential and residual capacities from which means, goals and following parameters will be established for the rehabilitation process of the patients. Due to the great number of variables which can compose a functional evaluation, it is necessary to define some instruments which can serve the needs during the rehabilitation process of an amputee.

One of the most common problems found in amputation is the functional commitment that according to Rebelatto and Morelli (2004) is defined as the person's autonomy to perform daily chores, granting him the possibility of living alone at home. It's essential to evaluate the different levels of incapacity of an individual, being a fundamental goal for the adequate planning of health care. (ARAUJO et al, 2007).

For Diogo (2003), the society view of a handicapped person is altered drastically when this person shows independence for Daily Life Activities (DLAs), because it meets the social prejudice related to the social and financial burdensome that the handicapped person represents for the society. Once independence is shown, the individual shows capacity or potential to perform his social and productive role in society. The physical incapacity can be a barrier for independence when people see it like this or when the environment makes it possible.

Considering the importance in functional evaluation as a parameter for taking decisions in the treatment and social and economical reinsertion of the amputee, this study aims to identify the principal variables for the evaluation of march capacity with the prosthesis and functional independence for transfemoral amputees.

### METHODOLOGY

This research is a field study, characterized by an epidemiologic, evaluative, quantitative and transversal cut characteristic. The sample was composed by 30 patients of FAG's Integrated Clinics in Cascavel city, in Paraná State, with transfemoral amputation, who fulfilled the following inclusion criteria: being a patient of FAG's Rehabilitation Care Center, with transfemoral amputation, regardless their sex and age, having the person's permission to apply a questionnaire assured by the signature of the free will agreement document and available time to participate of the research. The data collect was accomplished through an adapted questionnaire which was elaborated through the research of evaluation protocols that presented a better indication to evaluate the capability of march with prosthesis and higher precision level to evaluate the functional independence. Therefore, three protocols of evaluation were used: Houghton Scale, Prosthetic Profile of the Amputee (PPA) and the rate of Barthel. The questionnaire was composed by 23 questions, two subjective and 21 objective ones, this questionnaire was applied by four graduating students of the last year of the Physiotherapy Course of FAG College, individually with each patient in order to clear possible doubts of the interviewees. The interview was accomplished after the signature of the free will agreement document in the institution, from Monday to Thursday in the morning shift, from August 03rd to August 31st in 2009. The data were screened and analyzed statistically through the SPSS program, version 15.0. It was accomplished multi varied descriptive analysis with the correlational matrix to check the inner consistence of the items and dimensions, sequentially it was accomplished the factorial analysis with varimax rotation to potentialization the factorial charge of the items that matched the cut point of 0.4.

### RESULTS AND DISCUSSION

According to Gottschalk (1999), the second most important cause of amputation is due to trauma, committing mainly young adults. According to Carvalho (2003) the amputation of lower limbs caused by trauma, commit mainly adolescents and young

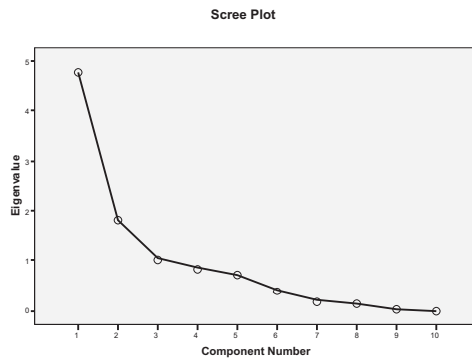
adults that are more exposed to labor accidents and accidents caused by the means of transportation, originated by the technology. It can be confirmed in this study that 45.2% of the amputees presented amputation of traumatic cause, 51.6% of them at medial level and 54.8% of them presented the phantom pain as a complication of the amputation.

We observed that out of the 30 interviewed participants 76.6% were men and 23.3% were women, whose average age of amputation was 49.6 years old (min=7,0, Max=82,0) and average use of prosthesis of 64.8 months. Nissen (1992) mentions the predominance of men, varying from 71% to 88% in his studies. The same information was seen in the study made by Diogo (2003), where 75% of the participants were men and only 25% were women.

It was accomplished the factorial analysis with a cut point factor of 0.4 (PASQUALI, 1999), who identified 3 dimensions (variables), which were also pointed by Scree Plot (figure 01), where only the dimensions that showed above the elbow curve were selected (THOMAS; NELSON, 2002) and classified as: dimension 1: capacity of marching with prosthesis, dimension 2: functional independence and dimension 3: socialization.

The identified dimensions were composed by 11 questions (items) with significant factorial charge, with a value superior to 0.4 according to Pasquali (1999) and Thomas; Nelson (2002) showed in chart 1.

Figura 1: Scree Plot



Quadro 1: Rotated Component Matrix(a)

	Component		
	1	2	3
VAR00014	,934		
VAR00015	,920		
VAR00016	,880		
VAR00017	,590		
VAR00018			,882
VAR00019	,786		
VAR00020		,809	
VAR00021	,430		,470
VAR00022		,947	
VAR00023		,947	

In the dimension number 1, 6 items were identified, from these items (14, 15, 16, 17) composed the evaluation instrument of march capacity with prosthesis and evaluation of the frequency of prosthesis use (Houghton scale) that according to Chamlian and Melo (2008), this instrument has been recommended as gold standard for the use of amputees, because most of its psychometric properties that were tested are adequate. Therefore the results that were found in this research reinforce the predictive capacity of the items for the evaluation of the march capacity with the prosthesis.

The dimension 2 identified 3 items (20, 22, 23) that contemplate the instrument for the evaluation of the functional independence during the accomplishment of the DLA's (Barthel rate), and it is frequently used in research to evaluate the functional capacity in amputees, however in a review article developed by Chamlian and Melo (2008), they affirm that it is a standardized, real and reproductive instrument, but it is not able to demonstrate changes, being considered inappropriate for the use with amputees, so, it does not contemplate capacity to evaluate march with prosthesis in amputees.

In the dimension 3, 2 items were identified (18 and 21), which compose the evaluation of the profile of socialization in amputees (Prosthetic Profile of the Amputee (PPA), which for Chamlian and Melo (2008), this questionnaire shows good psychometric properties and its use has been recommended in research with amputees.

**CONCLUSION**

Three dimensions and 11 items were identified for the sample. Therefore, through this study, it was possible to define the dimension (items) that must be contemplated in an instrument of evaluation of march capacity with prosthesis and functional independence for transfemoral amputees. (Appendix A)

According to the statistical analysis, the proposed instrument presents inner consistence and construct validation, so it is considered a trustful questionnaire and it is efficient to evaluate the march capacity with prosthesis and functional independence for transfemoral amputees.

**APÊNDICE A**

- Dimensão 1:**
- 14) Qual a sua porcentagem de utilização da prótese para caminhar?
    - a. ( ) menos que 25% ao caminhar
    - b. ( ) entre 25% e 50% para caminhar
    - c. ( ) mais de 50% para caminhar
    - d. ( ) todas as horas desde quando acorda
  - 15) Quando utiliza a prótese para caminhar?
    - a. ( ) Só quando vai ao atendimento médico e fisioterapeutico.
    - b. ( ) Só em casa, mas não para sair.
    - c. ( ) Fora de casa, em certas ocasiões.
    - d. ( ) Dentro e fora de casa, o tempo todo.
  - 16) Quando vai sair com a prótese você utiliza:
    - a. ( ) uma cadeira de rodas
    - b. ( ) usa duas muletas, duas bengalas ou o andador
    - c. ( ) utiliza 1 bengala
    - d. ( ) não usa nada
  - 17) Quando caminha em ambiente externo se sente instável quando:
    - a. ( ) caminha sobre terreno plano
    - b. ( ) caminha em terreno inclinado
    - c. ( ) caminha em terreno com pedras
    - d. ( ) Sim para qualquer seção
  - 19) Pensando nas pessoas que convivem com você, como descreveria a aceitação delas pela sua prótese?
    - 1.( ) não aceita
    - 2.( ) aceita moderadamente
    - 3.( ) aceita muito bem
    - 4.( ) aceita completamente

- 21) Como você se veste ? (Parte inferior do corpo)  
 Independente. Capaz de vestir- se e despir-se sem ajuda.  
 Necessita ajuda. Realiza todas as atividades pessoais sem ajuda mais da metade das tarefas em tempo razoável.  
 Dependente. Necessita de alguma ajuda.

**Dimensão 2:**

- 20) Como você toma seu banho ?  
 Independente. Capaz de se lavar inteiro, de entrar e sair do banho sem ajuda e de fazê-lo sem supervisão.  
 Dependente. Necessita de algum tipo de ajuda ou supervisão.
- 22) Como você vai ao banheiro ?  
 Independente. Entra e sai sozinho e não necessita de ajuda por parte de outra pessoa.  
 Necessita ajuda. Capaz de mover-se com uma pequena ajuda; é capaz de usar o banheiro. Pode limpar-se sozinho.  
 Dependente. Incapaz de ter acesso a ele ou de utilizá-lo sem ajuda maior.
- 23) Como você realiza as suas transferências (cama , poltrona , cadeira de rodas) ?  
 Independente. Não requer ajuda para sentar-se ou levantar-se de uma cadeira nem para entrar ou sair da cama.  
 Mínima ajuda. Incluindo uma supervisão ou uma pequena ajuda física.  
 Dependente necessita um apoio ou ser levantado por duas pessoas. É incapaz de permanecer sentada.

**Dimensão 3:**

- 18) Pensando nas pessoas que estão perto de você, como descreveria a aceitação delas pela sua amputação?  
 1. ( ) não aceita  
 2. ( ) aceita moderadamente  
 3. ( ) aceita muito bem  
 4. ( ) aceita completamente

- 21) Como você se veste ? (Parte inferior do corpo)  
 Independente. Capaz de vestir- se e despir-se sem ajuda.  
 Necessita ajuda. Realiza todas as atividades pessoais sem ajuda mais da metade das tarefas em tempo razoável.  
 Dependente. Necessita de alguma ajuda.

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**ANALYSIS OF EVALUATION PROTOCOLS FOR FUNCTIONAL INDEPENDENCE IN TRANSFEMORAL AMPUTATED PATIENTS.****ABSTRACT**

Amputation is a word derived from Latin that means the complete or partial removal of a limb of the body. After the amputation, the use of a prosthesis provides a normal body image, aiding the person to develop higher self esteem and physical abilities. The aim of the use of prosthesis is rehabilitate the patient to have a normal life and integrate this person to the society, enabling him to move with the use of the prosthesis. Due to the higher number of variables that can compose a functional evaluation, this study aims to identify the main variables to evaluate the march capacity with prosthesis and the functional independence for the transfemoral amputees. An epidemiologic study was accomplished at FAG's Integrated Clinics, the sample was composed by 30 patients with transfemoral amputation, who contemplated the inclusion criteria. The questionnaire was applied in August of 2009, the instrument was composed by 23 questions, 2 subjective and 21 objective ones. Three dimensions were classified in the

research as: dimension 1: march capacity with prosthesis, dimension 2: functional independence and dimension 3: socialization, and this instrument was composed by 11 items.

**KEY WORDS:** amputees, evaluation protocol, functional independence.

#### **ANALYSE DES PROTOCOLES POUR L'ÉVALUATION DE L'INDÉPENDANCE FONCTIONNELLE CHEZ LES PATIENTS AVEC UNE AMPUTATION TRANSFÉMORALE.**

##### **RÉSUMÉ**

L'amputation est un mot dérivé du latin, qui signifie une coupe partielle ou totale d'un membre du corps. Après l'amputation, l'utilisation d'une prothèse offre une image corporelle normale, en aidant l'individu à développer une plus grande confiance et les compétences physiques. L'objectif de la prothésisation est de rétablir le patient à une vie normale et à l'intégrer dans la société, permettant son mouvement à travers la prothèse. En raison du nombre élevé de variables qui peuvent faire une évaluation fonctionnelle, cette étude a l'objectif d'identifier les principales variables pour évaluer la capacité de marcher avec la prothèse et l'indépendance fonctionnelle pour les personnes amputées transfémorales. Nous avons effectué une étude épidémiologique dans les cliniques intégrées de la FAG (Faculté Assis Gurgacz) et l'échantillon comprenait 30 patients ayant une amputation transfémorale, qui ont envisagé les critères d'inclusion. Un questionnaire composé de 23 questions, 2 ouvertes et 21 fermées a été appliqué en août de 2009. Dans l'enquête a été identifié 3 dimensions classées comme suit: dimension 1: la capacité de marcher avec la prothèse, dimension 2: l'indépendance fonctionnelle et la dimension 3: la socialisation, et cet instrument est composé de 11 items.

**MOTS-CLÉS:** Amputés, indépendance fonctionnelle, protocoles d'évaluation.

#### **ANÁLISIS DE PROTOCOLOS DE EVALUACIÓN PARA INDEPENDENCIA FUNCIONAL EN PACIENTES AMPUTADOS TRANSFEROMALES.**

##### **RESUMEN**

Amputación es una palabra derivada del latín, que significa la retirada total o parcial de un miembro del cuerpo. Después de la amputación la utilización de una prótesis ofrece una imagen corporal normal, ayudando al individuo a desarrollar mayor confianza y habilidades físicas. El objetivo de la prótesis es rehabilitar al paciente para una vida normal e integrarlo a la sociedad, permitiendo su locomoción a través de la prótesis. Debido al gran número de variables que pueden componer una evaluación funcional, el presente estudio tiene por objetivo la identificación de las principales variables para la evaluación de capacidad de marcha con la prótesis y la independencia funcional para amputados transferomales. Fue realizado un estudio epidemiológico en las Clínicas Integradas FAG, la muestra fue compuesta por 30 pacientes con amputación transfemoral, que contemplaron los criterios de inclusión. Se procedió a la aplicación del cuestionario en el mes de agosto de 2009, el instrumento fue compuesto por 23 cuestiones, siendo 2 abiertas y 21 cerradas. En la investigación se identificó 3 dimensiones clasificadas como: dimensión 1: capacidad de marcha con prótesis, dimensión 2: independencia funcional y dimensión 3: socialización, siendo ese instrumento compuesto por 11 ítem.

**PALABRAS CLAVE:** amputados, protocolos de evaluación, independencia funcional.

#### **ANÁLISE DE PROTOCOLOS DE AVALIAÇÃO PARA INDEPENDÊNCIA FUNCIONAL EM PACIENTES AMPUTADOS TRANSFEROMAIS.**

##### **RESUMO**

Amputação é uma palavra derivada do latim, que significa a retirada total ou parcial de um membro do corpo. Após a amputação a utilização de uma prótese oferece uma imagem corporal normal, ajudando o indivíduo a desenvolver maior confiança e habilidades físicas. O objetivo da protetização é reabilitar o paciente para uma vida normal e integrá-lo a sociedade, permitindo a sua locomoção através da prótese. Devido ao grande número de variáveis que podem compor uma avaliação funcional, o presente estudo tem por objetivo a identificação das principais variáveis para avaliação da capacidade de marcha com a prótese e a independência funcional para amputados transferomais. Foi realizado um estudo epidemiológico nas Clínicas Integradas FAG, a amostra foi composta por 30 pacientes com amputação transfemoral, que contemplaram os critérios de inclusão. Procedeu-se a aplicação do questionário no mês de agosto de 2009, o instrumento foi composto por 23 questões, sendo 2 abertas e 21 fechadas. Na pesquisa identificou-se 3 dimensões classificadas como: dimensão 1: capacidade de marcha com a prótese, dimensão 2: independência funcional e dimensão 3: socialização, sendo esse instrumento composto por 11 itens.

**PALAVRAS CHAVE:** amputados, protocolos de avaliação, independência funcional.

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