

# COACH-ATHLETE RELATIONSHIP AND PERCEPTION OF TEAM COHESION IN YOUNG BRAZILIAN SPORTSMEN

RELACIÓN ENTRENADOR-ATLETA Y PERCEPCIÓN DE COHESIÓN DE EQUIPO EN JOVENES DEPORTISTAS BRASILEÑOS

RELAÇÃO TREINADOR-ATLETA E PERCEPÇÃO DA COESÃO DA EQUIPE EM JOVENS ESPORTISTAS BRASILEIROS

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## ABSTRACT

This cross-sectional study analyzed the perception of team cohesion and the quality of coach-athlete relationship among 301 Brazilian student-athletes, aged between 14 and 17, who competed in the final phase of the 2016 Pernambuco school games. Data were collected using group environment and coach-athlete relationship questionnaires. Data were analyzed using Kolmogorov-Smirnov and Mann-Whitney tests ( $p < 0.05$ ). Results showed that both boys and girls scored high on team cohesion, although boys scored higher score on the Group Integration-Task ( $p < 0.05$ ), as well as on all dimensions of coach-athlete relationship ( $p < 0.05$ ). Futsal and volleyball athletes stand out for scoring lower or higher on specific variables compared to other sports. In conclusion, the quality of the coach-athlete relationship may be a factor involved in the perception of group cohesion in school sport.

**KEYWORDS:** Group cohesion, interpersonal relationship, school sport, sport psychology.

## RESUMEN

Este estudio transversal analizó la percepción de cohesión de equipo y la calidad de la relación entrenador-atleta entre 301 estudiantes atletas brasileños, de 14 a 17 años, que compitieron en la fase estatal de los juegos escolares de Pernambuco 2016. Los datos se recogieron mediante cuestionarios de entorno grupal y de relación entrenador-atleta. Los datos se analizaron mediante las pruebas de Kolmogorov-Smirnov y Mann-Whitney ( $p < 0.05$ ). Los resultados mostraron que niños y niñas puntuaron alto en cohesión de equipo, aunque los niños puntuaron más alto en la Tarea de Integración Grupal ( $p < 0.05$ ), así como en todas las dimensiones de la relación entrenador-atleta ( $p < 0.05$ ). Los deportistas de fútbol sala y voleibol destacan por puntuar más bajo o más alto en variables específicas en comparación con otros deportes. En conclusión, la calidad de la relación entrenador-atleta puede ser un factor que interviene en la percepción de la cohesión de grupo en el deporte escolar.

**PALABRAS CLAVE:** cohesión de equipo, relación interpersonal, deporte escolar, psicología del deporte.

## RESUMO

Este estudo transversal analisou a percepção da coesão de grupo e a qualidade do relacionamento treinador-atleta de 301 estudantes-atletas, com idades entre 14 e 17 anos, participantes da fase estadual dos Jogos

Escolares de Pernambuco 2016. Os dados foram coletados por meio de questionários sobre o ambiente do grupo e sobre o relacionamento treinador-atleta. Para a análise dos dados utilizou-se os testes de Kolmogorov-Smirnov e Mann-Whitney ( $p < 0.05$ ). Os resultados demonstraram que tanto os meninos quanto as meninas obtiveram pontuações altas na coesão da equipe, embora os meninos tenham obtido pontuações mais altas na tarefa de integração do grupo ( $p < 0.05$ ), bem como em todas as dimensões do relacionamento treinador-atleta ( $p < 0.05$ ). Os atletas de futsal e voleibol se destacaram com pontuações mais baixas ou mais altas em variáveis específicas em comparação com outros esportes. Concluiu-se que a qualidade do relacionamento treinador-atleta pode ser um fator interveniente na percepção da coesão do grupo no esporte escolar.

**PALAVRAS-CHAVE:** coesão da equipe, relacionamento interpessoal, esporte escolar, psicologia do esporte.

## INTRODUCTION

The coach-athlete relationship (CAR) has a theoretical basis and has led to the growth of sport psychology research (Jowett & Nezlek, 2012; Jowett & Shanmugam, 2016). Several studies have pointed out the quality and importance of the CAR for the athlete's physical and motor performance and for the team's success (Jowett & Nezlek, 2012; Vieira et al., 2018). Additionally, it has been directly connected to the athletes' confidence, motivation and well-being (Jowett & Shanmugam, 2016).

The main theoretical model that explains the processes inherent in CAR quality is the "3Cs+1" model (Closeness, Commitment, Complementarity and Co-orientation). It refers to the affective, cognitive and behavioral aspects of the relationship, with the aim of structuring paths for scientific research (Davis et al., 2013).

Commitment (cognitive) includes dedication, sacrifice and satisfaction in the relationship between athletes and coaches. Closeness (affective) reveals the emotional perspective that both express through respect, trust and appreciation. Complementarity (behavioral) refers to the existing types of cooperative interaction, being decisive in the formation and maintenance of the mutual relationship, evaluating the task and the adaptability (Jowett & Ntoumanis, 2004; Yang and Jowett, 2012).

The characteristic element "+1C " (co-orientation) refers to the degree to which the perceptions of coaches and athletes are interlinked (Jowett and Nezlek, 2012; Jowett & Shanmugam, 2016). It includes the perceptions that both coach and athletes develop about their relationship, indicating how much they agree about their interaction together (Mata & Gomes, 2016).

Until recently, most research suggested that CAR quality interferes directly with group processes, particularly team cohesion (Balaguer et al., 2015), which involves athletes working collectively to achieve goals and social interactions among group mem-

bers (Eys et al. 2018; Eys & Brawley, 2018). Cohesion is a dynamic psychological construct with social and task components (Carron & Brawley, 2000; Eys & Brawley, 2018; Eys et al., 2018).

These components are related according to the individual attraction and the perceptions of integration of the athlete with the team, constituting four dimensions: Individual Attraction to the Group-Task (IAG-T), related to personal involvement with group tasks; Individual Attraction to the Group-Social (IAG-S), which includes social integration and the feeling of acceptance by the group; Group-Integration Task (GI-T), which refers to the understanding that team shares similar goals for the task; and Group-Integration Social (GI-S), which is defined by the affective relationships acquired among team members outside of competition (Eys et al., 2018; Eys & Brawley, 2018; Schürer et al., 2021).

Several studies have documented the relationship between CAR quality and perceived team cohesion among high performance (Nascimento Júnior et al., 2018) and recreational athletes (Jowett & Ntoumanis, 2004), but few papers have studied the relationship among youth athletes (Cheuczuk et al., 2016; Tatsumi & Tsuchiya, 2020); in fact, most studies were developed with adult athletes (Ji et al., 2022). Benson et al. (2016) state that there is little evidence regarding the link between CAR quality and team cohesion among youth athletes.

This study is relevant in the field of sport psychology because it intends to explore this gap by analyzing variables in young Brazilian student-athletes. The results of this study can help professionals working with high school sports coaches, as well as teachers, parents and psychologists, to show the importance of establishing relationships based on support, trust, commitment and affection, as these types of relationships can develop concentration to accomplish tasks and team goals, as well as create affinity and friendship with adolescents.

Thus, this study aimed to evaluate the perception of team cohesion and the quality of the CAR among young Brazilian

student athletes of both sexes and in different sports (modalities). The main hypothesis of the study is that the athletes whose perceived quality of the CAR is higher will show a higher level of group cohesion, since the literature has shown that the quality CAR tends to develop high levels of group cohesion (Jowett & Nezlek, 2012; Jowett & Shanmugam, 2016; Jowett et al., 2012; Vieira et al., 2018).

## METHODS

### Study design

An observational, cross-sectional, descriptive and empirical research with an associative strategy was designed (Ato et al., 2013). The study was developed and structured following the guidelines for observational research Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) (Malta et al., 2010).

### Participants

Participants were athletes aged 15 to 17 years from collective sports (basketball, futsal, handball, soccer and volleyball), comprising students-athletes from all regions of the State of Pernambuco, Brazil. The sample size was calculated using the finite sample formula, with a confidence level of 95%, with an estimation error of 5%, and an expected ratio of 50% (Richardson et al., 2014).

As the estimate for the competition included 2500 athletes, the minimum number of participants for this research was 333 students-athletes. 335 of the athletes who participated in the state phase of the 2016 School Games in Pernambuco participated in this study. However, 35 athletes were excluded because they did not fill out the questionnaires correctly. In total, 301 individuals participated in this study.

Participants were selected by convenience and the inclusion criteria included: 1) participation in any regional/state level competition during the 2015/2016 seasons; and 2) participation in the state stage of the 2016 Pernambuco School Games. Only athletes whose responsible coaches at the event had signed the consent form and those who verbally expressed their desire to participate took part in the study.

## Instruments

The quality of CAR was measured using the Coach-Athlete Relationship Questionnaire (CART-Q)-Athlete Version (Jowett & Ntoumanis, 2004) validated for Brazil. The instrument consists of 11 items divided into three subscales: closeness, commitment, and complementarity. The items are rated on a 7-point Likert scale from 0 (strongly disagree) to 7 (strongly agree). In the validation study conducted by Vieira et al. (2015), the instrument presented adequate psychometric properties ( $X^2/df = 3.03$ ; CFI = 0.96, GFI = 0.94; TLI = 0.94; RMSEA = 0.08). Cronbach's alpha of the instrument dimensions for this study ranged from  $\alpha = 0.83$  to  $\alpha = 0.95$ , indicating strong reliability.

To identify the level of cohesion of sports teams, the Group Environment Questionnaire (GEQ), developed by Carron et al. (1985), and validated for the Brazilian sports context by Nascimento Junior et al. (2012), was used.

The GEQ consists of 16 items responded on a 9-point-Likert-type scale (1-strongly disagree to 9-strongly agree), divided into four dimensions: GI-T, GI-S, IAG-T and IAG-S. In the validation study conducted by Nascimento Junior et al. (2012), the GEQ presented adequate psychometric properties ( $X^2/df = 3.02$ ; CFI = 0.93, GFI = 0.93; TLI = 0.92; RMSEA = 0.06). Cronbach's alpha of the instrument dimensions for this study ranged from  $\alpha = 0.78$  to  $\alpha = 0.90$ , indicating strong reliability.



## Procedures

The procedures followed the ethical criteria for research involving human beings in accordance with Resolution n. ° 466/12 of the National Health Council. The study is part of an institutional project approved by the Research Ethics Committee of the Federal University of Vale do São Francisco (protocol 1.648.086). Initially contact was maintained with the State Sport Bureau of Pernambuco to request authorization to carry out the data collection of the athletes of the teams participating in the 2016 School Games. Data collection was carried out in the hotels where teams were staying. The questionnaires were applied collectively, in a private room, to about 15 athletes at a time, in the absence of the coaches.

Before completing the questionnaires, the evaluators were in the room clarifying the participants' doubts, but they were not allowed to talk to them during the completion. The order of the questionnaires was randomized among the participants to minimize the effects on the quality of the responses of the last questionnaire. The completion of the questionnaires lasted approximately 30 minutes.

## Data analysis

Preliminary data analysis was performed using the Kolmogorov-Smirnov normality test. The Mann-Whitney "U" test was used to compare the level of team cohesion and the quality of the CAR as a function of sex. For the comparison of variables according to modality, the Kruskal-Wallis test was performed, followed by the Mann-Whitney test for pairs of groups. For the comparison of team cohesion as a function of CAR quality, the total CAR score was calculated and then the athletes were divided into two groups (high and moderate CAR quality) according to the median splitting process ( $<6.58$  = moderate and  $>6.58$  = high), using the Mann-Whitney "U" test. All analyses were conducted using SPSS v.22.0.

## RESULTS

As can be seen in table 1, both girls and boys demonstrated high scores in team cohesion and CAR. There was a significant difference between the groups in GI-T ( $p=0.022$ ), commitment ( $p=0.001$ ) and complementarity ( $p=0.003$ ). These results show that the girls perceive more the integration and collective work of the team members to achieve the goals. In addition, girls feel more admiration, respect and trust towards the coach, greater dedication and satisfaction in the relationship with the coach, and greater affiliation than boys.

**Table 1.** Comparison of group cohesion and CAR quality by sex

Variables	Boys (n=136)	Girls (n=165)	P
	Md (Q1-Q3)	Md (Q1-Q3)	
<b>Group cohesion</b>			
GI-T	8.00 (7.20-8.60)	8.40 (7.30-8.80)	<b>0.022*</b>
GI-S	8.00 (7.20-8.60)	8.40 (7.35-8.80)	0.216
IAG-T	7.25 (8.00-8.75)	8.40 (7.35-8.80)	0.058
IAG-S	7.25 (8.00-8.75)	6.50 (7.50-8.25)	0.977
<b>CAR</b>			
Closeness	6.75 (6.25-7.00)	7.00 (6.75-7.00)	<b>0.001*</b>
Commitment	6.00 (5.33-6.67)	6.71 (6.00-7.00)	<b>0.001*</b>
Complementarity	6.50 (6.00-7.00)	6.75 (6,25-7.00)	<b>0.003*</b>

Note. \* Significant difference  $-p<0.05$ ; Md = median; Q1 = quartile 25% Q3 = quartile 75%. GI-S = Group Integration-Social; GI-T = Group Integration-Task; IAG-T = Individual Attraction to the Group-Task; IA-S = Individual Attraction to the Group-Social.

**Source:** Own elaboration.

No significant differences ( $p>0.05$ ) were found when comparing the perception of team cohesion and the quality of the CAR according to time on the team (<1 year/>1 year) and age group (14-15 years/16/17 years). This indicates that the age of the athlete and the amount of time on the team do not influence

the perception of team cohesion or the quality of the CAR of youth athletes.

When comparing the level of team cohesion and CAR quality according to sport (table 2), a significant difference was found in GI-S ( $p=0.019$ ), IAG-S ( $p=0.016$ ) and commitment ( $p=0.029$ ). Interestingly, futsal athletes had a lower level of social cohesion (IAG-S and GI-S) than athletes in other modalities, while volleyball athletes had a higher quality of CAR than athletes in other sports.

**Table 2.** Comparison of team cohesion and CAR quality by sport

Variables	Futsal (n=124)	Volleyball (n=133)	Handball (n=24)	Basketball (n=20)	P
	Md (Q1; Q3)	Md (Q1; Q3)	Md (Q1; Q3)	Md (Q1; Q3)	
<b>Team cohesion</b>					
GI-T	8.20 (7.24-8.80)	8.40 (7.10-8.80)	8.60 (8.05-8.95)	7.80 (6.55-8.20)	0.837
GI-S	6.00 (4.75-7.00) <sup>a</sup>	6.50 (5.25-8.00)	7.25 (4.19-8.25)	6.50 (5.13-8.00)	<b>0.019*</b>
IAG-T	8.33 (7.25-9.00)	8.33 (7.33-9.00)	9.00 (8.33-9.00)	8.33 (7.33-9.00)	0.929
IAG-S	7.50 (6.69-8.25) <sup>b</sup>	8.00 (7.13-8.75)	7.59 (6.81-8.94)	8.25 (6.56-8.94)	<b>0.016*</b>
<b>CAR</b>					
Closeness	6.75 (6.50-7.00)	7.00 (6.50-7.00)	7.00 (7.00-7.00)	5.75 (4.81-7.00)	0.210
Commitment	6.33 (5.75-6.75)	6.50 (6.00-7.00) <sup>c</sup>	6.33 (5.67-7.00)	5.00 (4.08-7.00)	<b>0.029*</b>
Complementarity	6.67 (6.25-7.00)	6.75 (6.25-7.00)	7.00 (6.33-7.00)	5.88 (5.08-7.00)	0.111

*Note.* \* Significant difference ( $p<0.05$ ) between: a, b) Futsal with volleyball, handball and basketball; c) volleyball with futsal, basketball and handball.

GI-S = Group Integration-Social; GI-T = Group Integration-Task; IAG-T = Individual Attraction to the Group-Task; IA-S = Individual Attraction to the Group-Social. Md = median; Q1 = quartile 25% Q3 = quartile 75%.

**Source:** Own elaboration.

There was a significant difference in all dimensions of team cohesion ( $p<0.05$ ) according to CAR quality (table 3), showing that athletes who perceived themselves to have a high-quality CAR presented a higher level of both social and task cohesion compared to athletes with moderate CAR quality.

**Table 3.** Comparison of group cohesion according to CAR quality

Team cohesion	High CAR (n=148)	Moderate CAR (n=153)	p
	Md (Q1-Q3)	Md (Q1-Q3)	
GI-T	8.60 (7.85-9.00)	7.80 (6.60-8.40)	<b>0.001*</b>
GI-S	6.87 (5.50-8.19)	6.00 (4.50-6.87)	<b>0.001*</b>
IAG-T	9.00 (8.33-9.00)	8.00 (6.33-8.67)	<b>0.001*</b>
IAG-S	8.25 (7.50-8.75)	7.50 (6.50-8.25)	<b>0.001*</b>

Note. \* Significant difference -  $p < 0.05$ .

GI-S = Group Integration-Social; GI-T = Group Integration-Task; IAG-T = Individual Attraction to the Group-Task; IA-S = Individual Attraction to the Group-Social. Md = median; Q1 = quartile 25% Q3 = quartile 75%.

Source: Own elaboration.

## DISCUSSION

Results support the hypothesis, demonstrating that there are higher levels of team cohesion are presented among student-athletes with high perceived CAR quality. Specifically, students-athletes who perceived themselves to have a higher CAR quality had a higher level of social and task cohesion (see table 3). In addition, girls experience greater admiration, respect and trust towards the coach, and greater dedication and satisfaction in the relationship with him; compared to boys, girls are also more aware of the integration and collective work of the teammates to achieve the goals (see table 1). Finally, futsal athletes presented a lower level of social cohesion, while volleyball athletes presented higher quality of CAR (see table 2).

The main concepts relevant to this study have mainly shown that students-athletes who perceived themselves with high quality CAR presented a greater understanding that the team shares similar objectives and works collectively to achieve them, in addition to perceiving themselves with better affective relationships with teammates (Eys et al., 2018). The positive influence of the quality of the CAR on team cohesion is explained by the ac-

tual working interaction established between the coach and the athlete so that the objectives are achieved (Jowett & Ntoumanis, 2004; Vieira et al., 2018). Jowett & Shanmugam (2016) highlight this situation, arguing that dyadic coach-athlete relationships enable the transformation of both, leading to the development of feelings of belonging and valuing within sports teams.

Vieira et al. (2018) found that the quality of the CAR had a positive effect on the perception of social cohesion and for the task of professional football players, confirming the findings of this research. Wilhelmsson (2017) also found similar results when investigating the association between CAR quality and group cohesion in elite field hockey players. Hampson & Jowett (2014) noted that CAR was an important mediator of leadership style and collective effectiveness in football teams. However, these studies were conducted with adult and high-performance athletes, which is a different context than the sample of this study. Because of this, the findings of this study are relevant and unprecedented, as previous evidences is mainly found among high-performance athletes and adults (de Moraes, 2018).

Although the literature makes clear that various personal and social factors can interfere with the athlete's perception of team cohesion (Carron & Brawley, 2000; Eys et al., 2018; Eys & Brawley, 2018), the focus of this research was to analyze how the student-athlete's perception of an external social agent (in this case, the coach) can interfere with their individual feeling and members' collective involvement with the team's goals and social aspects.

The results showed that the girls had greater collective involvement and cooperation among team members to perform the tasks compared to boys (see table 1). Despite this difference, both groups presented high scores in all dimensions of team cohesion, fundamental for sport development and performance (Benson et al., 2016; Filho et al., 2014). This result is consistent with the findings of Baser et al. (2013), who analyzed goal orien-

tation among volleyball players, observing that women are more task-engaged than men. Cheuczuk et al. (2016) verified that men perceive themselves to be more engaged to this function than women; however, this study was conducted with high-performance athletes in transition to the adult category. We observe that there is no consensus in the literature on sex distinctions in relation to team cohesion in sport, revealing the need for further research to establish more scientific evidence.

It is also important to note that girls felt more admiration, respect and trust towards the coach, greater dedication and satisfaction in the relationship with him, and greater affiliation than the men (see table 2). This finding is likely related to the different family and group influences on adolescent behavior, as social peers directly interfere with behavior during adolescence (Jowett et al., 2012). Note that boys tend to be more introspective than girls, who have an easier time getting into groups (Novaes et al., 2014).

Jowett & Nezlek (2012) showed that same-sex coaches and athletes perceive higher levels of closeness, commitment and complementarity compared to other opposite-sex coach-athlete pairs. In any case, the higher perception of CAR quality among girls is a relevant and surprising result, since most school teams are coached by men, who have more difficulties in balancing loads for optimal performance with the different physiological and emotional phases that women go through on a daily basis (premenstrual tension, menstrual cycle, emotional reactions) (Cheuczuk et al., 2016), which can make it difficult for the coach to be close to the female athletes (Jowett & Nezlek, 2012).

Finally, it was observed that futsal athletes presented lower levels of social cohesion (attraction and integration by the group) than volleyball, handball and basketball athletes (see table 2). This result is explained by the fact that school futsal athletes are under greater pressure to obtain results than the other modalities, since futsal is one of the most popular modalities (Novaes et

al., 2014) in school competitions, thus creating greater recognition for coaches and schools (Santos, 2009). In short, futsal athletes develop a greater concentration on tasks, leaving aside social interactions. This finding can be considered unpublished, since no other studies have been found to establish comparisons.

## CONCLUSION

In summary, CAR quality seems to be a key factor for team cohesion among student-athletes. It is noted that athletes who perceive the relation with the coach better tend to be more intensively committed to the goals and to develop more social interactions within the team. In addition, sex and modality differences may interfere with the perception of team cohesion and CAR quality among student-athletes. On the other hand, girls have more feelings of admiration, respect and trust towards the coach.

From a practical point of view, coaches and physical education professionals should foster a training and competition environment based on support, trust, commitment and unity, since it tends to contribute to the development of concentration on the task and the common goal of the team, and facilitates the improvement of the perception of the relationship, and the competence of the individual and the collective.

Below, we highlight some limitations of this study. First, the sample was composed only of students-athletes from one Brazilian state, which makes it impossible to generalize the results to the national and international level. However, the athletes were participating in the state's premier school competition. Further, the cross-sectional design of the study, which evaluated the athletes at a single point of the season, prevented the analysis of cause-effect relationships between variables. Therefore, it is suggested that future research should also be carried out with individual modalities athletes, to compare groups and the invol-

vement of other variables, and with a longitudinal design to test possible changes in group cohesion over the course of a school sport season.

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