

**146 - EVALUATION OF PHYSICAL AND FUNCTIONAL CAPACITY OF OBESE PEOPLE THROUGH 6MWT**

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**INTRODUCTION**

Obesity is an epidemic disease worldwide from the fat accumulation in the body caused by excessive and chronic consumption of high-calorie foods linked to a low energy expenditure related mainly to a sedentary lifestyle (WANDERLEY, 2010). Excess fat and body weight is associated with greater susceptibility to a number of chronic disorders that increase the morbidity and mortality rates (PERECIN, 2003).

To classify this excess weight, a standard is used, which is the Body Mass Index (BMI), which assesses the anthropometric and nutritional profile of adults by calculating the weight in kg divided by height squared. From the results can be classified as overweight 25.0 to 29.9 (kg / m<sup>2</sup>), obesity grade I - moderate 30 to 34.9 (kg / m<sup>2</sup>), class II obesity - severe from 35.0 to 39.9 (Kg / m<sup>2</sup>), class III obesity - morbid > 40.0 (kg / m<sup>2</sup>) (WHO, 2004).

It is believed that the fact that obesity is closely related to increased BMI negatively influence the physical capacity and respiratory function, independently of age (ORSI, 2008).

In obese individuals it is possible observe chronic respiratory disorders such as hypoventilation, decreased aerobic capacity, strength and endurance of the respiratory muscles. These changes are caused by the accumulation of adipose tissue in the chest and the abdominal cavity, so that chest compression occurs, diaphragm and lung, which, therefore results in the reduction of lung volumes and results in muscular disorders (COSTA, 2008). Due to these alterations and the association between obesity and physical inactivity, the assessment of physical function or exercise capacity in obese individuals has become special target of interest and study (PERECIN, 2003).

Respiratory and functional changes can be observed during physical fitness tests field, as the walk test of six minutes (6MWT). This test has been used in diverse populations to detect possible changes in physical fitness (SOARES, 2011).

The 6MWT is a submaximal test, simple to apply, inexpensive and well tolerated by patients with cardiopulmonary diseases, including obesity (ATS, 2002).

It measures the distance a person can walk quickly, without running on a flat, hard surface for 6 minutes, evaluates and integrates the responses of all the systems involved during exercise (cardiovascular, respiratory, neuromuscular and metabolic), but not provides specific and isolated information (ATS, 2002).

The main indications of the 6MWT are comparing the pre- and post-treatment measure functional status and predict morbidity and mortality for cardiopulmonary diseases. The test primary measure is the total distance walked. The secondary includes muscular fatigue and dyspnea, measured by the modified Borg scale or Visual Analogue Scale. The last would be the measurement of peripheral oxygen saturation (SpO<sub>2</sub>) measured by a pulse oximeter (ENRIGHT, 2003).

Contraindications absolute for performing the test is stable angina, unstable and recent acute myocardial infarction, and the relative are heart rate at rest above 120 bpm, systolic blood pressure (SBP) above 180 mm / Hg and diastolic (DBP) above 100 mmHg (ATS, 2002).

In addition to the damage already mentioned caused the cardiorespiratory function, the obesity is associated with reduced psychological well-being, making the social interaction and favoring low self-esteem, which is crucial in the stigmatization of obese (ORSI, 2008).

The concept of quality of life, according to the World Health Organization (WHO), can be described as an individual's perception of their position within the cultural context and value system in which your life is inserted in relation to their goals, expectations and interests. This concept encompasses a complex way of relating to people and the environment, health, psychological state and social conditions (WHOQOL, 1995).

In order to measure the quality of life, various instruments have been developed in recent years. Specific instruments such as the Stanford Health Assessment Questionnaire (HAQ-20), are able to assess, individually and specifically, certain aspects of quality of life, such as functional capacity (CORBACHO, 2010).

This study was, therefore, to analyze the physical and functional capacity of obese candidates for bariatric surgery.

**DEVELOPMENT**

The study was characterized as a retrospective study based on analysis of medical records. After approval by the Ethics Committee of UNIOESTE with number 1180217 of the day 07/30/2015, there was a literary survey of the relationship between submaximal functional capacity testing six-minute walk and the questionnaire of functional capacity HAQ-20, compared to obese patients.

Data collection began by analyzing obese patient's medical records participants of "Obesity Group" in the Clinic HUOP - Cascavel / PR, candidates performing bariatric surgery, which were evaluated in the years 2014 and 2015 until the beginning of the collections data. The items evaluated the medical records were the initial evaluation of patients, including the following data: age, previous and associated diseases, BMI, analysis of the results of the 6MWT test and the responses obtained in HAQ-20 questionnaire.

All these data were previously collected by the physiotherapy team involved in outpatient care of obese patients, and have been filed along with patient's medical records.

The Health Assessment Questionnaire (HAQ-20) (16), consists of 20 direct questions, divided into eight areas (dressing, getting up, eating, walking, hygiene, reach objects, grasp objects and other Activities) in which the highest score is obtained from the average of areas, ranging from 0 to 3 points. In that questionnaire, the lower score reflects better functional capacity.

The 6MWT was applied based on the Guideline from the American Thoracic Society (ATS 2002). At the beginning and end of test are measured the monitoring of variables: heart rate (HR), respiratory rate (RR), blood pressure (BP), oxygen saturation (SpO<sub>2</sub>), sensation of dyspnea and fatigue according the Borg scale. Standardized test by incentives commands were performed every new minute. The test was discontinued if the patient had excessive sweating, severe breathlessness, pain in the lower limbs, SpO<sub>2</sub> less than 85%, or any other symptoms that prevent him from proceeding.

The 6MWT was performed on the same day of the patient's initial assessment and the HAQ-20 questionnaire.

Knowing the pulmonary and functional capacity of obese patients allows diagnose losses related to overweight and recognize those patients most likely to diseases, and similarly increased risk for carrying out a possible bariatric surgery. Information obtained from medical records were computed and analyzed, making it possible to evaluate the influence of excess body weight and physical functional capacity.

## RESULTS AND DISCUSSION

It was analyzed medical records of 21 obese candidates for bariatric surgery followed at Clinic- HUOP Cascavel. Individuals were aged between 23 and 58 years. Eighteen of these patients were female and three male. Four patients were former smokers, seventeen nonsmokers and none were smokers. Ten of the patients practiced physical activities regularly and eleven were sedentary. The mean BMI was 41.3 with a standard deviation of 2.04. As the classification of the degree of obesity according to the BMI one patient was classified as obesity grade I, five patients grade II and grade III fifteen. Bariatric surgery is the first option only for a patient, the others had already tried other ways to lose weight. Diet, exercise and drug treatment options were to lose body fat. Analyzing medical history of the patients, it might be noted that most of the patients had more than one associated disease, among them diabetes mellitus, esophagitis or gastritis, arrhythmias, osteoarthritis, hypothyroidism and high blood pressure, and the latter was the most prevalent, then Diabetes Mellitus. The analysis of the HAQ-20 questionnaire data is presented in table 1.

Table 1- Data of HAQ-20

	Dressing	Stand up	Feeding	Grasp objects	Walk	Hygiene	Catch up	Others Activities
Any Difficulty	62,28%	54,76%	98,41%	79,36%	59,51%	80,95%	45,23%	57,13%
ome Difficulty	21,24%	35,71%	0%	12,69%	26,18%	9,52%	35,70%	25,39%
Much difficulty	14,28%	9,52%	1,58%	9,52%	14,28%	9,52%	16,66%	17,45%
Unable to do	0%	0%	0%	0%	0%	0%	4,76%	0%

In the six-minute walk test four patients could walk more than predicted for their age. Only one patient had to stop the test because of severe dyspnea, and bronchospasm, which ceased with rest. The average distance walked was 451,5m and the average percentage obtained was 93.2%.

Obese patients have exercise intolerance due to malfunctioning of the respiratory and / or cardiovascular systems and dysfunction of peripheral and respiratory skeletal muscles. The 6MWT has been validated in different populations to be more representative of the activities of daily living compared to other walking tests (SOLWAY, 2001).

In the study by Soares and Gomes et al, the results showed that obese subjects were able to obtain higher performance in the 6MWT than in the Shuttle Walk Test (SWT), another fitness test field, shown by the distance in meters, for while they walked 244 m on average in SWT, walked nearly twice (489 m) in the 6MWT. This result adds to the information that the 6MWT can be more appropriate for obese (SOARES, 2011).

Individuals with BMI > 30 kg / m<sup>2</sup> walked approximately 85.0% of the distance of the 6MWT covered by normal individuals in the study by Enright et al. Although the BMI is a clinical obesity index useful, it can not be regarded as the best index for determining the amount of body fat (ENRIGHT, 2003).

In the study of Gontijo and Lima et al, eutrophic women walked an average 583.44 + - 43.75 m against 522.61 + - 48,54m of obese and normal-weight men obtained average distance of 604.68 + -46,47m from 547.81 + - 68,16m obese. A negative and weak association was observed when correlated degree of obesity and 6MWD, reporting that the lower the degree of obesity, the greater the distance walked (GONTIJO, 2011). The same result was found by Pires et al with different levels of BMI, where individuals with index <25 kg / m<sup>2</sup> walked distance greater than the subjects with index > 25 kg / m<sup>2</sup>. This suggests that, when comparing the results obtained in the tests by different individuals, weight and height must also be considered (Pires, 2007).

## FINAL CONSIDERATIONS

The study showed that the 6MWT is a physical fitness test fast and easy application where patients had no difficulty in understanding and execution. Obese patients showed satisfactory results in the 6MWT, which is consistent with the outcome of HAQ-20 questionnaire, showing that the studied sample showed no functional capacity physically changed, which reduces the risks of surgical.

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### **EVALUATION OF PHYSICAL AND FUNCTIONAL CAPACITY OF OBESE PEOPLE THROUGH 6MWT ABSTRACT**

**Introduction:** Obesity is now a major public health problems, the high weight associated with inactivity, is directly related to pathological conditions that cause high morbidity and mortality. Compared to the existing malnutrition in poor countries, obesity is still considered more serious because its pathological effects in the body lead from premature death to limitations that impair directly the quality of life of these people. **Objective:** To evaluate the physical and functional capacity of obese patients undergoing bariatric surgery. **Methods:** Analysis of patients' medical records that are monitored and evaluated at the Clinic HUOP- Cascavel / PR who underwent functional test (6MWT) and answered the questionnaire of quality of life (HAQ-20). **Results:** We evaluated medical records of 21 patients, 18 women and 3 men, aged 23 and 58, the mean BMI obtained was 41.3. The mean of 6'WT was 451,5m and the average percentage obtained was 93.2%. **Conclusions:** The 6MWT proved to be an appropriate test for the obese population. The sample showed no functional capacity physically changed, which reduces the risks of surgical intervention.

**KEY WORDS:** Physical aptitude; Obesity; Quality of life.

### **ÉVALUATION DE LA CAPACITÉ PHYSIQUE ET FONCTIONNELLE DES PERSONNES ÂGÉES PAR TM6' RÉSUMÉ**

**Introduction:** L'obésité est devenu l'un des principaux problèmes de santé publique en raison du poids élevé associé à l'inactivité, est directement liée à des conditions pathologiques qui causent une morbidité et la mortalité. Par rapport à la malnutrition existante dans les pays pauvres, l'obésité est toujours considéré comme plus grave que leurs effets pathologiques dans la tête du corps de la mort prématurée de limitations qui nuisent directement la qualité de vie de ces personnes. **Objectif:** Évaluer la capacité physique et fonctionnelle des patients obèses ayant subi une chirurgie bariatrique. **Méthodes:** Analyse les dossiers médicaux des patients suivis et évalués à la Clinique HUOP- Cascavel / PR qui ont subi test fonctionnel (TM6') et ont répondu au questionnaire de qualité de vie (HAQ-20). **Résultats:** Ont été évalués les dossiers médicaux de 21 patients, 18 femmes et trois hommes, âgés de 23 et 58, l'IMC moyen a été obtenu 41,3. Le TM6' moyen 'était 451,5m et le pourcentage moyen obtenu est de 93,2%. **Conclusions:** La TM6' avéré être un critère approprié pour la population obèse. L'échantillon n'a montré aucune capacité fonctionnelle changé physiquement, ce qui réduit les risques d'une intervention chirurgicale.

**MOTS-CLÉS:** La forme physique; l'obésité; La qualité de vie.

### **EVALUACIÓN DE LA CAPACIDAD FÍSICA Y FUNCIONAL DE LAS PERSONAS MAYORES A TRAVÉS PM6' RESUMEN**

**Introducción:** La obesidad es ahora uno de los principales problemas de salud pública debido al alto peso asociado con la inactividad, está directamente relacionada con las condiciones patológicas que causan una alta morbilidad y mortalidad. En comparación con la desnutrición existente en los países pobres, la obesidad se considera todavía más grave debido a que sus efectos patológicos en el cuerpo principal de la muerte prematura a las limitaciones que perjudican directamente la calidad de vida de estas personas. **Propósito:** Evaluar la capacidad física y funcional de los pacientes obesos sometidos a cirugía bariátrica. **Métodos:** Análisis de archivos de los pacientes monitoreados y evaluados en la Clínica HUOP- Cascavel / PR que se sometieron a la prueba funcional (PM6') y respondieron al cuestionario de calidad de vida (HAQ-20). **Resultados:** Se evaluaron las historias clínicas de 21 pacientes, 18 mujeres y tres hombres, 23 y 58 años de edad, el IMC promedio se obtuvo 41.3. La media la distancia en PM6'era 451,5m y el porcentaje promedio obtenido fue de 93.2%. **Conclusiones:** La PM6' resultó ser una prueba adecuada para la población obesa. La muestra no mostró ninguna capacidad funcional cambiado físicamente, lo que reduce los riesgos de la intervención quirúrgica.

**PALABRAS CLAVE:** Aptitud física; Obesidad; Calidad de vida.

### **AValiação da Capacidade Física e Funcional de Obesos Através do TC6' RESUMO**

**Introdução:** A obesidade é hoje um dos principais problemas públicos de saúde, pois o peso elevado, juntamente com o sedentarismo, está diretamente relacionado com condições patológicas que causam altas taxas de morbidade e de mortalidade. Comparada com a desnutrição existente em países pobres, a obesidade ainda é considerada mais grave, pois seus efeitos patológicos no organismo levam desde a morte prematura até limitações que prejudicam diretamente a qualidade de vida dessas pessoas. **Objetivo:** Avaliar a capacidade física e funcional de pacientes obesos que serão submetidos a cirurgia bariátrica. **Métodos:** Análise de prontuários dos pacientes acompanhados e avaliados no Ambulatório HUOP- Cascavel/PR que realizaram teste funcional (TC6') e responderam o questionário de qualidade de vida (HAQ-20). **Resultados:** Foram avaliados prontuários de 21 pacientes, 18 mulheres e 3 homens, com idade entre 23 e 58 anos, a média do IMC obtida foi 41,3. A média da distância percorrida no TC6' foi 451,5m e a média do percentual obtido foi 93,2%. **Conclusões:** O TC6' se mostrou um teste apropriado para a população obesa. A amostra estudada não apresentou capacidade física- funcional alterada, o que diminui os riscos na intervenção cirúrgica.

**PALAVRAS-CHAVE:** Aptidão física; Obesidade; Qualidade de vida.