# 152 - PROFILE OF THE CORPORAL COMPOSITION OF SWIMMERS MASTERS

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## INTRODUCTION

In swimming the corporal weight represents only one tenth of the weight in land (WEINECK, 2003), however the studies are many that relate the percentage of fat with the performance of swimming, therefore the fluctuation is intimamente on to the components of the corporal composition, a small percentage of fat is necessary for the swimmer, differently of corridors that possess decreases fat percentages, with a little of fat the buoyancy is not facilitated, but it is observed that fat swimmers do not obtain to dislocate themselves with much rapidity, however the biomechanics explains this situation, therefore for the each armful applied force it is the value of its proper weight (PALMER, 1990). The evaluation of the broken up corporal composition in four components (% of fat, % of the muscular weight, % of bone weight and % of the residual weight) are very important so that the technician of this sportive modality, it gets predictions, as much related to the levels of health and quality of life, as well as with the performance in swimming. The effect of the training in swimmers masters can very be positive, as much related to the performance of the modality as also in the quality of life and the longevity, reducing innumerable pathologies and the verification of the corporal composition makes possible this process.

## THEORETICAL REFERENCIAL

*Corporal composition*

The corporal composition is the ratio of fat in relation to the lean corporal weight and is frequently express in percentage of corporal fat (NIEMAN, 1999). The values of the corporal weight depend basically on an accumulation of components as bones, muscles, fat and other fabrics that, depending on the type of physical exercise, of the alimentary diet and also of the hereditary succession, they suffer to different variations in its constitutions during all the life from a person (GUEDES & GUEDES, 2003). For Marins and Giannichi, the 2003 corporal composition in such a way represents an important way in the control of a training for athlete how much for not athlete, allowing to the technician an interpretation according to its objectives as: To identify to risks the health high or low associates excessively of corporal fat; To identify to risks the health associates to the extreme accumulation of intra-abdominal fat; Follow changes in the corporal composition associates the certain illnesses; To evaluate the efficiency of nutritional interventions and physical exercises in the alteration of the corporal composition; Esteem the ideal corporal weight of athlete and not athlete; To formulate recommendations and lapsing of physical exercises dietary; To monitor changes in the corporal composition associates to the growth, to the development, the maturation and the age.

*Classification of the corporal composition*

According to Jackson & Pollock, (1978 apud MARINS and GIANNICHI, 2003) the normative values for percentage of corporal fat for men and
women follow in picture 1.

**Picture 1.** Normative values for percentage of corporal fat.

| Age | | | | | Classification |
|---|---|---|---|---|---|
| 20 – 29 | 30 – 39 | 40 – 49 | 50 – 59 | +60 | |
| | | | | | **Men** |
| <11 | <12 | <14 | <15 | <16 | Excelent |
| 11-13 | 12-14 | 14-16 | 15-17 | 16-18 | Good |
| 14-20 | 15-21 | 17–23 | 18-24 | 19-25 | Medium |
| 21-23 | 22-24 | 24-26 | 25-27 | 26-28 | Regular |
| >23 | >24 | >26 | >27 | >28 | Insufficient |
| | | | | | **Women** |
| <16 | <17 | <18 | <19 | <20 | Excelent |
| 16-19 | 17-20 | 18-21 | 19-22 | 20-23 | Good |
| 20-28 | 21-29 | 22-30 | 23-31 | 24-32 | Medium |
| 29-31 | 30-32 | 31-33 | 32-34 | 33-35 | Regular |
| >31 | >32 | >33 | >34 | >35 | Insufficient |

Effect of the aging in the corporal composition According to Wilmore and Costill (2001) with the aging, the content of corporal fat increases to the step that, concomitantly, the exempt mass of fat diminishes and many of these alterations the reduction of the level of general activity must be attributed that occurs with the aging. Almost all the the 0,8 people acquire 0,2 kg of corporal fat to each year after 20 30 years MCARDLE, KATCH & KATCH (1981 apud MAGLISCHO, 1999). It has innumerable cases, as much in men how much in women, that they arrive to duplicate and until tripling the amount of corporal fat for return of the 60 years of age. The training can delay these alterations of the corporal composition.

*Corporal component for swimmers masters*

It is very common to use the protocol of Faulkner (1968) to measurement the percentage of fat in swimmers, however in this research, for if dealing with swimmers masters the use of a protocol became necessary that became the results trustworthest, therefore the used protocol was of 7 DC Jackson and Pollock (1978).

Points of DC: to sub scapular, triceps, pectoral, axillaries average, it supplies-iliac, abdomen and thigh.

*Master swimming*

The swimmers masters must have equal or superior age the 25 years, to the competition level the categories are subdivided of 5 in 5 years, initiating for the band of 25 the 29 years and it is followed thus until the infinite age. Swimming to master is formed normally by former-athlete of the modality and also by people who had learned to swim in the adult age, therefore many of them do not possess decreases fat taxes. "the aging habitually is followed by an increase in the corporal fat and by losses of the aerobic capacity, muscular volume, forces, power, speed, coordination and flexibility "(MAGLICHO, 1999 p.269). The change percentage is of 5% 10% for each decade after the 20 or 30 years of age and swimming is an excellent ally to help to fight these undesirable effect, or at least to delay them. Athletes masters are of form can improve very with the training, e its levels of progress in force and aerobic capacity can be similar to the ones of younger athletes, depending on the capacity of the swimmer in improving the ability in the style, in the training intensity and/ or n the competition capacity.

**METHODOLOGY**

For this study of almost experimental descriptive characteristic with quantitative boarding and typology of profile 21 individuals with age between 26 and 61 years had been part of the sample, participant swimmers of the team Acquamaster de Foz of the Iguassu. For measurement of the corporal weight a anthropometric scale of the Full mark with capacity for 150 was used kg and precision of 100gr. However for verification of the stature stadiometer of the Sanny mark was used one with precision in millimeters. However for verification of the percentage of corporal fat the anthropometric method of cutaneous folds with protocol calculations of Jackson and Pollock was used doubly indirect (7 folds). For spalling of the corporal composition in four components the equation of Matiegka was used, in which the total corporal weight is the addition of the weight of fat, bone weight, residual weight and muscular weight, protocols these cited by Fernandes Filho (2003). For the accomplishment of the statistical treatment it was used descriptive statistics. To evidence the data radar was used graphical of the type.

**RESULTS AND QUARREL**

**Table 01.** Spalling of the corporal composition in four components of the results collected through the sample (masculine).

| | Age | Corporal Weight | Stature | %G | %M | %O | %R |
|---|---|---|---|---|---|---|---|
| Minimum | 26 | 66,2 | 163 | 10,41 | 33,69 | 13,9 | 20,1 |
| Medium | 41,75 | 76,77 | 175,41 | 18,32 | 40,86 | 15,6 | 23,6 |
| Máximum | 61 | 92,3 | 197 | 27,52 | 49,93 | 17,52 | 24,1 |
| DP | 13,26 | 8,04 | 10,09 | 5,6 | 5,18 | 1,12 | 1,29 |

In table 1 the characteristics of the population are presented show of the masculine sort, the age, the corporal weight, the stature and the spalling of the corporal composition in Percentage of Corporal Fat, Muscular Weight, Bone Weight and Residual Weight. The analyzed 0 variable present the following averages +/- shunting lines standards: 41,75 +/- 13,26 for the age; 76.77 +/- 8,04 for corporal weight; 175,41 +/- 10,09 for the stature; 18.32 +/- 5,60 for percentage of Corporal Fat; 40,86 +/- 5,18 for percentage of Muscular Weight; 15,60 +/- 1,12 for percentage of Ósseo Weight and 23,60 +/- 1,29 for percentage of Residual Weight.

**Graph 01-** Spalling of the corporal composition in four components of the results collected through the sample (masculine).

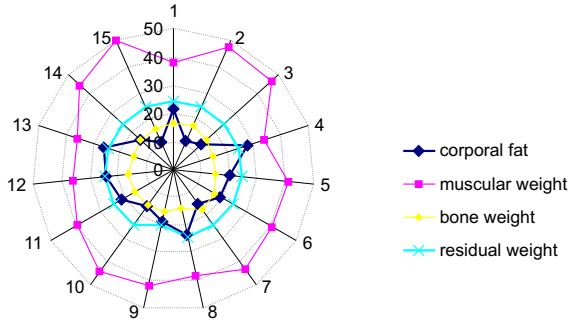



**Table 02.** Spalling of the corporal composition in four dos components results collected through of the sample (feminine).

| | Age | Corporal Weight | Stature | %G | %M | %O | %R |
|---|---|---|---|---|---|---|---|
| Minimum | 29 | 48,7 | 150 | 21,18 | 22,3 | 11,05 | 20,9 |
| Medium | 38 | 60,3 | 158 | 31,35 | 29,89 | 14,24 | 20,9 |
| Máximum | 59 | 76,1 | 168 | 45,75 | 41,53 | 16,39 | 20,9 |
| DP | 11,75 | 10,94 | 6,77 | 9,27 | 7,25 | 2,22 | 0 |

In table 2 the characteristics of the population are presented show of the feminine sort, referring the age, the corporal weight, the stature and the spalling of the corporal composition in Percentage of Corporal Fat, Muscular Weight, Bone Weight and Residual Peso. The analyzed 0 variable present the following averages +/- shunting lines standards: 38 +/- 11,75 for the age; 60.3 +/- 10,94 for corporal weight; 158 +/- 6,77 for the stature; 31.35 +/- 9,27 for percentage of Corporal Fat; 29,89 +/- 7,25 for percentage of Muscular Weight; 14,24 +/- 2,22 for percentage of Bone Weight and 20,90 +/- 0 for percentage of Residual Weight.

**Graph 02** - Spalling of the corporal composition in four dos components results collected through of the sample (feminine).

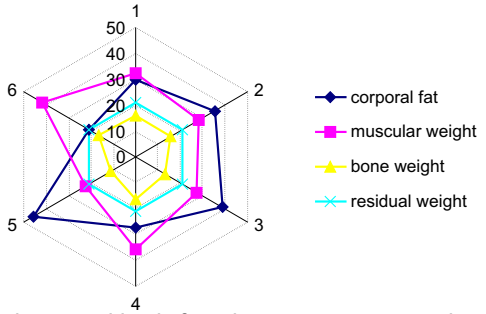
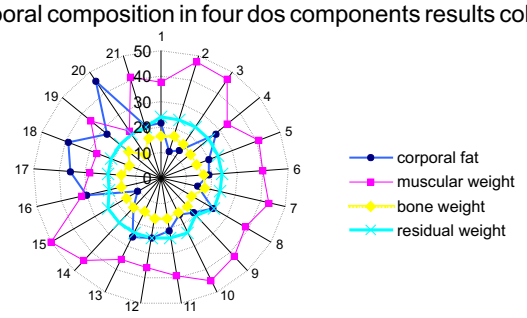



**Table 03**. Spalling of the corporal composition in four dos components results collected through of the sample.

| | Age | Corporal Weight | Stature | %G | %M | %O | %R |
|---|---|---|---|---|---|---|---|
| Minimum | 26 | 48,7 | 150 | 10,41 | 22,3 | 11,05 | 20,1 |
| Medium | 41,14 | 72,01 | 170,43 | 22,34 | 37,69 | 15,25 | 22,86 |
| Máximum | 61 | 92,3 | 197 | 45,75 | 49,93 | 17,52 | 24,1 |
| DP | 12,61 | 11,96 | 12,63 | 10,02 | 7,78 | 1,69 | 1,63 |

In table 3 the characteristics of all population are presented show (sorts masculine and feminine) the age, the corporal weight, the stature and the spalling of the corporal composition in Percentage of Corporal Fat, Muscular Weight, Bone Weight and Residual Peso. The analyzed 0 variable present the following averages +/- shunting lines standards: 41,14 +/- 12.61 for the age; 72.01 +/- 11,96 for corporal weight; 170,43 +/- 12,63 for the stature; 22.34 +/- 10,02 for percentage of Corporal Fat; 37,69 +/- 7,78 for percentage of Muscular Weight; 15,25 +/- 1,69 for percentage of Bone Weight and 22,86 +/- 1,63 for percentage of Residual Weight.

**Graph 03** - Spalling of the corporal composition in four dos components results collected through of the sample.




**CONCLUSION**

With the gotten results it can be concluded that the swimmers of the category to master of the team Acquamaster de Foz of the Iguassu, of the masculine sort, they are inside of an Average classification (18,32 +/- 5,60), as the normative values for percentage of fat of the picture 1 (JACKSON & POLLOCK, 1978). Already the analyzed swimmers are inside of a Regular classification (31,35 +/- 9,27), following the same picture. Being thus it is observed then, the necessity of an orientation to the training level relating the nutrition, also characterizing the visible difference of the sample, characteristic of the amateur sport.

**REFERENCES**

CATTEAU, R; GAROFF, G. **O ensino da Natação.** São Paulo: Manole, 1990.
COLWIN, C. **nadando para o século XXI.** São Paulo: Manole, 2000.
FERNANDES FILHO, J. **A prática da avaliação física.** Rio de Janeiro: Shape, 2003.
GUEDES, D. P. **Controle do peso corporal Composição corporal, atividade física e nutrição.** Rio de Janeiro: Shape, 2003.
MARINS, J.C.B. & GIANNICHI, R. S. **Avaliação & Prescrição de Atividade Física Guia prático.** Rio de Janeiro: Shape, 2003.
MAGLISCHO, E. W. **Nadando ainda mais rápido.** São Paulo: Manole,1999.
NIEMAN, D. C. **Exercício e Saúde.** São Paulo: Manole,1999.
PALMER, M.L. **A Ciência do Ensino da Natação**. São Paulo: Monole, 1990.
WEINECK, J. **Atividade Física e Esporte para que?** São Paulo: Manole, 2003.
WILMORE, JACK H.; COSTILL, DAVID L. **Fisiologia do esporte e do exercício.** São Paulo: Editora Manole, 2001.

**PROFILE OF THE CORPORAL COMPOSITION OF SWIMMERS MASTERS**

**ABSTRACT**

In swimming the corporal weight represents only 10% of the weight in land, however the studies are many that relate the percentage of corporal fat with the performance of swimming, therefore the fluctuation is intimacy on to the components of the corporal composition, a small percentage of fat is necessary for the swimmer, but it is observed that fat swimmers do not obtain to dislocate themselves with much rapidity, however the biomechanics explains this situation, therefore for the each armful applied force it is the value of its proper weight. The evaluation of the broken up corporal composition in four components is very important so that the technician, it gets predictions, as much related to the levels of health and quality of life, as well as with the performance in swimming. The objective of the present study of descriptive characteristic, experimental with typology of profile it was to analyze and to diagnosis through the anthropometric method of cutaneous folds and protocol calculations of Jackson and Pollock the corporal composition of swimmers of the category to master. The sample was composed for 21 swimmers with age between 26 and 61 years (men n=15 and women n=6) members of the Acquamaster of Foz do Iguassu - Pr. The average values and found shunting line standard for swimmers of the masculine and feminine sex how much its percentage of corporal fat had been of 18,32 +/- 5,60 and 31,35 +/- 9,27, respectively. It is observed then, the necessity of an orientation to the training level relating the nutrition, also characterizing the variable difference of the sample, characteristic of the amateur sport.

**Key-words**: Profile, corporal composition and swimming to master.

**PROFIL DE LA COMPOSITION CORPORELLE DES NAGEURS SENIORS**

**RÉSUMÉ**

Dans l'eau le poids corporel représente 10% du poids réel mesuré sur le sol. Cependant de nombreuses études lient le pourcentage de graisse corporelle à la performance de nage car la flottabilité du corps est intimement liée à celle de sa composition. Un petit pourcentage de graisse est nécessaire à un nageur mais on observe que les nageurs obèses n'arrivent pas à se mouvoir rapidement ; l'explication est bio-mécanique : la force appliquée à chaque brassée est égale à son propre poids. L'évaluation de la composition corporelle, qui comprend quatre éléments, est très importante pour que l'entraîneur puisse faire des projections tant reliées aux niveaux de santé et de qualité de vie qu'aux performances de natation. L'objectif de la présente étude de type descriptif, expérimental avec typologie de profil, est d'analyser et d'étudier, à travers de la méthode anthropométrique des plis cutanés et des calculs suivant le protocole de Jackson et Pollock, la composition corporelle des nageurs de la catégorie senior. L'échantillon est composé de 21 nageurs âgés de 26 à 61 ans (15 hommes et 6 femmes) membres de l'Académie Acquamaster de Foz do Iguaçu (État du Parana). Les résultats pour cet échantillon des moyennes et écart type relatifs au pourcentage de graisse sont respectivement de 18,32 +/- 5,60 e 31,35 +/- 9,27. On observe le besoin d'une orientation liée au niveau d'entraînement en relation avec la nutrition compte tenu aussi de l'hétérogénéité de l'échantillon propre au sport amateur.

**Mots clés :** profil, composition corporelle et natation senior.

**PERFIL DE LA COMPOSICIÓN CORPORAL DE NADADORES MASTERS**

**RESÚMEN**

En la natación el peso corporal representa apenas 10% de excesso de peso corporal en tierra, por lo tanto son muchos los estúdios que relacionan el porcentaje del excesso con la condicion física para la natación, pues el flotamiento esta intimamente relacionado con los componentes de la composición corporal, un pequeno porcentaje de gordura es necessário para el nadador, pero se puede observar que nadadores excedidos de peso no conseguen transladarse con major rapidez, por lo tanto la biomecânica explica esta situación pues para cada brazada la fuerza aplicada es del valor de su próprio peso. La avaliación de la composición corporal dividida la composición corporal dividida en 4 componentes es muy importante para que el técnico, obtenga una idéia, tanto relacionadas a los niveles de salud y calidad, bien como con la estructura de la natación. El objetivo del presente estúdio de característica descriptiva esperimentales con tipologia de perfil fue el de analizar y diagnosticar através de métodos antropométrico de pliegues cutâneos y cálculos protocolares de Jackson e Pollock la composioción corporal de nandadores de la categoria masters. La amuestra fue compuesta por 21 nadadores con edad entre 26 a 61 anõs (hombres=15) y mujeres (N=6) miembros de Acquamaster de Foz do Iguaçu Pr. Los valores médios y de desvio padrones encontrados para nadarores del sexo masculino y feminino en cuanto a su porcentaje de excesso corporal fueron de 18,32 +/- 5,60+/- e 31,35+/- 9,27+/-, respectivamente. Se observa entonces, la necessidad de uma orientación al nível de estrenamiento relacionado a la nutrición, caracterizando también la heterogeneidad de la muestra característica del deporte amador.

**Palabras-Clave:** perfil, composición corporal y natación masters

**PERFIL DA COMPOSIÇÃO CORPORAL DE NADADORES MASTERS**

**RESUMO**

Na natação o peso corporal representa apenas 10% do peso em terra, no entanto são muitos os estudos que relacionam a porcentagem de gordura corporal com a performance da natação, pois a flutuação está intimamente ligada aos componentes da composição corporal, uma pequena porcentagem de gordura é necessária para o nadador, mas observa-se que nadadores obesos não conseguem deslocar-se com muita rapidez, entretanto a biomecânica explica esta situação, pois para cada braçada a força aplicada é o valor do seu próprio peso. A avaliação da composição corporal fragmentada em quatro componentes é muito importante para que o técnico, obtenha predições, tanto relacionadas aos níveis de saúde e de qualidade de vida, bem como com a performance na natação. O objetivo do presente estudo de característica descritiva, experimental com tipologia de perfil foi o de analisar e diagnosticar através do método antropométrico de dobras cutâneas e cálculos protocolares de Jackson e Pollock a composição corporal de nadadores da categoria máster. A amostra foi composta por 21 nadadores com idade entre 26 e 61 anos (homens n=15 e mulheres n=6) membros da Acquamaster de Foz do Iguaçu - Pr. Os valores médios e desvio padrão encontrados para nadadores do sexo masculino e feminino quanto a seu percentual de gordura corporal foram de 18,32 +/- 5,60 e 31,35 +/- 9,27, respectivamente. Observa-se então, a necessidade de uma orientação ao nível de treinamento relacionando a nutrição, caracterizando também a heterogeneidade da amostra, característica do desporto amador.

**Palavras-chave:** perfil, composição corporal e natação máster.