

## Self-gender schemes: A comparison between individual and collective sport modalities

### Esquemas de auto-género: Una comparación entre modalidades deportivas individuales y colectivas

### Esquemas de auto-género: Uma comparação entre as modalidades esportivas individuais e coletivas

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**Resumen:** El objetivo de este estudio fue analizar las diferencias en los esquemas de género de autoconcepto entre los deportes colectivos e individuales. Los participantes fueron 140 atletas aficionados de edades comprendidas entre los 13 y 17 años que practican un deporte de equipo (fútbol sala) y un deporte individual (atletismo) en los municipios de Chapecó y Florianópolis Santa Catarina-SC. Los instrumentos utilizados fueron el Cuestionario para sociodemográfico y Formación, el inventario femeninos esquemas de género del autoconcepto (IFEAGA) y el Inventario de esquemas de género masculinos de Autoconcepto (IMEGA). No hay diferencias en el esquema de género se encontraron entre las mujeres deportistas que fueron clasificados principalmente como femenina (esquemática iso) masculino / . Entre los hombres, los jugadores de fútbol mostraron un esquema de género hetero masculino, mientras que en el atletismo mostraron un esquema esquemática iso. En cuanto a la variación dentro de las dimensiones de género de esquema, los atletas de fútbol tuvieron valores más altos en términos de inferioridad en relación con los de atletismo. Entre los hombres, los atletas atletismo mostraron valores más altos de audacia y valores más bajos de la inseguridad en comparación con los atletas de fútbol. Llegamos a la conclusión de que los esquemas de género de auto-concepto sólo tenían variaciones en las dos modalidades para los atletas masculinos; sin embargo, las variaciones en sus dimensiones constitutivas de esquema se produjeron de acuerdo con la naturaleza del deporte practicado.

**Palabras clave:** Autoconcepto; Género; Fútbol de salón; Los atletas, psicología del deporte.

**Abstract:** The aim of this study was to analyze the differences in gender schemas of self between collective and individual sports. The participants were 140 amateur athletes aged between 13 and 17 years practicing a team sport (indoor soccer) and an individual sport (athletics) in the Chapecó and Florianópolis municipalities of Santa Catarina-SC. The instruments used were the Questionnaire for Socio-Demographic and Training, the Inventory Female Gender Schemas of Self-Concept (IFEAGA) and the Inventory of Male Gender Schemas of Self-Concept (IMEGA). No differences in gender schema were found among women athletes who were mostly classified as masculine/ feminine (*iso schematic*). Among men, the soccer players

showed a *hetero masculine* gender schema, while those in athletics showed an iso schematic scheme. Regarding the variation within the gender schema dimensions, the soccer athletes had higher values in terms of inferiority in relation to those in athletics. Among men, the athletics athletes showed higher values of boldness and lower values of insecurity as compared to soccer athletes. We conclude that gender schemas of self-concept only had variations in the two modalities for male athletes; however, the variations in their constitutive dimensions of schema occurred according to the nature of the sport practiced.

**Keywords:** Self-concept; Gender; Indoor soccer; Athletics, Sports Psychology.

**Resumo:** O objetivo deste estudo foi analisar as diferenças nos esquemas de género o autoconceito entre esportes coletivos e individuais. Os participantes foram 140 atletas amadores com idades entre 13 e 17 anos que praticantes de esportes coletivos (futebol de salão) e individuais (atletismo) nos municípios de Chapecó e Florianópolis de Santa Catarina-SC. Os instrumentos utilizados foram o Questionário para características sociodemográficas e Formação, o Inventário Feminino dos Esquemas de Género do autoconceito (IFEAGA) e o Inventário de Esquemas de Género do sexo masculino (IMEGA). Não houve diferença no esquema de género entre mulheres atletas que eram em sua maioria classificados como equilibradas entre o masculino e feminino (esquemática iso). Entre os homens, os jogadores de futebol mostraram um esquema de género masculino, enquanto os atletas de atletismo mostraram-se iso esquemáticos. Em relação à variação dentro das dimensões do esquema de género, os atletas de futebol apresentaram valores mais elevados em termos de inferioridade em relação aos do atletismo. Entre os homens, os atletas de atletismo apresentaram valores mais elevados de ousadia e valores mais baixos de insegurança em relação aos atletas de futebol. Conclui-se que os esquemas de género do autoconceito apresentou variações nas duas modalidades para atletas do sexo masculino. No entanto, as variações nas suas dimensões constitutivas do esquema ocorreu de acordo com a natureza do esporte praticado.

**Palavras Chave:** Auto-conceito; Género; Futebol de salão; Atletas, Psicologia do Esporte.

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## Introduction

In recent years there has been a growing interest in developing studies that focus on understanding athletes as a whole, particularly with regard to psychological profile. One of the pioneering studies in this area indicated that persistent individuals in high performance sports have similar psychological profiles, with small differences between the sexes (Harris, 1973). Some articles have focused on trying to draw a single complex psychological profile for each modality (Cardoso, Marinho, & Pimentel, 2013; Cardoso, Martins, Fávero, Silveira, & Souza, 2009; Cardoso & Sacomori, 2012; Cardoso, Silveira, Sacomori, Sperandio, & Beltrame, 2011), considering that athletes from different modalities can have different psychological characteristics (Vanek, Hosek, Rychtecky, & Slepicka, 1975). Other authors are more focused on general psychological traits that help us to understand sport orientation as a complex concept (Amaral, Melo, & Giavoni, 2010; Medeiros, Ferrari, & Cardoso, 2014; Melo & Giavoni, 2011; Melo, Giavoni, & Troccoli, 2004).

As such, there is a need to focus on different aspects that form the psychological profile. Among these that stand out are the social theories of gender development that provides potential alternatives to psychoanalytic theory. These theories try to explain how children identify themselves as masculine or feminine human beings (Brannon, 1999).

Brannon's (1999) social theories include the cognitive developmental theory and its extension, the gender schema theory. The cognitive developmental theory suggests that gender identity is a cognitive concept that children learn as part of their development in terms of physical environment and their own bodies. Gender schema theory is focused on the gender schemata that would explain how cognitive structures give support to complex social concepts.

Gender self-concept schemes have been presented as an important tool for understanding athletes' behavior in regards to their sport modalities and the daily stressors that surround this environment (Marques, Cipriani, Melo, & Giavoni, 2010). According to Giavoni and Tamayo (2005), the self is comprised of cognitive, multidimensional, multifaceted and flexible structures composed of self-representation from the internal association, organization and coordination of the cognitive scheme components.

The self is composed of gender schemas and masculine and feminine traits (identity), which in turn are related to stereotypes of masculinity and femininity in each culture or society. The male figure presents experiences, traits, values and roles related to masculinity, while the female comprises those relating to feminine features. Both can be triggered in the presence of social stimuli related to masculinity or femininity, influencing the answers regarding individual behavior, affection and cognition (Giavoni & Tamayo, 2003).

In the sporting context, studies dealing with this issue have aimed to identify whether individuals have gender schemes consistent with the characteristics of the sport practiced (Cardoso & Sacomori, 2012; Matteo, 1986; Melo & Giavoni, 2010). This is largely due to the literature that has shown that some types are stereotyped as feminine (figure skating and rhythmic gymnastics), masculine (soccer, rugby and wrestling) and neutral (volleyball and swimming) (Colley, Berman, & Millingen, 2005; Hardin & Greer, 2009; Koivula, 1995, 2001). However, the results have indicated that individuals with different gender identities and schemas participate in masculine, feminine or neutral sports, which demonstrate that the gender stereotypes of the sport practiced does not seem to influence the athlete's.

No studies have addressed the association between the nature of the sport modality and the gender self-concept schemas. Thus, highlights the need to compare the athletes in collective and individual sports in order to verify if the nature of the sport influences the gender self-concept schema of athletes or vice versa. Therefore, the objective of this research was to analyze possible differences between athletes from a collective modality (indoor soccer athletes) and an individual modality (athletics) in relation to gender self-concept schemas.

## Method

### Study Characterization

According to Thomas and Nelson (2002), this is an exploratory, cross-sectional and comparative descriptive study. This study is part of a major project entitled "Sport and artistic profile of athletes and dancers in Brazil," which seeks to draw the profile of athletes from different sports and dancers from different dance styles that was submitted and approved by the Ethics Committee for Human Beings Research at UDESC registered under number 275 381/2013.

#### Participants

The participants were 140 amateur athletes aged 13 to 17 years who were practitioners of indoor soccer (collective modality) or athletics (individual modality) from the cities of Florianópolis and Chapecó, SC, Brazil. The subjects were split into two groups: 1) individual sport - athletics, totaling 68 practitioners with 36 women ( $M = 16.2, \pm 1.7$  years), and 32 men ( $M = 16.1, \pm 1.0$  years); and 2) team sport - indoor soccer, totaling 72 practitioners with 30 women ( $M = 13.5, \pm 1.1$  years) and 42 men ( $M = 13.1, \pm 0.35$  years).

The study included individuals who met the following criteria: (a) agreed to participate in the study by signing the Terms of Consent and Free Clear Assent (signed by parents or guardians when participants were less than 18 years old); (b) trained in a systematic way with the frequency of at least

three times per week; and (c) would be training regularly during the period of data collection.

### Measures

A questionnaire with the following items was used to gather socio-demographic and sports participation information:

- a) Skin color (IBGE, 2008);
- b) Brazilian Economic Classification Criterion (ABEP, 2013);
- c) Systematized time of practice
- d) Training days per week
- e) Number of competitions
- f) Level of competition

The variables were categorized as follows: skin color (white, black, yellow, brown and indigenous); marital status (single and married); level of education (incomplete primary education, incomplete secondary education and higher education); time in systematic practice ( $\leq 3$  years and  $> 3$  years); training days per week ( $\leq 3$  days and  $> 3$  days); number of competitions ( $\leq 3$  and  $> 3$ ) and level of competitions (state, national and international). The economic level was obtained through the ABEP (2013). This questionnaire uses a point system that serves to divide the population into five economic classes: "A", "B", "C", "D" and "E" in descending order of purchasing power, with the classes A and B, divided into A1 and A2 and B1 and B2, respectively. In the present study, the economic level was divided into three classes: "High" ("A" + "B"), "Medium" ("C"), or "Low" ("D" + "E").

The levels of masculinity and femininity were assessed using the Inventory of Self Gender Schemas (IEGA): The feminine version (IFEGA; Giavoni & Tamayo, 2005) for women and the masculine version (IMEGA; Giavoni & Tamayo, 2003) for men.

The IFEGA consists of 75 items where 36 items represent masculine schema and 39 items represent the feminine schema. The masculine schema range consists of the factors stranding, self-centeredness and neglect. The feminine schema range includes the factors sensuality, inferiority and social adjustment. The items are assessed using a five-point scale, where a score of zero (0) indicates that the item does not apply to the respondent to a score of four (4) which the item applies fully to the respondent.

Similar to the previous inventory, the IMEGA consists of 71 items where 41 items represents the masculine schema and 30 items represent the feminine schema. The factors in the

masculine scale are egocentrism, boldness, and rationality. The feminine factors are integrity, sensuality, insecurity and emotionality. The emotionality and integrity factors result in a second-order factor called sensitivity. The items are assessed using a five-point scale, where a score of zero (0) indicates that the item does not apply to the respondent to a score of four (4) which the item applies fully to the respondent.

### Data Collection

With the approval of involved institutions, the study objectives and procedures were explained to the subjects who were invited to participate. Surveys were completed in private rooms on their institutions reserved for this project.

### Data Analysis

Data were tabulated and analyzed in Statistical Package for Social Sciences (SPSS) version 17.0. Frequencies (relative and absolute) were used to characterize the participants. The Kolmogorov-Smirnov test was used to test for data normality. Chi-square tests were used to assess the association between gender schemas of the self and the sport modality according to sex. Because the data were not normally distributed, Mann Whitney U tests were utilized to compare athletes between modalities according to sex using the factors' raw scores that comprise the self-concept of gender schemas. Tests of significance were assessed at the  $p < .05$  for all analyses.

### Results

Table 1 presents the characteristics of the subjects in terms of socio-demographic and sports variables according to the nature of the sport and the sex of the participants. In general, all athletes were single, mostly white, with a weekly frequency of training  $\leq 3$  times, with a number of participants in more than two competitions last year at the Santa Catarina state level. From an economic level, indoor soccer players had higher numbers at the top level, while the athletics athletes were more at the lower level. Indoor soccer players showed a higher heterogeneity in the variables investigated. Male indoor soccer athletes and both sexes in athletics reported a systematic practice of  $\leq 3$  years and women indoor soccer athletes reported more than 3 years. For the duration of the workouts, female indoor soccer athletes and both sexes in athletics trained over 2 hours per day, while men indoor soccer athletes trained  $\leq 2$  hours daily.

**Table 1.** Distribution of Participants in Terms of Socio Demographic and Sports Characteristics, According to the Sport Modality and Sex of the Participants.

Variable	Collective modality		Individual modality	
	Men n (%)	Women n (%)	Men n (%)	Women n (%)
<b>Marital status</b>				
Single	42 (100.0)	30 (100.0)	32 (100.0)	36 (100.0)
Married	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)
Divorced	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)
<b>Skin color</b>				
White	29 (69.0)	18 (60.0)	14 (43.8)	16 (44.4)
Black	05 (11.9)	12 (40.0)	03 (9.4)	06 (16.7)
Yellow	04 (9.5)	00 (0.0)	02 (6.3)	02 (5.6)
Brown	04 (9.5)	00 (0.0)	13 (40.6)	10 (27.8)
Indigene	00 (0.0)	00 (0.0)	00 (0.0)	02 (5.6)
<b>Social Class</b>				
Low	05 (11.9)	00 (0.0)	16 (50.0)	21 (58.3)
Median	00 (0.0)	02 (6.7)	15 (46.9)	15 (41.7)
High	37 (88.1)	28 (93.3)	00 (0.0)	00 (0.0)
<b>Time of systemized practice</b>				
≤ 3 years	24 (57.1)	8 (26.7)	29 (90.6)	30 (83.3)
>3 years	18 (42.9)	22 (73.3)	03 (9.4)	06 (16.7)

Variable	Collective modality		Individual modality	
	Men n (%)	Women n (%)	Men n (%)	Women n (%)
<b>Sports training per week</b>				
≤ 3 days	42 (100.0)	30 (100.0)	32 (100.0)	36 (100.0)
>3 days	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)
<b>Training hours per day</b>				
≤ 2 hours	42 (100.0)	00 (0.0)	03 (9.4)	02 (5.6)
> 2 hours	00 (0.0)	30 (100.0)	29 (90.6)	34 (94.4)
<b>Number of competitions</b>				
≤ 2 competitions	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)
>2 competitions	42 (100.0)	30 (100.0)	32 (100.0)	36 (100.0)
<b>Level of competitions</b>				
State (Santa Catarina)	42 (100.0)	30 (100.0)	28 (87.5)	19 (52.8)
National (Brazil)	00 (0.0)	00 (0.0)	02 (6.3)	13 (36.1)
International	00 (0.0)	00 (0.0)	02 (6.3)	04 (11.1)

Regarding the typological groups of gender of self-concept schemas, it was found that among women, there were no significant differences ( $p > .05$ ). This means that independent of the modality, most women were classified as iso schematic. On the other hand, in men, significant differences were observed ( $p < .01$ ) which showed that the male indoor soccer players mostly presented hetero schematic schemas, while the males in athletics presented iso schematic schemas (see Table 2).

**Table 2.** Association between Gender Schemas of Self and Sports Modalities According to Biological Sex.

Gender schemas	Females		p	Males		p
	Collective modality n (%)	Individual modality n (%)		Collective modality n (%)	Individual modality n (%)	
HM	10 (23.8)	04 (13.3)	.359	20 (20.0)	08 (22.2)	< .01
ISO	25 (59.5)	21 (70.0)		05 (5.0)	19 (52.8)	
HF	07 (16.7)	05 (16.7)		07 (7.0)	09 (25.0)	

Note. HM - Hetero masculine schematic; ISO = Iso schematic; HF = Hetero feminine schematic; Chi-square test.

According to Table 3, significant differences among women were found regarding inferiority where the indoor soccer players had higher values as compared to the females in athletics ( $p < .05$ ). Among men, the factors that showed differences between the sport modalities were boldness and insecurity. Men in athletics showed higher values of boldness and lower values of insecurity as compared to the indoor soccer players ( $p < .05$ ).

**Table 3.** Factors that Comprise the Gender Schemas of Self and Sports Modalities According to Biological Sex.

Females			
Factors	Collective modality M (SD)	Individual modality M (SD)	p
Stranding	2.5 (0.5)	2.4 (0.5)	.46
Egocentrism	1.3 (0.5)	1.0 (0.4)	.06
Neglects	1.3 (0.7)	1.1 (0.6)	.20
Sensuality	1.5 (0.8)	1.5 (0.6)	.45
Inferiority	1.4 (0.4)	1.2 (0.4)	.02
Social adjustment	2.4 (0.5)	2.3 (0.7)	.75

Males			
Egocentrism	1.5 (0.6)	1.3 (0.5)	.09
Boldness	2.5 (0.6)	2.8 (0.4)	<.01
Rationality	2.3 (0.6)	2.6 (0.5)	.07
Integrity	2.6 (0.6)	2.8 (0.5)	.13
Sensuality	2.0 (0.9)	1.7 (0.6)	.06
Insecurity	1.8 (0.7)	1.5 (0.6)	.04
Emotionality	1.8 (1.0)	1.9 (1.1)	.90

## Discussion

This study offers relevant information to help differentiate the psychological characteristics of athletes, specifically on the gender self-concept schemas. This study aimed to compare athletes in individual and collective modalities to illustrate potential differences in gender self-concept schemas. The results of the study only found differences in self-concept schemas for male athletes. Moreover, within the factors that comprise the gender self-concept scales, female indoor soccer players had higher values of inferiority and males in athletics had higher values of boldness and lower values in insecurity as compared to male indoor soccer participants.

Observing the context of sports from a social and historical construct, it is found that some sports are stereotyped as masculine (football, rugby, and wrestling), feminine (skating and rhythmic gymnastics) and neutral (volleyball and swimming) (Colley, Berman, & Millingen, 2005; Hardin & Greer, 2009; Koivula, 1995, 2001). In this sense, it could be supposed that individuals who practice any kind of stereotyped masculine sport modality would have a masculine gender identity (Matteo, 1986). However, studies by Cardoso and Sacomori (2012) and Melo and Giavoni (2010) have demonstrated that individuals with different gender identities and different gender schemas, respectively, participate in masculine, feminine and neutral sports as well.

When evaluating the gender self-concept schemas in this study, a predominance of female athletes self-assessed as iso schematic regardless of the sport modality investigated. According to Giavoni and Tamayo (2003), the iso schematic person is characterized by some symmetry between the masculine and feminine schemas, that is, in the sports environment iso schematic athletes tend to balance characteristics as self-overcoming, domain and individualistic tendencies of power.

The lack of studies that assess athletes' gender self-concept schemas does not permit a large comparison between the data; however, some studies have aimed to identify the gender identity of athletes in many sports (Myers & Lips, 1978; Salaminen, 1990) that could potentially be used as a parameter. Myers and Lips (1978) and Salaminen (1990) indicated that women who participate in a traditionally masculine sport of-

ten present masculine or androgynous gender identities. In terms of gender identity, the denomination of androgynous refers to the balance between the masculine and feminine identities, something close to the iso schematic intermediary category for gender schemas.

Wilinski (2012), studying female soccer players, found that they were mostly androgynous in terms of gender identity. The author pointed out that this fact occurs as an effective strategy for survival in conditions that are not suitable for feminine women in such a stereotyped masculine sport. Corroborating with this position, Burdizicka-Wolowik (2012) studied 90 women divided into masculine, feminine, and neutral sports plus women who did not participate in any sport. The author reported that women who engaged in sports were on average more androgynous in terms of gender identity, with masculine schemes and lower femininity rates when compared to the control group.

Unlike female athletes, the male athletes of the present study differed between sport modalities in their gender self-concept schemas. Male team sport athletes self-evaluated as hetero schematic while the individual athletes identified as iso schematic. Similarly, the study by Venâncio, Castilho, Junior, Lima, and Teixeira (2013) examined athletes of both sexes (ages from 18 to 34 years) from different sports including dance, wrestling, swimming, basketball and indoor soccer. He observed of the athletes investigated, 11.8% were masculine hetero schematic, 32.4% were iso schematic and 55.9% were feminine hetero schematic. When he grouped the athletes into individual sports, he found 37.8% were iso schematic, 37.8% were feminine hetero schematic and 24.4% were masculine hetero schematic. For the collective sports, 30.8% were considered iso schematic, 41.0% masculine hetero schematic and 28.2% feminine hetero schematic. In conclusion, his study showed a preponderance of masculine hetero schematic and iso schematic individuals, while in the collective sports, the majority of the participants were masculine hetero schematic.

According to Giavoni and Tamayo (2003), social attributes in the scope of masculinity and incorporated into the masculine scheme are competitiveness, daring, rationality, self-determination, objectivity, among others. Furthermore, the authors suggested that the schemas are perceptual filters, influencing the behavior of individuals. Thus, male hetero schematic individuals tend to have features such as competitiveness, determination, need for self-overcoming, self-fulfillment and power. These features tend to motivate them to do their best, give the most of themselves, and both looking beyond oneself overcoming other team members (Gomes, Sotero, Giavoni, & Melo, 2011).

With regard to the prevalence of iso schematic schemas between the male athletic athletes investigated, it is suggested that despite this sport having masculine characteristics,

some characteristics can have strong influences. Maybe the fact that males in athletics do not compete to become part of a limited team such as indoor soccer or perhaps, because they train individually and depend only on themselves for success stimulates the development of the hetero schematic schema characteristics. In addition, higher values in the boldness factor and lower values in the insecurity factor as compared to indoor soccer players may be a result of athletes not depending on the group for the best results. Individual athletes may tend to be more enterprising and feel less inferior because they are not compared to other teammates. However, the study's lack of evaluation of athletes in athletics who take part in relay races (group races) do not allow us to prove this association. Furthermore, the comparison of one collective modality with one individual modality does not allow us to generalize our findings that individual sport athletes and collective sport athletes in general are predominately iso schematic and masculine schematic, respectively.

Important study limitations include: 1) the non-stratification of indoor soccer players according to tactical function and the non-stratification of the athletics participants engaged in individual and collective competitions; 2) the evaluation of only one individual and only one collective modality; and 3) the use of self-perception questionnaires in order to measure gender self-concept. However, this study stands out because it is the first to characterize a comparison between one individual and one collective sport modality in terms of gender self-concept schema.

According to the results, it can be concluded that regardless of the sport modality practiced, indoor soccer or athletics, women self-evaluated as iso schematic while male indoor soccer practitioners were mostly masculine hetero schematic and males in athletics were mostly iso schematic. When considering the factors that comprise the gender self-concept schemas, women differed in inferiority, and men for boldness and insecurity.

The mapping of athletes belonged to collective and individual sports in relation the gender scheme can help us to understand the impact of the gender self-concept on the sport performance in different positions and function in each sport modalities. For example, indicating the best gender scheme for the different positions inside the field or for the different kind of athletics competitions. In terms of scientific implications, this study brings some contribution in order to explain the performance in sport considering the psychological aspect in the training. We believe that the gender schemes construct can replace or complement the biological sex as an independent variable in future research. Research on sport performance may need to control not only for biological sex, but also perhaps, the gender self-concept schema. In short, biological sex would explain some physiological differences, but gender schema could explain some behavioral differences between male and female athletes' performance.

### Practical implications

As a social implication, this study could be legitimized by providing recommendations to professional sport coaches regarding the best fit in training strategies for athletes, so that performance can be optimized. In terms of educational environment, physical education (PE) teachers can explore their pupils' gender schema in order to plan and promote adequate movement experiences in PE classes.

Other research on this subject is suggested in order to help confirm the findings from this study and to address other collective and individual sports, providing the scientific community a better understanding of gender self-concept schemes of athletes in many sports. As well, we suggest longitudinal studies to determine if gender schemes are modified over time, influencing sport behavior and its results over the life span.

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