

43 - LEVEL OF ASSOCIATION BETWEEN MORPHOLOGICAL, PHYSIOLOGICAL VARIABLES AND HEALTH-RELATED BODY IMAGE WITH THE PRACTICE OF PHYSICALACTIVITIES IN MALE AND FEMALE ADULTS IN THE MUNICIPALITY OF NATAL RN

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Introduction

Physical Activity

Investigations on the health / physical activity relationship have increasingly and quickly grown in the last decade. There are significant evidences that sedentary habits increase the risk of morbidity and mortality in several chronic diseases BLAIR *et al.*, (1995).

In this aspect, physical activity is a complex phenomenon characterized by intensity, duration of sessions, weekly frequency and surrounding social and environmental conditions MONTOYE, (2000). It is believed that a regular practice of physical activity reduces cardiovascular disease risks, blood pressure, increases glucose tolerance and may prevent certain types of cancer MARTINEZ-GONZALEZ *et al.*, (2000).

WILLIAMSON *et al.* (1993) reported that during a 10-year period the highest gain in body mass (>13kg), an anthropometric parameter that interferes in the blood pressure control and glucose rate, occurred in individuals having a low level of physical activity. STEVENS (1998) observed that between adult age and middle age the rise of body weight occurs even when a considerable level of physical activity is maintained. Regular physical activities for at least 3 hours a week are capable to limit the increase of fat percentage in males above 25 years old and in females up to 54 years old CASPERSEN (2000).

It is also believed that physical inactivity causes an excessive increase of body fat in humans. Research by WILLIAMSON *et al.*, (1993) consistently showed that active individuals weighed much less than those considered sedentary. However a higher quantity of research is needed to test the hypotheses that regular physical activities reduce the risk of weight gain and that inactivity increases the risk to become predominantly obese. No wide clinical trial was administered to test such hypotheses and is unlikely to occur in a near future because of complex logistics and costs.

The research that has been carried out go on confirming the relevant role of regular physical activity to maintain health and well being PAFFENBARGER Jr. *et al.*, (1986); BIJNEN *et al.*, (1992) Among the various benefits of regular physical activities we can mention the improve of cardio-respiratory function, decrease of systolic and diastolic pressure at rest, increase of high-density lipoprotein cholesterol (HDL), decrease of serum triglycerides, decrease of body fat, decrease of insulin need, reduction of morbidity-mortality mainly due to heart-related diseases, besides suggesting that it decreases anxiety and depression, improves professional and athletic performance and the general feeling of well being FLETCHER *et al.*, (1992).

The relationship between physical aptitude (as attribute) and physical activity (as behavior) and the onset of diseases is controversial BLAIR *et al.*, (1989). The association between physical activity and its positive benefits to health are well documented and occur generally and primarily in reducing the risk of chronic-degenerative diseases in adults.

Body Image

According to WILLIAMSON & O'NEIL, (1998) body image is the capacity of mental representation of one's own body, the interaction between the perceptive component, a cognitive assessment of the body size and the postural component. It is a complex affective cognitive behavioral response to such assessment; one's individual perception of one's own body and the manner how one feels about it.

For MATARUNA (2004), body Image is a figurative representation of one's own body formed and structured in the mind of the same individual, which is developed from birth to death within a complex and subjective structure going through modifications implying an ongoing construction and unceasingly reconstruction resulting from processing of stimulus.

FEY-YESAN *et al.*, (2002) says that such consciousness does not mean satisfaction since several studies that carried out a comparative analysis between young and aged women perceived that a large number (60%) of dissatisfaction and body image distortion (form and size) persisted further among elderly women.

On the other hand, comparison between genders showed more positive results among men, including both aesthetical (weight and facial appearance) and functional aspect (coordination, agility, health and sexual performance). The comparison between ethnical groups showed that Asian women presented lower degree of dissatisfaction than Caucasian and black women followed by the group of black women. And finally the Caucasian women group presented the highest index of dissatisfaction with the body CACHELIN *et al.*, (2002).

HAYFLICK (1997) affirms that the body image dissatisfaction among elderly women is different from the dissatisfaction during youth, since the aging process not only interferes with their aesthetical presentation (hair, skin, teeth, posture, body weight, voice intonation, etc.) but also reduces the performance of their entire body limiting it in many daily activities. Thus, the loss of beauty, independence and energy associated with loss of loved ones, health, individuality, may cause a huge impact on the elderly woman's life and interfere with her self-image.

Persons with a healthy view of their body image see themselves in a realistic way and like their own physiques; a positive body image reveals self-confidence, energy, vitality and positive self-evaluation, feelings of beauty and attraction, confidence and respect for one's own body, freedom of body expression regardless of weight. On the other hand persons with poor and distorted body image feel dissatisfied and indifferent to their own body, thinking that their appearance is object of criticism and evaluation by others, attach too much importance to the physical aspect on their self-evaluation, have a distressing preoccupation with their own body, feel ashamed and / or embarrassed by it. Such feelings can be accompanied by attitudes such as excess physical tests (weighing, measuring and trying on clothes), disguising their size and form by wearing larger clothes, avoiding social situations that can trigger a physical self-consciousness, avoiding exposing the entire body (not wearing swimming suits or shorts) KOWALSKI (2003).

Purpose of the Study

The purpose of this study was to analyze the degree of association between variables pertaining to morphological and physiological dimensions related to health and the level of practice of physical activity and body image in male and female adults in the Municipality of Natal-RN.

Material and Methods

Research Outline: The method developed in this investigation was Analytical Transversal. Transversal studies are observational investigations to detect risk factors (FLETCHER, 1996).

Sample Selection: It was a random sample in stages (cells) where the case history was formed from the utilization of more than one basic type in the selection of subjects (PEREIRA, 2003). First the groups of individuals walking on Av. Roberto Freire, in Ponta Negra were selected; then a selection of subjects was made by survey of sample milestone or sampling enrollment (files) from the initial unit that was chosen at random. The sample of this study comprised 200 volunteers of both genders with age between 20 and 69 years residing in the city of Natal-RN.

Experimental Treatment: Variables studied were those referring to morphological dimensions (Body Weight, WHR, BMI), physiological dimensions (VO₂max, RHR, THR, MBP, DBP) and body image related to health.

Data Analysis: Statistical treatment was carried out through variance analysis test (ANOVA): the linearity, homogeneity of intra-group variances (homocedasticity), independence between data and normality (PATTEN, 2002). To test the differences between genders and age groups as to correlation coefficient values the statistical test significance level was used: the level for rejection of hypothesis of nullity was set at 5%. Software used was SPSS 12.0. The statistical package SPSS for Windows 12.0 was used.

Results and Discussion

Table 1 Comparison in Age Groups between 20 and 69 years of age between Genders (males and females) - Natal RN

PARAMETERS	BW	WHR	BMI	RHR	THR	VO ₂ max	MBP	DBP
Males	0.0984	0.0002**	0.0063**	0.9219	0.6329	0.0001**	0.1967	0.0195*
Females	0.4904	0.0204*	0.5590	0.7497	0.4603	0.0001**	0.0996	0.0054**

Legend: BW: Body Weight; WHR: Waist / Hip Ratio; BMI: Body Mass Index; RHR: Resting Heart Rate; THR: Training Heart Rate; VO₂max: Maximum Oxygen Volume; MBP: Mean Blood Pressure; DBP: Differential Blood Pressure
* = significant difference (p=0.05). ** = highly significant difference (p=0.01)

In Table 1 when we compare the results between age groups and genders, we used variance analysis, and found body weight values of both genders where there was no significant difference p=0.05. In WHR and BMI there was highly significant difference of p= 0.01, there was no significant difference between the age groups in females only. The results found in the WHR variable characterize the types of distribution of body fat; the proportion indicates that the amount of fat on the torso also reflects the proportion of obesity in the body upper part observed in relation to the lower part. The volumes found of body weight, WHR and BMI were consistent with what the international literature confirms (PRASHER, 1995) and has been informing in relation to age effects on the behavior of body composition that were much higher in the oldest age group between 60 and 69 years of age, while the BMI percentage was higher in the younger group between 20 and 29 years. It is known that the incidence of obesity increases with age but not in a linear form. Such differences might also be associated to nutritional, endocrine problems and sedentary lifestyle (STEEN, 1988). Changes that occurred in body composition between 20 and 69 years of age include loss of lean mass and accumulation of fat tissue resulting in a rise of body weight (KOHRT *et al.*, 1992).

In Table 1 when we compare the results between age groups between genders the values found of RHR, THR, MBP of both genders show that there was no significant difference. p=0.05. Variable VO₂max was highly significant of p= 0.01 and DBP also showed a significant difference of p=0.05 in males. Only in females DBP was highly significant of p= 0.01. The observation of WHR both between genders and by age group shows that it has a high degree of association with adverse metabolic results causing rise of blood pressure, diabetes, myocardial infarction BLAIR *et al.*, 1995).

Through the body image assessment scale only two questions were chosen for this analysis: Question P1. How are you today? And Question P2: How would you like to be? According to questionnaire adapted from SORENSEN & STUNKARD (1993).

Table 2 Comparison in age groups between genders in body image from 20 to 69 years of age, Natal-RN

Age Group	Variables	Male		Female	
		P1	P2	P1	P2
20 to 29	Body Weight	0.01**	0.57	0.27	0.33
	WHR	0.33	0.76	0.83	0.86
	BMI	0.07**	0.53	0.04*	0.22
30 to 39	Body Weight	0.18	0.35	0.03*	0.42
	WHR	0.01**	0.27	0.22	0.17
	BMI	0.01**	0.12	0.01**	0.16
40 to 49	Body Weight	0.03**	0.17	0.07	0.09*
	WHR	0.02**	0.22	0.74	0.46
	BMI	0.01**	0.04**	0.01**	0.66
50 to 59	Body Weight	0.01**	0.76	0.01**	0.13
	WHR	0.76	0.63	0.02*	0.88
	BMI	0.01**	0.55	0.01**	0.12
60 to 69	Body Weight	0.03**	0.02	0.12	0.15
	WHR	0.42	0.42	0.7	0.83
	BMI	0.01**	0.03**	0.06**	0.10

Legend: WHR: Waist / Hip Ratio; BMI: Body Mass Index;
* = significant difference (p=0.05). ** = highly significant difference (p=0.01)

In Table 2 when we compare the results between age groups and genders the body weight values found in males showed a highly significant difference p= 0.01 only in the 30 - 39 years age group there was no significant difference of p=0.05 associated to body image. In WHR there was a significant difference of p= 0.01 only in the 30 - 49 years age group and in females there was a significant difference of p= 0.05 associate with body image. We also recorded it in the BMI where it was highly significant of p= 0.01 for both genders. In this aspect, ALMEIDA (2002) describes that the subjective realization that a person has of his/her own body may be more important than the objective reality of his/her appearance, and that the weight does not seem in itself to be a single determinant of the degree of satisfaction or dissatisfaction with body image. BAHRAM A.; SHAFIZADEH, M., (2003) state that persons subject to a regular program of physical activity presented higher satisfactory index of body image than sedentary individuals.

Final Considerations

On the analysis of this association between variables pertaining to morphological and physiological dimensions related to health, the degree of practice of physical activities and body image, in male and female adults and in the relevant age groups we concluded that there was a significant improvement in the values found of Body Weight, Waist / Hip Ratio, BMI, VO_{2max} and Differential Blood Pressure in the satisfaction index in body image.

Bibliographical references

- ALMEIDA, G. A. N. A imagem corporal de mulheres morbidamente obesas avaliadas através do desenho da figura humana. *Psicologia: reflexão e crítica*, v 15 (2): 283-292, 2002.
- BAHRAM.A.; SHAFIZADEH, M. A comparative and correlational study of the body-image in active and inactive adults and with body composition and somatotype. *Australian Association for research in education*, 2003. <http://www.aare.edu.au/03pap/bah03789.pdf>.
- BIJNEN, F. C.; MASTERED, W. L.; CASPERSEN, C. J. *Physical inactivity: a risk factor for coronary heart disease: A position statement for the world health organization, governments, heard fundation, societies of cardiology and other health professional*. Geneve: International Society for the World I health organization, P. 2-5, 1992.
- BLAIR, S.N. et al. Physical fitness and all-cause mortality. A prospective study of healthy men and women. *The Journal of the American Medical Association*. v.262, n.17, p.2395-2401, 1989.
- BLAIR, S. N.; KOH III, H. W.; BARLOW, C. E.; PAFFENBARGER Jr., R. S.; GIBBONS, L. W. ; MACERA, C. A. Changes in Physical fitness and all-cause mortality : a prospective study of health and unhealthy men. *The Journal of the American Medical Association*. [S.I.]; v. 273, p. 1093-1098, 1995.
- CACHELIN, F. M.; REBECK, R. M.; CHUNG, G. H.; PELAYO, E.; Does egthnicity influence body-size preference? A comparison of body image and body size. *Obesity research*. V 10 (3): 158-166, 2002.
- CASPERSEN, C. J.; PEREIRA, M. A.; CURRAN, K. M. Changes in physical patterns in the United States, by sex and cross-sectional age. *Medicine & Science in Sports & Exercise*. Atlanta, GA, v. 32, n°9, p. 1601-1609, 2000.
- FEY-YENSAN, NANCY, LISA MARIE MCCORMICK AND CATHERINE ENGLISH "Body Image and Weight Preoccupations in Older Women: A Review. *Healthy Weight Journal*. 16(5):68-71, 2002.
- FLETCHER, R. H.; FLETCHER, S. W.; WAGNER, E. H. *Epidemiologia Clínica: Elementos Essenciais*. 3ª ed., Tradução: Maria Inês Schimidt; Bruce B. Duncan; Micahel Schimidt Duncan; Lisângela Preissler, Porto Alegre, Artmed, 1996.
- FLETCHER, G.F. et al. Benefits and recommendations for Physical Activity Programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation on the Coucil on Clinical Cardiology, American Heart Association. *Circulation*, v.86, p.343-344, 1992.
- HAYFLICK, L. *Como e porque envelhecemos*, 2 ed. Rio de Janeiro, Campus, 1997.
- KOHR, W. M.; MALLEY, M. T.; DALSKY, H. Body composition of health sedentary and trained, young and older men and women. *Medicine and Science in Sports and Exercise*. [S.I.]; v. 24, n° 7, p. 832-837, 1992.
- MARTINEZ-GONZALEZ, M. A.; VARO, J. J.; SANTOS, J. L.; IRALA, J.de; BIBNEY, M. KEARNEY, J.; MARTINEZ, J. A. Prevalence of physical activity during leisure time in the European Union. *Medicine & Science in Sports & Exercise*. Pamplona Spain, v. 33, n° 7, p. 1142-1146, 2000.
- MATARUNA, L. Imagem corporal: noções e definições. *Revista digital Buenos Aires*. Año 10. n° 71, 2004. <http://www.efdeportes.com>
- KOWALSKI, KATHIAN M., *Current Health* 2, 0163156X, Vol 29 (7): 6-7, 2003.
- MONTOYE, H. J. Introduction: evaluation fo some measurements of physical activity and energy expenditure. *Medicine & Science in Sports & Exercise (supp)*. Michigan, v. 32, n° 9, p. s439-s441, 2000.
- PAFFENBARGER Jr.; R. S.; HYDE, R.T.; WING, A. L.; HSIEH, C-c. Physical activity, all-cause mortality, and longevity of college alumni. *New England Journal of Medicine*. [S.I.]; v. 314, p. 605-618, 1986.
- PATTEN, MILDRED L. *Understanding research methods: An Overview of the essentials* (3rd ed.). Los Angeles: Pyczak Publishing, 2002.
- PEREIRA, M. G. *Epidemiologia teoria e prática*. Rio de Janeiro: Guanabara-Koogan, 2003.
- PRASHER, V. P. Overweight and obesity amongst Down's Syndrome adults. *Journal of Intellectual Disability Research*. [S.I.]; v. 39, p. 437-441, 1995.
- SORENSEN T.I.A; STUNKARD A. J. Does obesity run in families because of genes? An adoption study using silhouettes as a measure of obesity. *Acta Psychiatrica Scandinavica*. 1993.
- STEEN, S. N.; OPPLIGER, R. A.; BROWNELL, K. D. Metabolic effects of repeated weight loss and regain in adolescent wrestlers. *JAMA*, [S.I.]; v. 260, p. 47-50, 1988.
- STEVENS, J.; CAI, J. PAMUK, E. R.; WILLIAMSON, D. F.; THUN, M. J.; WOOD, J. L. The effect of age on the association between body-mass index and mortality. *N. Engl. J. Med.* [S.I.]; v. 338, p. 1-7, 1998.
- WILLIAMSON, D. F.; MADANS, J.; ANDA, R. F.; KLEINMAN J. C.; KAHN, H.S.; BYERS, T. Recreational physical activity and ten-year weight change in a U. S. National Cohort. *International Journal of Obesity*. [S.I.]; v. 17, p. 279-286, 1993.
- WILLIAMSON, D.A.; O'NEIL, P.M., Behavioral and psychological correlates of obesity. In: BRAY, G. A.; BOUCHARD, C.; JAMES, W.P.T. eds., *Handbook of obesity*. New York, Marcel Dekker, 1998. P. 129-142.

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LEVEL OF ASSOCIATION BETWEEN MORPHOLOGICAL, PHYSIOLOGICAL VARIABLES AND HEALTH-RELATED BODY IMAGE WITH THE PRACTICE OF PHYSICAL ACTIVITIES IN MALE AND FEMALE ADULTS IN THE MUNICIPALITY OF NATAL RN

Abstract

The purpose of this study was to analyze the degree of association between morphological and physiological variables of physical aptitude related to health and the level of practice of physical activity and body image in adults of both genders in the Municipality of Natal-RN. The study was transversal analytical. Sample comprised 200 individuals of both genders practicing physical activities within the age group between 20 to 69 years. At the experimental treatment we used morphological variables (Body Weight, WHR, BMI), physiological variables VO_{2max} , RHR, THR, MBP and DBP) and the body image variable. The statistical treatment used the variance analysis test. The level for rejection of hypothesis of nullity was set at 0.05. The association between variables pertaining to health-related morphological and physiological dimensions and the level of practice of physical activity and body image in adults of both genders and in the relevant age groups recorded a significant improvement in the values found in Body Weight, WHR, BMI, VO_{2max} and DBP and in the body image satisfaction index. **Key Words:** 1. Physical Activity; 2. Morphological and Physiological Variables; 3. Body Image.

NIVEAU D'ASSOCIATION ENTRE VARIABLES MORPHOLOGIQUES, PHYSIOLOGIQUES ET IMAGE CORPORELLE QUI EST EN RELATION À LA SANTÉ DANS SA PRATIQUE D'ACTIVITÉ PHYSIQUE CHEZ DES INDIVIDUS ADULTES DES DEUX SEXES DANS LA MUNICIPALITÉ DE NATAL RN**Résumé :**

La présente étude a eu pour objectif d'analyser le degré de l'association entre des variables morphologique et physiologique de l'aptitude physique qui est en relation à la santé et le niveau de pratique de l'activité physique et l'image corporelle chez des individus adultes des deux sexes dans la Municipalité de Natal RN. L'étude a été analytique transversale. L'échantillon a été composé de 200 individus des deux sexes qui pratiquent une activité physique et qui sont dans la tranche d'âge comprise entre 20 et 69 ans. Dans le traitement expérimental, nous avons utilisé les variables morphologiques (Poids corporel, RCQ, IMC), variables physiologiques (VO_2 max, FCR, FCE, PAM e PADif) et la variable image corporelle. Dans le traitement statistique, nous avons utilisé le test d'analyse de variance. Le niveau pour la rejection de l'hypothèse de nullité a été fixé à 0,05. Dans l'association entre des variables qui appartiennent aux dimensions morphologique et physiologique étant en relation à la santé, et le niveau de pratique de l'activité physique et image corporelle, chez des individus adultes des deux sexes et dans les respectives tranches d'âge, on a enregistré une amélioration significative dans les valeurs rencontrées de Poids Corporel, RCQ, IMC, VO_2 max et PADif et dans l'indice de satisfaction dans l'image corporelle.

Mots-clés : 1. Activité Physique ; 2. variables morphologiques et physiologiques ; 3. Image Corporelle.

NIVEL DE ASOCIACIÓN ENTRE VARIABLES MORFOLÓGICAS, FISIOLÓGICAS Y IMAGEN CORPORAL RELACIONADA CON LA SALUD EN SU PRÁCTICA DE ACTIVIDAD FÍSICA EN INDIVIDUOS ADULTOS DE AMBOS LOS GÉNEROS EN EL MUNICIPIO DE NATAL RN.**Resumen**

El presente estudio tuvo como objetivo analizar el grado de la asociación entre variables morfológica y fisiológica de la aptitud física relacionada con la salud y el nivel de práctica de la actividad física y imagen corporal en individuos adultos de ambos los géneros en el municipio de Natal-RN. El estudio fue analítico transversal. La muestra fue compuesta por 200 individuos de ambos los géneros, practicantes de actividad física en la faja de edad comprendida entre 20 y 69 años de edad. En el tratamiento experimental utilizamos las variables morfológicas (Peso Corporal, RCQ, IMC), variables fisiológicas (VO_2 max, FCR, FCE, PAM e Padif) y la variable imagen corporal. En el tratamiento estadístico utilizamos el test de análisis de variación. Fixou-se em 0,05 el nivel para lo rechazo de la hipótesis de nulidad. En la asociación entre las variables pertenecientes a las dimensiones morfológica y fisiológica relacionada con la salud, y el nivel de práctica de la actividad física y imagen corporal, en individuos adultos de ambos los géneros y en las respectivas fajas de edad, registró-se una mejora significativa en los valores encontrados de Peso Corporal, RCQ, IMC VO_2 max y Padif y en el índice de satisfacción en la imagen corporal.

Palabras llaves: 1. Actividad Física; 2. Variables Morfológicas y Fisiológicas; 3. Imagen Corporal.

NÍVEL DE ASSOCIAÇÃO ENTRE VARIÁVEIS MORFOLÓGICAS, FISIOLÓGICAS E IMAGEM CORPORAL RELACIONADA À SAÚDE NA SUA PRÁTICA DE ATIVIDADE FÍSICA EM INDIVÍDUOS ADULTOS DE AMBOS OS GÊNEROS NO MUNICÍPIO DE NATAL - RN.**Resumo**

O presente estudo teve como objetivo analisar o grau da associação entre variáveis morfológica e fisiológica da aptidão física relacionada à saúde e o nível de prática da atividade física e imagem corporal em indivíduos adultos de ambos os gêneros no Município de Natal-RN. O estudo foi analítico transversal. A amostra foi composta por 200 indivíduos de ambos os gêneros, praticantes de atividade física na faixa etária prevista entre 20 a 69 anos de idade. No Tratamento experimental utilizamos as variáveis morfológicas (Peso Corporal, RCQ, IMC), variáveis fisiológicas (VO_2 max, FCR, FCE, PAM e PADif) e a variável imagem corporal. No tratamento estatístico utilizamos o teste de análise de variância. Fixou-se em 0,05 o nível para a rejeição da hipótese de nulidade. A associação entre variáveis pertencentes às dimensões morfológica e fisiológica relacionada à saúde, e o nível de prática da atividade física e imagem corporal, em indivíduos adultos de ambos os gêneros e nas respectivas faixas etárias registrou-se uma melhora significativa nos valores encontrados de Peso Corporal, RCQ, IMC, VO_2 max e PADif e no índice de satisfação na imagem corporal.

Palavras chaves: 1. Atividade Física; 2. Variáveis Morfológicas e Fisiológicas; 3. Imagem Corporal.