# 193 - STUDY ON SOMATOTYPICAL CHARACTERISTICS OF THE PROFESSIONAL PLAYERS OF FIELD SOCCER ACCORDING TO THE TACTICAL DISPOSAL, WITH AGE BETWEEN 17 AND 20 YEARS OF BRAZILIAN TEAM SUB-20, THAT HAD DISPUTED THE FEMININE WORLD-WIDE CHAMPIONSHIP OF 2006, CARRIED THROUGH RUSSIA, AND THAT HAD FINISHED THE COMPETITION IN THIRD PLACE.

ANA CRISTINA MORAES E OLIVEIRA; ALINE DE CARVALHO SILVA;
RICARDO VICENTE PALHARES MOREIRA; NILTON CéSAR SPINELLI.
Universidade Estácio de Sá, Petrópolis, Rio de Janeiro; Brasil;
aninhacmoraes@hotmail.com

## INTRODUCTION

Man has always worried about its physical form, or for basic necessity of survival or the natural necessity to classify and to identify its proper species. This makes it extremely investigative and comes back toward the discovery of its more diverse characteristics and amongst these they come with importance to those of somatotypical character (FERREIRA, 2004).

In old Greece, Hipócrates, being based on visual inquiry it established a biotipologic classification that can be considered one of the first comments of physical types. (FREITAS, 2004).

Endomorphism represents the relative adiposity, the mesomorphism the robustness or relative magnitude muscle-esquelétical and the ectomorphism represents the relative linearity or delgadez of a physicist. (FERNANDES FILHO, 2003).

Somatotype is a parameter that better express the physical constitution of an individual, therefore determines its components of adiposity, its osseal, muscular structure parallel and linearity of its body. (HEATH; CARTER, 1990, apud FERNANDES FILHO,2003).

To Sheldon (1940, apud FREITAS, 2004) somatotype was a definitive entity genetical. In the current vision, somatotype is fenotype, and, therefore, modifiable throughout the growth, of the aging, through diet and physical training (FREITAS, 2004).

Flegner; Dias (1995), explain that, if determining a profile of a group, the individuals are placed in a scale of tests and this way can be determined some individual standards when identifying in tested its positive and negative points.

We can observe in literature that some somatotypical factors collaborate for the predominance of definitive characteristics, that can be used in the process of talent identification.(MARINS; GIANNICHI, 1996).

According to Dantas (1998, apud FERNANDES FILHO, 2004), the determination of the desirable profile for each porting modality becomes necessary. Fernandes Filho (2004) tells that the profile of characteristics is of utmost importance for improvement of the sportive preparation, thus being able to create precocious orientacions each time.

Although Brazil is considered "the country of soccer", verifies it lack of information on the feminine soccer and specially to those related with the somatotypical characteristics, arriving the commissions techniques to act of empirical form, or perhaps, using the masculine parameters.

Such fact is justified in virtue of the delayed inclusion of the women in the soccer, in relation to men. On the other hand, the bibliography specialized on this subject is poor. It has three decades, it's been observed a gradual increase in the stature and the weight of the football players of the masculine sex.

Unhappyly, had to the small number of published, this comment cannot be made for the women, a time that its presence in international level works is to recent. (KIRKENDALL, 1985 apud BARROS; WAR, 2004).

## OBJECTIVE

To identify the somatotypical characteristics of the professional players of field soccer, with age between 17 and 20 years of the Brazilian team sub-20 of 2006.

## TYPE OF RESEARCH

In the research, techniques of descriptive study had been used, with tipology of quantitative profile, former post fact.

## SAMPLE

The sample will be limited the professional players of field soccer, of the Brazilian team Sub-20 of 2006, participant one of the World-wide Sub-20 carried through Russia. All volunteers, with age understood between 17 and 20 years.

N= 21 players of the election who had participated of the research represented 100%.

## INSTRUMENT

The attainment of the values of somatotype will be carried through the Antropometric Method of the Somatotype de Heath-Carter (FERNANDES FILHO, 2003; ISAK, 2000) and registered in the fiche of register of somatotypical characteristics.

## METHODOLOGY

The measures had been gotten according to the protocol of Heath-Carter. The mensuration of the cutaneous folds was carried through in the plain ortostatic position of frankfurt in which the bones diâmeter bi-epicondiliano of humerus had been measured and bi-epicondiliano of femur; the perimetrias of contracted arm and calf; as well as the following cutaneous folds, to subescapular, tríceps, supraespinal and calf, as protocol. Adipômetro used was of the Sanny mark. Manufactured for American Medical in Brazil, Scientific model. The corporal weight was verified by means to the use of a scale, marks Filizola, year 2000, with precision of 100g. The stature was verified by means of one estadiômetro, wooden with scale of measure in 0,1 cm. The measures of perimetria had been collected with a flexible antropometric tape measure of the Sanny mark, manufactured for Medical American of Brazil and the bone diameter with one paquímetro of metal also of the Sanny mark, manufactured for Medical American of Brazil in the year of 2003.

The measurements of the players had been made before the game trainings when the same ones were concentrated, in the Center of Training Heleno Nunes - Farm Comary Teresópolis R.J. The data had been collected individually, in a room in the Center of Training of the Brazilian Confederation of Soccer with ambient temperature of 26º C. The place where the respective measurements had been carried through did not present external stimulatons, that is, a calm and adjusted place.

The players as well as all the commission technique had been informed of the objective of the research and all the

procedure of the tests.

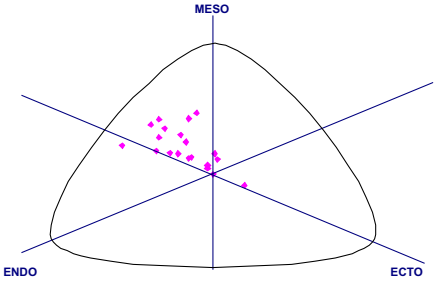
**RESULTS AND QUARRELS**

The relative results to somatotype of 21 football players of the Brazilian team sub 20 meets in Table 1. In the Figure 1 and graph 1, we can observe the general classification of somatotype, and according to the results, we find characteristics with meso-endomorphic predominance. A study carried through for QUEIROGA; FERREIRA; ROMANZINI in 2001 analyzed the profile somatotype of players of Futsal, participant of the Taça Brasil de Clubes in 2001, also demonstrated the same classification in any analyzed tactical function.

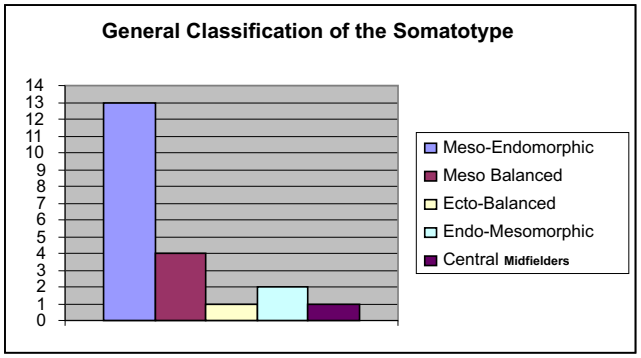
TABLE 1. DESCRIPTIVE RESULTS

| *Position* | *Endomorphy* | *Mesomorphy* | *Ectomorphy* | *Classification* |
|---|---|---|---|---|
| **Goalkeeper** | 3,2 | 3,6 | 2,4 | Meso-Endomorphic |
| | 3,9 | 4,6 | 1,9 | Meso-Endomorphic |
| | 3,4 | 4,9 | 1,4 | Meso-Endomorphic |
| **Defenders** | 3,4 | 4,6 | 1,6 | Meso-Endomorphic |
| | 3,3 | 3,6 | 2 | Meso-Endomorphic |
| | 3,3 | 3,5 | 3,1 | Meso-Balanced |
| | 4,4 | 4,4 | 2,3 | Endo-Mesomorphic |
| **Side Midfielders** | 2,4 | 2,5 | 3,6 | Ecto-Balanced |
| | 2,5 | 4,6 | 1,6 | Meso-Endomorphic |
| | 3,2 | 3,2 | 3,2 | Central |
| | 2 | 4,5 | 1,4 | Meso-Endomorphic |
| | 3 | 3,3 | 2,8 | Meso-Balanced |
| **Winger** | 4,8 | 4,4 | 1,4 | Endo-Mesomorphic |
| | 2,5 | 3,3 | 2,7 | Meso-Balanced |
| **Central Midfielders** | 3,4 | 4,4 | 2,4 | Meso-Endomorphic |
| | 3,4 | 4,5 | 1,1 | Meso-Endomorphic |
| | 3,3 | 3,6 | 2,4 | Meso-Endomorphic |
| | 3,3 | 4,5 | 2,1 | Meso-Endomorphic |
| **Strikers/Forwards** | 3,8 | 4 | 2,2 | Meso-Endomorphic |
| | 2,5 | 3,5 | 2,6 | Meso-Balanced |
| | 3,4 | 3,8 | 2,3 | Meso-Endomorphic |

FIGURE 1. SOMATOCARTA OF THE APPRAISED GROUP.




GRáPH 1- GENERAL CLASSIFICATION OF THE SOMATOTYPE




In Table 2 endomorphism data, mesomorphismo and ectomorphism had suffered statistical treatments getting average it, the minimum and maximum defelction standard, values and reliable interval for the average, 95% of certainty. Study according to carried through we can classify the football players of field as mesomorphicals. These references are ratified by DANTAS and FERNANDES 2002 in literature, how much to the importance in if establishing the somatotypical profile of the athlete of high income, having a trend in the high income, of the somatotypes if presenting homogeneous.

CHART 2 - REFERRING STATISTICAL VALUES TO THE SOMATOTYPE DIVIDED IN ITS COMPARTMENTS (ENDOMORPHY, MESOMORPHY AND ECTOMORPHY)

| | Average | Deflection of pattern | Minimum | Maximum | IC to 95% of certainty |
|---|---|---|---|---|---|
| Endomorphy | 3,257 | 0,656 | 2,0 | 4,8 | **2.958< μ < 3.556** |
| Mesomorphy | 3,966 | 0,631 | 2,5 | 4,9 | **3.679< μ <4.254** |
| Ectomorphy | **2,214** | **0,658** | **1,1** | **3,6** | **1.915< μ <2.514** |

The average values and deflection of standard, referring to somatotype in accordance with the tactical disposal are in TABLE 3. We can observe that the goalkeepers possess the average greater of mesomorphy (4,3), on the other hand possess an average minor in ectomorphy (1,9). The less deflection (0.05) was found in the central midfielders, characterizing the most homogeneous position as. In the side midfielders we found the biggest index of deflection. (0,97).

CHART 3 - AVERAGE AND DEFLECTION BY POSITION

| Position | N | Endomorphy | Mesomorphy | Ectomorphy |
|---|---|---|---|---|
| | | Average ± S | Average ± S | Average ± S |
| **Goalkeeper** | 3 | 3,5 ± 0,36 | **4,36** ± 0,68 | **1,9** ± 0,50 |
| **Defenders** | 4 | 3,6 ± 0,53 | 4,02 ± 0,55 | 2,25 ± 0,63 |
| **Side Midfielders** | 5 | 2,62 ± 0,48 | 3,62 ± 0,90 | 2,52 ± **0,97** |
| **Winger** | 2 | 3,65± 1,62 | 3,85 ± 0,77 | 2,05 ± 0,91 |
| **Central Midfielders** | 4 | 3,5 ± **0,05** | 4,25 ± 0,43 | 2,0 ± 0,61 |
| **Strikers/Forwards** | 3 | 3,23 ±0,66 | 3,76 ± 0,25 | 2,36 ± 0,20 |

In graph 2, we can observe the average values of somatotype for tactical disposal. Analyzing the data, we verify that the mesomorphy characteristics are predominant in all the positions. The endomórphics characteristics also are gifts with short while lesser percentage in relation to the mesomórphics data, and with regard to ectomorphy the data if they present in lesser percentages that the remain of the data of the analyzed group.

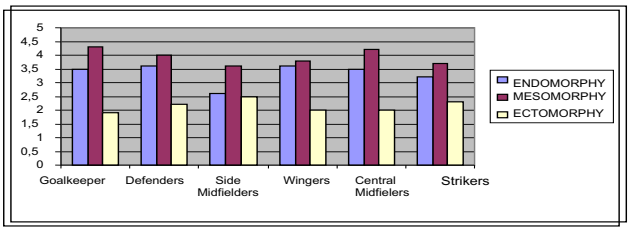



TABLE 4 - COEFFICACIOUSNESS OF CORRELATION

| CORRELATION | COEFFICACIOUSNESS OF CORRELATION | |
|---|---|---|
| ENDORMOPHY x MESOMORPHY | r - 0,3738 | Fail to Reject the Null Hypothesi |
| ENDORMOPHY x ECTOMORPHY | r - 0,2590 | Fail to Reject the Null Hypothesi |
| ECTOMORPHY x MESOMORPHY | r - 0,8691 | Reject the Null Hypothesi |

In TABLE 4, in accordance with the correlation coefficient, we verify that mesomorphy x endomorphy demonstrated frequency of normality inside, therefore the averages are very next, the same happened with endomorphy x ectomorphy, already between ectomorphy x mesomorphy presented discrepancy, in its average values.

**CONCLUSION**

Through the gotten data we observe that the analyzed population has as characteristic predominant, the meso-endomorphy, express through the development moderate skeletical muscle, as well as of the adiposity according to classificatory table of Heath-Carter (1990).

For Gualdi-Russo and Zaccagni (apud QUEIROGA; FERREIRA; ROMANZINI, 2005) knowledge of somatotype ideal, gotten of athlete of high level can contribute for the sportive team, distribution of functions inside of the team and in the planning of specific training that takes in consideration the ability and the correct physical profile of the athlete.

Knowing that the factors are many of the influence to the sportive performance, we cannot use the somathotype, as only parameter for the attainment of ideal results, it serves as a tool to be used during the process of preparation of a team that searches a better performance, and is the small details in the training that will make the difference at the decision moment.

**BIBLIOGRAPHICAL REFERENCES**

BARROS, Turíbio; GUERRA, Isabela. **Ciência do Futebol**. São Paulo, Manole, 2004.

FERNANDES FILHO, J. **A prática de avaliação física**. Rio de Janeiro: Shape, 2003.

FERREIRA, André Augusto de Menezes. **Perfil dermatoglífico, somatotípico e das qualidades físicas de atletas brasileiros de corrida de orientação de alto rendimento**. Tese de Mestrado em Ciência da Motricidade Humana, Universidade Castelo Branco: Rio de Janeiro, 2004.

FLEGNER, A. J: DIAS, J. **Manual Completo de Pesquisa e Redação**. Rio de Janeiro: EsEFEX, 1995.

FREITAS, Raimundo Hespanha de. **Medida e avaliação para esporte e a saúde**. Rio de Janeiro: Rubio, 2004.

ISAK - SOCIEDADE INTERNACIONAL PARA AVANÇO DA CINEANTROPOMETRIA. **Apostila de curso**. Rio de Janeiro,2000.

MARINS, João C. B. ; GIANNICHI, Ronaldo S. **Avaliação e prescrição de atividade física guia prático**. Rio de Janeiro: Shape, 1996.

DANTAS, Paulo Moreira Silva; FERNANDES FILHO, José. **Identificação dos perfis genético, de aptidão física e somatotípico que caracterizam atletas masculinos de alto rendimento, participantes do futsal adulto no Brasil.** Artigo da Revista Fitness e Performance, Volume n°1 Jan/Fev 2002.

QUEIROGA, Marcos Roberto; FERREIRA, Sandra Aires; ROMANZINI. **Anthropometric profile of elite athletes of women's futsal according to tactical function in the game.** Revista Brasileira Cineantropometria Desenvovimento Humano. 2005

BATISTA, Lauro Boechat; BATISTA, Keila Moreira. **Introdução á estatística/bioestatística**. Rio de Janeiro: 2003

Aline de Carvalho Silva

Instituição: UNESA
Endereço: Rua Luiz Biazi, 21
Cascatinha -25710-200 - Petrópolis - R.J
Telefone: (24) 2242-6168 / 8812-5127
e-mail: alinedcarvalho@gmail.com

**STUDY ON THE PERFIL SOMATOTÍPICO OF THE PROFESSIONAL PLAYERS OF SOCCER OF FIELD, WITH AGE BETWEEN 17 AND 20 YEARS OF THE BRAZILIAN SELECTION SUB-20, THAT THEY DISPUTED THE FEMININE WORLD CHAMPIONSHIP OF 2006, ACCOMPLISHED IN RUSSIA, AND THAT THEY FINISHED THE COMPETITION IN THIRD PLACE.**

**SUMMARY**

So the objective of study present was identifying the somatotype profile of professional player's football ground Brazilian selection Sub-20 accord with function tactics. The sample was of 21 athletes participants of world championship 2006; obtain the third collocation in the competition. Was sad weight corporeal, stature, perimeters, bone diameters and flexure cuteness' accord with the protocol of Heath-Carter (1990) .The facts was presented by statistic descriptive with middle values diversion model general of 3,257±0,656 to endomorphic, 3,966±0,631 to mesomorphic and 2,214±0,658 to ectomorphic, respective minimum values of 2,0 - 2,5 - 1,1 and maximum of 4,8 - 4,9 - 3,6 and the interval of trust to the middle, to 95% of certainty.

Accord with arrangement tactics had middle and diversion standard to endomorphic, mesomorphic and ectomorfphic of 3,5 ± 0,36 - 4,36 ± 0,68 e 1,9 ± 0,50 to goalkeepers (n=3); 3,6 ± 0,53 - 4,02 ± 0,55 - 2,25 ± 0,63 to fullback (n=4); 2,62 ± 0,48 - 3,62 ± 0,90 - 2,52 ± 0,97 to sideline (n=5) ; 3,65 ± 1,62 - 3,85 ± 0,77 - 2,05 ± 0,91 to steering (n=2) ; 3,5 ± 0,05 - 4,25 ± 0,43 - 2,0 ± 0,61 to middle (n=4) , 3,23 ±0,66 - 3,76 ± 0,25 - 2,36 ± 0,20 to attacker (n=3). It was verified that athletes of the Brazilian selection of Soccer of Field regarding the classification of the somatotype presented, predominance of characteristic meso-endomorphic, that is to say, where the muscle-skeletal magnitude is put upon to the corporal adiposity and the crossing of the tactical functions doesn't depend on the classification somatotipic.

Key words: somatotype, soccer, female

**UNE ÈTUDE CONCERNANT LES CARACTÉRISTIQUES SOMATOTYPIQUES DES JOUEURS FÉMININES PROFESSIONNELLES DE FOOTBALL DE CAMP, COMPRENNANT l' ÂGES ENTRE 17 Á 20 ANS DE LA SÉLECTION BRÉSILIENNE SUB-20, QUI ONT DISPUTE LE CAMPIONNAT MUNDIAL FÉMININ DE 2006, QUI A EU LIEU EN RUSSIE, ET QUI OBTENU LA TROISIÉME PLACE.**

Le but de cette étude a été ce d` identifier le profil somatotypique des joueuses professionnelles de football de camp de la Sélection Brésilienne de Sub-20 selon la fonction tactile. L`échantillon a été fait avec l` aide de 21 athlètes qui ont disputé le Campionnat Féminin 2006, réalisé en Russie, obtenant la troisième classification. On a mésuré la masse corporelle, la taille, les périmètres, le diamètre osseux et les plis cutanés, selon le protocole de Heath-Carter. Les donnés ont été présentés d`après la statistique descriptive des valeurs moyennes et détour patron général de 3,257+-0,656 pour la endomorphie, 3,966+-0,631 pour la mésomorphie et 2,214+-0,658 pour l`héctomorphie, respectivement, valeurs minimum de 2,0 - 2,5 -1,1 et maximum de 4,8 - 4,9 - 3,6 et l`intervalle de confiance pour la moyenne, à 95% de sûreté. Selon la disposition tactile on a obtenu la moyenne et détour patron pour l`endomorphie, mésomorphie et héctomorphie de 3,5 +-0,36 - 4,36+- 0,68 et 1,9+-0,50 pour les gardiennes de but (In=3) ; 3,6+-0,53 - 4,02+-0,55 - 2,25+-0,63 pour les arrières (n=4), 2,62+-0,48 - 3,62 +-0,90 - 2,52+-0,97 pour les joueuses de ligne médiane (n=5) ; 3,65+-1,62 - 3,85+-0,77 - 2,05+-0,91 pour les joueuses voleurs (n=2) ; 3,5+-0,05 - 4,25+-0,43 - 2,0+-0,61 pour celles de demi (n=4), 3,23+-0,66 - 3,76+-0,25 - 2,36+-0,20 pour celles d`attaque (n=3). On a vérifié que les athlètes de la Sélection Brésilienne de Football de Camp par rapport à la classification du somatotype ont présenté une prédominance de caractéristique méso-endomorphique, c`est-à-dire, la magnitude muscle-squelletique se superpose à l` adiposité corporale. Le croisement des fonctions tactiles ne dépend pas de la classification somatotypique.

Mots-clés : SOMATOTYPIQUE, FÉMININ, FOOTBALL

**UN ESTUDIO RELATIVO A LAS CARACTERÍSTICAS SOMATOTYPIQUES DE LAS JUGADORAS FEMENINAS PROFESIONALES DE FÚTBOL DE CAMPO, CON EDADES ENTRE 17 A 20 AÑOS DE LA SELECCIÓN BRASILEÑA SUB 20, QUE PARTICIPARON DEL CAMPEONATO MUNDIAL FEMENINO DE 2006, QUE TUVO LUGAR EN RUSIA, Y QUE OBTUVO EL TERCER LUGAR.**

El objetivo de este estudio fue de identificar el perfil somatotypique de las jugadoras profesionales de fútbol de campo de la Selección Brasileña Sub 20 según la función táctil. La muestra se hizo con la ayuda de 21 atletas que disputaron el Campeonato Femenino 2006, realizado en Rusia, obteniendo la tercera clasificación. Fueran medidos la masa corporal, el tamaño, los perímetros, el diámetro óseo y los pliegues cutáneos, según el protocolo de Heath-Carter. Los dados se presentaron según la estadística descriptiva los valores medios y desvío padrón general 3,257+ -0,656 para el endomorfía, 3,966+-0,631 para el mésomorfía y 2,214+ -0,658 por éctomorfía, respectivamente, valores mínimos de 2,0 - 2,5 -1,1 y máximo de 4,8 - 4,9 - 3,6 y intervalo de confianza para la media, al 95% de seguridad. Según la disposición táctica se obtuvieron la media y desvío padrón para el endomorfía, mésomorfía y éctomorfía de 3,5 + - 0,36 - 4,36 + - 0,68 y 1,9+-0,50 para las guardianas de objetivo (In=3); 3,6+-0,53 - 4,02+-0,55 - 2,25+-0,63 para las partes (n=4), 2,62+-0,48 - 3,62 + - 0,90 - 2,52+-0,97 para las jugadoras de línea mediana (n=5); 3,65+-1,62 - 3,85+-0,77 - 2,05+-0,91 para las jugadoras ladrones (n=2); 3,5+-0,05 - 4,25+-0,43 - 2,0+-0,61 para las de mitad (n=4), 3,23+-0,66 - 3,76+-0,25 - 2,36+-0,20 para las atacantes (n=3). Se comprobó que los atletas de la Selección Brasileña de Fútbol de Campo con relación a la clasificación del somatotipo presentaron un predominio de característica méso-endomorphica, O sea, la magnitud muslo-esqueleto se superpone a la adiposidad corporal. El cruce de las funciones táctiles no depende de la clasificación somatotípica.

Palabras claves: SOMATOTYPIQUE, FEMENINO, FÚTBOL

**UM ESTUDO SOBRE AS CARACTERíSTICAS SOMATOTíPICAS DAS JOGADORAS PROFISSIONAIS DE FUTEBOL DE CAMPO, COM IDADE ENTRE 17 E 20 ANOS DA SELEçãO BRASILEIRA SUB-20, QUE DISPUTARAM O CAMPEONATO MUNDIAL FEMININO DE 2006, REALIZADO NA RúSSIA, E QUE TERMINARAM A COMPETIçãO EM TERCEIRO LUGAR**.

O objetivo do presente estudo foi de identificar o perfil somatotípico das jogadoras profissionais de futebol de campo da seleção brasileira Sub-20 de acordo com a função tática. A amostra foi composta de 21 atletas que disputaram o Campeonato Mundial feminino de 2006, realizado na Rússia, obtendo a terceira colocação na competição. Foram mensuradas massa corporal, estatura, perímetros, diâmetro ósseo e dobras cutâneas, de acordo com o protocolo de Heath-Carter. Os dados foram apresentados mediante estatística descritiva com valores médios e desvio padrão geral de 3,257±0,656 para endomorfia, 3,966±0,631 para mesomorfia e 2,214±0,658 para ectomorfia, respectivamente valores mínimo de 2,0 - 2,5 - 1,1 e máximo de 4,8 - 4,9 - 3,6 e o intervalo de confiança para a média, a 95% de certeza.

De acordo com a disposição tática obtivemos média e desvio padrão para endomorfia, mesomorfia e ectomorfia de 3,5 ± 0,36 - **4,36** ± 0,68 e **1,9** ± 0,50 para as goleiras (n=3); 3,6 ± 0,53 - 4,02 ± 0,55 - 2,25 ± 0,63 para as zagueira (n=4); 2,62 ± 0,48 - 3,62 ± 0,90 - 2,52 ± **0,97** para as laterais (n=5) ; 3,65 ± 1,62 - 3,85 ± 0,77 - 2,05 ± 0,91 para as volante (n=2) ; 3,5 ± **0,05** - 4,25 ± 0,43 - 2,0 ± 0,61 para meia (n=4) , 3,23 ±0,66 - 3,76 ± 0,25 - 2,36 ± 0,20 para atacante (n=3). Verificou-se que as atletas da seleção Brasileira de Futebol de Campo com relação à classificação do somatotipo apresentaram, predominância de característica meso-endomórfica, ou seja, onde a magnitude músculo-esquelética sobrepõe-se à adiposidade corporal. O cruzamento das funções táticas não depende da classificação somatotípica. Palavras-chaves: SOMATOTIPO, FEMININO, FUTEBOL.