126 - BODY SCHEME ANALYSIS BETWEEN YOGA AND BODY COMBAT PRACTITIONERS

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1.INTRODUCTION

The human body and it´s relation with the environment has been the object of studies of diverse areas of knowledge. Several researches try to discover how the morphologic organization of the individual is and how social, psychological, and physical aspects can interfere with the internal equilibrium of the body and, consequently reflect attitude and behavior (SEGHETO and GAMA, 2008). In this context, has been emphasized body awareness and it´s relationship with the movement.

The body awareness is a mental construction of our own body based on value judgement and from multimodal stimulus (sight, touch, proprioception). So, we can identify two distinct and complementary aspect in the structure of our own body and it´s relation to the environment and other bodies, the body image (BI) and the body scheme (BS). The interaction of proprioceptive and kinaesthetic mechanisms that allow the individual to become conscious of his own body in time and space and establish relationship with the surrounding objects is denominated body schema (LE BOUCH, 1977; FREITAS, 2004; HOLMES and SPENCE, 2004; BARROS, 2005). The body image, refers to the perception of corporal dimensions developed from thoughts and feelings associated with sociological, physiological questions or from the own body structure (SCHILDER, 1999; THOMPSON, 2004).

Both, BI and BS present a great labile character and could be influenced by intrinsic and extrinsic organic factors (SCHILDER, 1999; HOLMES e SPENCE, 2004). In this study we are going to point out the relationship between body schema and movements (TURTELLI, 2002) and the influences of pain on body perception (SCHOWOEBEL et al, 2001).

Several studies points the positive influence of exercises on subjective perception of body (ARAÚJO e ARAÚJO, 2003, DAMASCENO et al, 2003; DAMASCENO et al, 2005; VIEIRA et al., 2006). However, these researches are based on physiological approach, and describe the influence of physical activities on the body composition (McARDLE et al, 2003). The body composition may cause an alteration of the body perception (Araujo, 2002; BENEDETTI et al, 2003 ; MATSUO et al, 2007). Studies correlating body schema with movement are insufficient, mainly the exercises with emphasis on proprioceptive mechanisms.

In the practice of physical activities, the more developed the body schema, the more efficient the motor gesture, more precise movements are in relation to personal, peripersonal and extrapersonal space. The more positive the relation of the body with the environment, the more confident individual becomes in the practice of physical exercises, and the more coordinated the movement the more able to prevent possible injures (ARAÚJO e ARAÚJO, 2002).

Moreover, depending on the intensity, style, frequency and performance of the the exercises, this can generate points of muscular tension and, many times, these points can be painful. Literature points out that one of the stimulants that can modify the BS is the presence of pain.

The aim of this study was to analyze and to compare the BS and the BI, of individual practicing Yoga and Body Combat (BC), to identify and to compare the presence of tender points (PMT) between practitioners of both modalities and to relate the PMT with BS, being looked at in order to identify the influences of these activities on the subjective and introspective perception of the body.

2. METHODOLOGY

We evaluated and analyzed 24 women aged 18 - 45 years, divided in three groupsYoga practitioners (n=8), BC practitioners (n=8) and inactive (n=8). Active women should practice the activity at least for 3 months, with a minimum frequency of once a week. We excluded women who takes or needs of any medicine related to bones, joints or muscles, and / or have been submitted to any type of musculoskeletal surgery.

All procedures were applied in the Laboratory of Body Perception and Movement - USJT and all participants read and signed a consent form.

The Image Marking Procedure was used to assess BS. Body parts were used as reference points: acromio-clavicular joints, narrowest waist width and greater trochanters. The subjects remained in standing position against the wall and through verbal guidance they were instructed to perform the test blindfolded and they should imagine themselves in a mirror. The investigator stands behind the subjects and with his fingers tip firmly touches the body regions. The subjects are then are asked to point on the wall where they “see” these points in the “mirror”. This procedure was performed for 3 times consecutively as determined by Thurm (2007). Next, the subject was placed near the wall to mark the actual points (Figure 1). The distances of the points marked by the individual (perceived measure) and by the examiner (real measure) were measured in the horizontal level, which represents the body width and the length of the right and the left body parts in order to analyze the symmetry (ASKEVOLD, 1975). The Body Perception Index (BPI), which consists in using the average formula of the perceived size divided by the actual size multiplied by 100 (FICHTER et al, 1986; LAUTENBACHER et al, 1992; LAUTENBACHER et al; 1997), was then applied. The participants that were 100% aware of their body dimensions were considered as adequate body perception; values below 100% were classified as hyposchematia and those above, as hyperschematia (RODE et al, 2006; BONNIER; 1905).

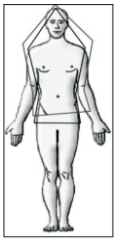

Figure 1 – Schema of body segments touched during Image Marking Procedure and the final result of the union of the real points (black) and perceived points (gray).

The silhouette scale purposed by Stunkard et al (1983) and adapted by Thompson and Gray (1995) was use, and the subjects should choose between the silhouette drawings (Figure 2), one actual (SA) e one ideal (SI).The difference between the two silhouettes defines the degree of own body (dis)satisfaction (Thompson and Gray, 1995).

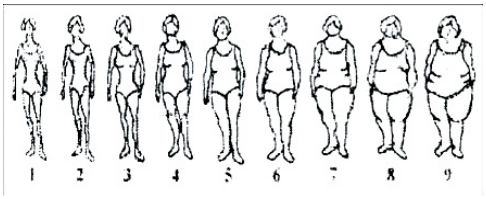

Figure 2 – Silhouette scale used to assess body image (Thompson & Gray, 1995).

Digital pressure was used to identify tender points. The regions evaluated were: insertion of the occipital muscles, lower cervical spine (C5-C7), trapezium muscle, the scapular spine, second costochondral joint, lateral humerus epicondyle, upper external quadrant of the gluteal region (gluteus medius), the greater trochanter and medial fat of the knee. All points were assessed right and left side. The subject were asked to say if they felt pain or not, and (Wolfe et al., 1990). All data were statistically analyzed using SPSS software (version 12.0). And the level of significance was 5%. The data were presented as mean and standard deviation.

3.RESULTS

We evaluated 24 female volunteers divided into 3 groups, the first consisting of 8 inactive aged 19 to 45 years (25 ± 8.34), second group of 8 practitioners in BC aged 18 to 24 years (21 ± 2.25) and the third group consisting of 8 Yoga practitioners aged 19 to 34 years (26 ± 4.77). Regarding the education level of the population studied, all groups were constituted of graduated and undergraduate students, demonstrating the high level of education of volunteers.

The BS analysis demonstrated that individuals of all groups showed hyposchematia of head height (Table 1). Using ANOVA with repeated measurements for the widths of the shoulder, waist and hip, it was observed that the inactive group presented hyperschematia in all measures, the BC group presented hyposchematia, that is, they perceive lower, affecting significant difference in waist size, compared to other groups. The Yoga practitioners showed hyposchematia, except the waist width.

Table 1 - Values of mean and standard deviation of the BPI of IMP of the head height and width of the body.

Head height and width of body segments	Inactive	Body Combat	Yoga
Head height	99,95±2,04	97,44±2,60	99,89±3,19
Shoulder width	102,99±22,99	89,24±31,46	91,74±14,79
Waist Width	119,78±17,43 [a]	91,06±32,12 [a b]	121,18±10,08 [b]
Hip Width	103,16±22,00	89,36±33,05	96,09±11,36

a : p= 0,048; b: p= 0,036

The BPI in relation to body symmetry showed no significant difference in perception between right and left sides (Table 2).

Table 2 - Values of mean and standard deviation of the BPI of heights right and left of the inactive, Body Combat and Yoga groups.

Inactive Group	Right	Left
Shoulder	106,34±2,62	105,08±3,00
Waist	111,06±5,93	111,75±5,65
Hipl	110,23±10,68	115,24±9,22
Body Combat Group	**Right**	**Left**
Shoulder	105,03±3,69	102,58±2,62
Waist	109,45±4,61	108,25±4,91
Hipl	110,84±8,11	109,23±8,32
Yoga Group	**Right**	**Left**
Shoulder	105,09±1,75	103,81±2,08
Waist	108,09±5,28	107,26±4,02
Hipl	109,24±4,67	108,50±5,12

Beyond quantitative analysis, scanned images from the IMP test, were also evaluated qualitatively, so that the distortions and similarities between what real dimension and perceived dimension were analyzed. Thus, we found no specific feature in any groups, all groups presented distortions in width and height measures, as can be seen in figure 3.

A B C

Figure 3 - Test of Image Marking Procedure (IMP) from subjects of inactive (A), Body Combat (B) e and Yoga (C) group. Lines in black are the real dimensions of the body; in gray the perceived ones.

The tender points test showed that the inactive group presented more tender points than the other groups. There was no statistical difference There was a statistical difference between Inactive and Yoga group, as shown in the table below.

Table 3 - Number of tender points in the groups analyzed.

GROUPS	PAIN
Inactive	7,3±4,30 [a]
Body Combat	4,0±2,72
Yoga	1,3±1,16[a]

a= p<0,01

3.DISCUSSION OF RESULTS AND CONCLUSION

As far as we review this work seems to be the first one assessing the BS and BI of individuals practicing Yoga and BC and its association with the presence of tender points.

Regarding the education level and body awareness relationship it was not possible to evaluate a possible correlation, since all the volunteers had the same instruction level.

Body schema analysis showed that all subjects tested presented hyposchematia of head height, however, body perception index (BPI) values were very close to the ideal (100%). These findings are not described or discussed in the literature; however, considering the location and importance of brain, the accurate perception of head position is fundamental to protect it.

In relation to body width, women in Inactive group showed hypershematia for all body segments, confirming what the literature suggests. Women tend to perceive their body size larger than they actually are (MOLINARI, 1995). Practitioners of BC had a hyposchematia for all body dimensions. The practice of BC is characterized by constant movements in medial rotation, flexion and adduction. This "closed" position may be responsible for the proprioceptive information that leads to perceive the body smaller. The Yoga practitioners showed hyposchematia of the shoulder and hip width and hypershematia to the waist width. Analyzing some postures of Yoga practice various movements of the trunk are performed in class and emphasize the stretching of the muscles of the anterior body, the twists stimulate the abdominal organs.

Regarding tender points it was observed that inactive group presented more points than other groups. Sedentary lifestyle generates muscle tension, add to this the stress of daily routine that can cause shortening of muscles. Aerobic exercises targeting a muscle conditioning, Yoga and relaxation techniques are effective in reducing points of muscle tension (Weidebach, 2002). The Yoga practitioners presented the minor quantity of tender points.

We could not identify any relationship between tender points and BS. However, it seems to be clear that intense or relaxing physical activity tends to reduce the muscle tension.

Women who practice more intense activities, such as BC, that require a pattern of movements more flexed and retracted may lead to a hyposchematic perception of the body. Isometric postures that are practiced in Yoga tend to a expansion of body mainly in waist segment. Perhaps this is the explanation of waist hyperschematia in Yoga group. According to data obtained in this study, body awareness could be developed if there is a balance in corporal practice of exercise, intensity of muscular action and relaxing plus

This research was important for the understanding of the various neuromotor and affective processes involved in movements performed in these two types of physical activities. It is also evident the need for physical education professionals to be alert and prepared to organize programs of activities and exercises that meet the individual in their diverse needs.

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BODY SCHEME ANALYSIS BETWEEN YOGA AND BODY COMBAT PRACTITIONERS

ABSTRACT

Body awareness is a concept that involves subjective aspects (Body Image - BI) and perception of anatomic segments of the body and its relation to space (Body schema - BS). Physical activity may alter the perception of the body. Yoga exercise emphasizes harmony between the body segments with smooth and slow movements. On the other hand, Body Combat exercise (BC) are characterized by explosives, varied and intense movements. The aim of this study was to evaluate and compare the BS and BI in practitioners of Yoga and BC and to identify the presence of tender points and verify its relationship with BS. We evaluated 24 women, aged 18-45 years divided in three groups: inactive (n=8), Yoga practitioners (n=8) and BC practitioners (n=8). Regarding the BS we observed that all subjects presented hyposchematia of the head height; the inactive group presented hypershematia of the width of the body segments. The Yoga practitioners presented hyposchematia of the widths of the shoulders and hip and hypershematia of the waist dimensions. The BC practitioners presented hyposchematia of the body width. There were significant differences in the perception of the waist dimensions, the practitioners of BC perceived themselves smaller. Related to tender points the inactive group presented significantly more points than the practitioners of Yoga and BC. We conclude that the Yoga practitioners presented better body schema. Regarding tender points it was not found any relationship with the BS, but it was clear that intense or relaxing physical activity tends to reduce the muscle tension.

KEYWORDS: Body image, body scheme, tender points

ANALYSE DU SCHÉMA CORPOREL PARMI LES PRATIQUANTS DE YOGA ET BODY COMBAT

RÉSUMÉ

La perception corporelle est un concept qui regroupe des aspects subjectifs (Image Corporelle – IC) et la perception du corps anatomique et sa relation avec l'espace (Shéma Corporel – SC) peut se voir modifiée à partir de la pratique des activités physiques. Les exercices de yoga accentuent l'harmonie entre les segments corporels avec des mouvements lents, doux et néanmoins intenses. A contrario, les mouvements d'un cours de Body Combat (BC) sont amples, explosifs, variés et intenses. Pourtant, l'objectif de sa recherche était d'évaluer et comparer le SC et la IC chez les praticiens de yoga et de BC, ainsi que d'identifier la présence des points de tension musculaire (PTM) et vérifier sa relation avec le SC. Vingt-quatre femmes âgées de 18 à 45 ans ont été évaluées : 8 personnes inactives, 8 praticiennes de yoga et 8 praticiennes de Body Combat. En ce qui concerne le SC, il a été verifié que : tout les sujets présentaient de l'hiposhématique pour la perception de taille de la tête ; les sujets inactifs présentaient de l'hipershématique pour la largeur des segments corporels et la taille des segments du côté droit et gauche ; les praticiennes de yoga présentaient de l'hiposhématique pour la largeur des épaules et des hanches et de l'hipershématique pour la largeur de la taille ; les praticiennes de Body Combat présentaient de l'hiposhématique pour les largeurs corporelles et hipershématique pour la taille des segments corporels. On a pu constater une différence significative au niveau de la perception de la largeur de la taille chez les praticiennes de BC, qui se sont senties plus petites. A propos des PTM, les sujets inactifs présentaient une quantité significativement plus grande que les praticiennes de yoga et de BC. On a ainsi pu conclure que les praticiennes de BC peuvent présenter une distorsion de la perception corporelle, alors que cela n'arrive pas chez les praticiennes de yoga. En ce qui concerne les PTM, aucune relation avec le SC n'a été découverte, mais il est clair que la pratique de l'activite physique en favorise la réduction.

MOTS CLES: image, schéma corporel, Points de Muscle Tension

ANÁLISIS DEL ESQUEMA CORPORAL ENTRE PRATICANTES DE YOGA Y BODY COMBAT
RESUMEN

La percepción corporal es un concepto que no solo envuelve aspectos subjetivos (Imagen Corporal – IC), sino que la percepción del cuerpo anatómico y su relación con el espacio (Esquema Corporal – EC) y puede modificarse a partir de la práctica de actividad física. Los ejercicios de yoga enfatizan la harmonía entre los segmentos corporales con movimientos suaves y lentos, pero intensos. Ya los movimientos de una clase de Body Combat (BC) son amplios, explosivos, variados y intensos. Así que, el objetivo de esa investigación fue evaluar y comparar el EC y la IC en los practicantes de Yoga y BC, además de identificar la presencia de puntos de tensión muscular (PTM) y observar su relación con el EC. Se les evaluaron a 24 mujeres, con edades entre 18 hasta 45 años, siendo 08 inactivas, 08 practicantes de Yoga y 08 practicantes de BC. En relación con el EC se observó que todos los individuos presentaron hipoesquematía para la percepción de la cabeza; las inactivas presentaron hiperesquematía para las anchuras de los segmentos corporales, alturas de los segmentos del lado derecho y izquierdo; las practicantes de Yoga presentaron hipoesquematía para las anchuras del hombro y cuadril y hiperesquematía para la anchura de la cintura; las practicantes de BC presentaron hipoesquematía para las anchuras corporales y hiperesquematía para la altura de los segmentos corporales. Hubo diferencia significativa en la percepción de la anchura de la cintura, siendo que esa diferencia se mostró menor en las practicantes de BC. En cuanto a los PTM, las inactivas presentaron una cantidad significativamente mayor de PTM que las practicantes de Yoga y BC. Concluyendo, vimos que las practicantes de BC pueden presentar distorsión de la percepción corporal, siendo que lo mismo no ocurre con las practicantes de yoga. En cuanto al PTM, no se encontró ninguna relación de este con el EC, pero eso dejó claro que la práctica de actividad física lleva a una reducción.

PALABRAS CLAVE: Percepción Corporal, Esquema Corporal, Puntos de Tensión Muscular.

ANÁLISE DO ESQUEMA CORPORAL ENTRE PRATICANTES DE YOGA E BODY COMBAT
RESUMO

A percepção corporal é um conceito que envolve aspectos subjetivos (Imagem Corporal - IC) e a percepção do corpo anatômico e sua relação com o espaço (Esquema Corporal – EC) e pode modificar a partir da prática de atividade física. Os exercícios de Yoga enfatizam a harmonia entre os segmentos corporais com movimentos suaves e lentos, porém intensos. Já os movimentos de uma aula de Body Combat (BC) caracterizam-se por serem amplos, explosivos, variados e intensos. Portanto, o objetivo desta pesquisa foi avaliar e comparar o EC e a IC em praticantes de Yoga e BC, além de identificar a presença de pontos de tensão muscular (PTM) e verificar sua relação com EC. Foram avaliadas 24 mulheres, com idade entre 18-45 anos, sendo 08 inativas, 08 praticantes de Yoga e 08 praticantes de BC. Quanto ao EC verificou-se que: todos os indivíduos apresentaram hipoesquematia para a percepção da altura da cabeça; as inativas apresentaram hiperesquematia para as larguras dos segmentos corporais, alturas dos segmentos do lado direito e esquerdo; as praticantes de Yoga apresentaram hipoesquematia para as larguras de ombro e quadril e hiperesquematia para a largura da cintura; as praticantes de BC apresentaram hipoesquematia para as larguras corporais e hiperesquematia para altura dos segmentos corporais. Houve diferença significativa na percepção da largura da cintura, sendo as praticantes de BC se percebiam menores. Quanto aos PTM, as inativas apresentaram quantidade significativamente maior que as praticantes de Yoga e BC. Concluímos, assim que as praticantes de BC podem apresentar distorção da percepção corporal, sendo que o mesmo não ocorre com as praticantes de yoga. Quanto ao PTM não foi encontrada nenhuma relação com o EC, mas ficou claro que a prática de atividade física promove uma redução.

PALAVRAS CHAVE: Percepção Corporal, Esquema Corporal, Pontos de Tensão Muscular.

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