

## ***Team work in Cuban national teams of Water Polo***

Talia Virgen Negret Veranes<sup>1</sup>, Rafael Millán Caballero<sup>2</sup>, Marta Cañizares Hernández<sup>3</sup>.

<sup>1</sup>Instituto de Medicina Deportiva. Email: [talianegretveranes@gmail.com](mailto:talianegretveranes@gmail.com).  
<https://orcid.org/0000-0003-36068675>

<sup>2</sup>Universidad de Ciencias de la Cultura Física y el Deporte. Email: [micara81@gmail.com](mailto:micara81@gmail.com).  
<https://orcid.org/0000-0001-7413-7518>

<sup>3</sup>Universidad de Ciencias de la Cultura Física y el Deporte. <https://orcid.org/0000-0001-9504-8675>

### ***Abstract***

*The work presented summarizes a descriptive-correlational research that aimed to analyze the functioning of teamwork in the Cuban women's and men's water polo teams. The selected sample was 29 athletes, 14 participants from the women's team and 15 from the men's team, with ages between 20 and 21 years in both teams, sports experience is approximately 9 years and experience in the team is 2.6 years. The applied methodology consisted of a first step, related to the adaptation of the contextualized instrument to the characteristics of the Water Polo, checking the reliability of its items using the Cronbach's Alpha statistical procedure; Subsequently, based on Kendall's Tau-b, the analysis of teamwork was carried out through the correlations of sociodemographic variables of the selected sample with the dimensions associated with the teamwork variable: communication, coordination, trust, complementarity and commitment. The results showed that, for the applied context, the sociodemographic variables did not have a significant relationship with the teamwork variables; However, the relationship established from communication with commitment, coordination, complementarity and trust did show significant positive relationships.*

*Keywords: variables, teamwork, correlations, psychological analysis*

## **Introduction**

Water polo is a team sport and, like any team, it needs to coordinate all its components to achieve a good result (Ayovi, 2019). The actions in this sport occur in conditions of interrelation and interdependence in a non-natural environment (water). Therefore, it needs coordination and precision, supported by offensive and defensive transition strategies. It has complex tactical communication systems between the players and between them and the coach.

Athletes in this discipline must have a high degree of collectivism, where the individual does not take precedence over the group, the team. They must be able to develop good emotional relationships in their activity group, but above all be able to interact from a functional sporting point of view with their teammates and at the same time not lose individual initiative and decision making when this is necessary. necessary.

It constitutes a fundamental premise for performance in this sport, full and unconditional identification with the goals and purposes of the team, mutual help and constant support. Polo players are required to have a high capacity to concentrate attention, adequate self-regulatory mechanisms, both for emotional self-control, before and during playing actions, and for the regulation of the action itself and physical and/or psychological recovery in each moment of sports fighting.

The high development of volitional qualities and sporting morality is another premise that should not be overlooked in water polo, since volitional athletes with a sporting and social ethic in accordance with the guiding principles of the society they represent, They are players who fight and seek victory until their last breath.

Like any other sport, water polo is structured into sports teams, according to Paulas (2004) they are basic structural units that integrate athletes, coaches, support staff, resources and processes in order to achieve a high result. To achieve this goal.

An important part of the functioning of sports teams is psychological preparation. Roffé (2020) supports the criterion that in team sports, psychological preparation is aimed at establishing objectives, developing cohesion, strengthening mental aspects, as well as managing pressures, focusing attention and developing self-confidence, among other aspects.

As part of the study of psychological preparation, group cohesion allows us to know aspects associated with the functioning of sports teams. In this sense, Roffé and Rivas (2013) summarize the aspects in five dimensions known as the "five Cs" (communication, cooperation, coordination, trust and commitment).

In another order, from the sports practice of gymnastics in the State of Cojedes, Nuñez, M., Isla, SD., Páez, YR., and Alata, YI (2019) showed little combativity and fighting spirit; reflecting difficulties for the gymnasts when completing some tasks, facing obstacles and no guidance was heard nor was there any planning of psychological actions on the part of the coach.

The background of the dimensions that make up the "five Cs" in sports teams are characterized by the isolated study of each one, the union of these with other associated ones, or the investigation of cohesion in general as an element associated with sports performance.

From cohesion as an integrating element of teamwork, García Más (2001) emphasizes the importance of cohesion, together with other factors such as cooperation and coordination. In his work, the author cites Rabbie (1995) who evaluates communication and trust as variables integrated into cooperation.

Also on cohesion, Verdier (2020) and Correa Recabal et al. (2021) carried out a study on the psychological variables that influence sports results, which included group cohesion as a variable that defines performance.

For their part, Vives Ribó and Rabassa (2020) presented their professional experience in two of the "five Cs". The authors enhanced the coach's communication to achieve better motivation towards achievement and confidence.

Regarding this aspect, the coaches of the Cuban men's and women's national water polo teams demanded the study of the psychological aspects that influence performance problems in matches, such as errors in passing, difficulties in leadership and lack of coordination.

In response to this demand, the objective of the research was determined: to analyze the behavior of the five Cs in the matches of the Cuban national water polo teams.

## **Materials and methods**

The research was descriptive-correlational in nature and consisted of a first step aimed at adapting and verifying the reliability of the survey; and the second, oriented to the

processing of information and analysis of the results of the correlations carried out. It was carried out in the period corresponding to the 2022-2023 training macrocycle.

**Population:** 29 polo players from the two Cuban national water polo teams, 14 polo players from the women's team and 15 from the men's team. Table 1 summarizes the main characteristics of these.

Table 1 Sample characteristics

Sport team	N	Averages in years		
		Age	Water polo experience	Team experience
Female	14	19,7	8,3	1,7
Male	15	21,4	9,8	3,6

For its selection, the following inclusion and exclusion criteria were taken:

Inclusion criteria:

- Athletes enrolled in the Giraldo Córdova Cardín high-performance athlete training schools in the 2022-2023 academic year.
- Belong to the national teams of the senior category.
- Athletes who practice Water Polo and were invited to train with the selected sample.

Exclusion criteria:

- Athletes hired abroad during the application of the questionnaire.

### Evaluation instrument

The adapted questionnaire consisted of a first group of sociodemographic questions including age, experience in the national team, regularity in matches and participation in

competitions. The second group of questions was aimed at measuring the dimensions of teamwork based on the instrument by Cañizares (2022).

This author designed an instrument to evaluate teamwork based on the five Cs: communication, coordination, complementarity, trust and role and commitment. For each dimension he assigned four items (20 in total).

Taking into account the particularities and interests of the research, the five dimensions were maintained, but only 10 items (two for each one) as shown in table 2. The participants made a rating of each dimension on a Likert-type scale with five levels: very low, low, medium, high and very high.

Table 2. Aspects evaluated in the research

<b>No.</b>	<b>Aspects</b>	<b>Dimension</b>
1	The information necessary for the development of technical-tactical actions in the game is transmitted in the team.	Communication
2	The tasks and actions in the game are coordinated taking into account the level of preparation of each one	Coordination
3	Rookies enrich their individual preparation through the support of players with greater sporting experience	Complementarity
4	Actions in competitions are coordinated by the team leader	Coordination
5	The skills of each player favor the results of the team's game	Complementarity
6	Collective information is used in matches.	Communication
7	Group tasks in the game are easily carried out because team members share various socialization spaces.	Confidence

8	On the team, everyone knows their roles for the game and is committed to meeting the objectives.	Role and commitment
9	Attackers in water polo are certain that the defenders will “cover their back” during attacking actions.	Confidence
10	In the match, the team leader ensures that the agreement agreed upon by everyone is fulfilled.	Role and commitment

## Statistical procedures

Two statistical procedures were used to analyze the results obtained in the evaluated variables.

1. Cronbach's alpha. It allowed the instrument to be validated in both selections.
2. Kendall's Tau-b correlation coefficient. It allowed us to verify if there was a significant relationship between the 10 variables evaluated, in addition, if there was a relationship between age and years of experience in the team, with the 10 variables that measure the behavior of the five Cs in both teams.

## Instrument validation

Table 3 shows the values of the Cronbach's Alpha statistic for the total number of polo players surveyed and the female and male teams separately.

Table 3. Reliability statistics

Sample	Cronbach's Alpha	N of items
Total polo players	,749	10
Female team	,750	10

men's team	,736	10
------------	------	----

Note that, in all cases, the values of the reliability statistic are greater than 0.7. Based on the criteria of Oviedo and Campo Arias (2005), reliability values greater than 0.7 are an acceptable result, depending on the type of research carried out in this work.

## Results and discussion

In this section, the results of the correlation between variables and their discussion are presented.

### Results of the correlation between the sociodemographic variables with the variables of the functioning of the female and male teams

Table 4. Correlations of the women's team

Variables	Aspects	General variables			
		Age	Team experience	Participation in competitions	Regularity
Communication	1	-,168	-,268	-,121	-,452
	6	-,195	,186	,112	,175
Coordination	2	-,107	-,030	,100	-,225
	4	-,083	-,063	,103	,251
Complementarity	3	,027	-,180	-,181	-,052
	5	-,080	,325	,297	,186
	7	<b>,534*</b>	-,390	,330	,304
confidence	9	,181	-,125	,155	,341

---

Role	and	8	-,189	-,082	,342	,451
commitment		10	-,028	-,016	,295	,380

---

\*The correlation is significant at the 0.05 level

As can be seen, there was no statistically significant relationship between age, team experience, participation in competitions and regularity, and the variables of communication, coordination, complementarity and role and commitment evaluated in the women's team; since the general aspects indicated are not decisive in the adequate development of the 5 dimensions that measure the teamwork variable.

Only in the case of trust, a statistically significant relationship is corroborated between the group training tasks and age because it is a team that shares various socialization spaces (curricular activities, coexistence, recreation) expressing common interests and objectives, functioning as psychogroup favorably; while, for the other indicator, on the relationships of trust between defenders and attackers, there are no significant differences, because personal brilliance comes before the team's success.

Table 5. Correlation coefficients of the men's team

---

Variables	Aspects	General variables			
		Age	Team experience	Participation in competitions	Regularity
Communication	1	,114	,064	,398	,037
	6	,101	,165	,099	,000
Coordination	2	-,011	,148	-,236	-,117
	4	,264	-,058	,226	-,288
Complementarity	3	,299	,133	,328	-,018

---



	5	-,060	-,278	-,156	-,282
Confidence	7	,062	,200	-,178	-,219
	9	,375	,154	,123	,052
Role and commitment	8	<b>,445*</b>	,219	,110	,000
	10	-,072	-,097	,031	-,282

\*The correlation is significant at the 0.05 level

As in the women's team, there was no statistically significant relationship between age, team experience, participation in competitions and regularity, with and the teamwork functioning variables evaluated.

Exceptionally, in the case of role and commitment, a statistically significant relationship was corroborated between the knowledge of the roles of each team member and age, motivated because the team members consciously strive to comply with the assigned tasks and with the set objectives, contributing the best individually in favor of the group, during the training sessions.

## Correlation results between the variables that evaluate teamwork

Table 6. Correlations of the women's team

Aspect	1	2	3	4	5	6	7	8	9	10
1	1,000	<b>,691*</b>	<b>,462</b>	,029	,135	,158	,330	,138	,029	-,015
		*	*							
2	<b>,691*</b>	1,000	,430	-,168	<b>,516*</b>	,424	,079	,190	-,084	,211
		*								
3	<b>,462*</b>	,430	1,00	,125	,192	,105	,267	,436	,181	,322
			0							

4	,029	-,168	,125	1,00	-,234	-,047	,393	,379	,145	-,058
				0						
5	,135	<b>,516*</b>	,192	-,234	1,00	<b>,524*</b>	-,019	,122	,200	,219
				0						
6	,158	,424	,105	-,047	<b>,524*</b>	1,00	,035	,410	-,078	,426
				0						
7	,330	,079	,267	,393	-,019	,035	1,00	<b>,531*</b>	,459	,215
							0			
8	,138	,190	,436	,379	,122	,410	<b>,531*</b>	1,000	,106	<b>,672*</b>
										*
9	,029	-,084	,181	,145	,200	-,078	,459	,106	1,00	-,175
									0	
10	-,015	,211	,322	-,058	,219	,426	,215	<b>,672*</b>	-,175	1,000
								*		

\*\*the correlation is significant at the 0.01 level

\*the correlation is significant at the 0.05 level

#### Highly significant relationships:

- ✓ transmission of team information (communication) and coordination of actions (coordination); This indicates that for the team members it is essential that communication flows in order to coordinate the development of technical-tactical actions from the different individual actions.
- ✓ knowledge of the roles of the team members and the role of the leader in the parties (both role and commitment), demonstrating that in this team knowing the individual roles and consciously complying with the objectives set is essential to achieve compliance what was agreed between everyone, during the games.

#### Significant relationships:

- ✓ transmission of team information (communication) and enrichment of the preparation of new players helped by more experienced players (complementarity); highlighting that novice players require that during training sessions players with more sports experience inform them of the tasks that must be performed and how to improve their performance in fulfilling them.
- ✓ coordination of actions in the game (coordination) and individual performance for the overall team result (complementarity); This means that the presence of the



<b>10</b>	<b>,494*</b>	-,168	-,110	,224	,151	<b>,504</b>	<b>,568*</b>	,303	,188	1,00
						*				0

\*\*the correlation is significant at the 0.01 level

\*the correlation is significant at the 0.05 level

**Highly significant correlation:**

- ✓ knowledge of the roles of the team members (role and commitment) and the certainty of defensive coverage in attacking actions (trust); demonstrating that this team is emotionally united and committed to their sport and their role, willing to eradicate the barriers that arise in the fulfillment of their tasks, which promotes the fulfillment of achievements, and contributes to the improvement of each one.

**Significant correlation between:**

- ✓ the transmission of team information (communication) and the coordination of the leader's actions (coordination); This indicates that for the team members it is essential that communication flows in order to coordinate the development of technical-tactical actions from the different individual actions.
- ✓ transmission of team information and use of collective information (both communication); highlighting that the transmission of the necessary information during training sessions generates the optimization of resources and time, increasing performance in the celebration of matches, in which it is effective to provide information collectively.
- ✓ transmission of team information (communication) and the leader's work in fulfilling roles (role and commitment); highlighting that good communication allows us to clearly understand each of the instructions given by the leader, especially in “how” to meet the objectives and goals set.
- ✓ coordination of game actions based on the level of preparation of each member (coordination) and individual performance to achieve collective goals (complementarity); highlighting that the good relationships established between novice players and those with greater experience strengthen the work to achieve a certain goal or objective, with the leader exerting a positive influence during the activities to be carried out.
- ✓ coordination of the leader's actions (coordination) and the development of new players (complementarity); This means that the presence of the leader within the

team in the development of training tasks and actions contributes to enhancing coordinated work, thus conditioning the overall result.

- ✓ use of collective information (communication) and the certainty of defensive coverage in attack actions (trust); expressing that good communication promotes compliance with agreed agreements, enables the exchange of criteria and facilitates decision-making and the implementation of concrete actions.
- ✓ use of collective information (communication) and the leader's work in fulfilling roles (role and commitment); shows that collective information has a positive effect on skills, stimulating self-confidence and trust in others.
- ✓ the leader's work in fulfilling roles (role and commitment) and fulfilling group tasks in socialization spaces (trust); reveals that the members of this group, by believing in what they do, consciously commit themselves, voluntarily respecting what has been agreed between them.

The research showed that in general for the teams studied, there is no significant correlation between the variables experience, regularity in the team and participation in competitions with the dimensions known as the five Cs of teamwork. But when detailing the correlations, it was found that age does show significant relationships in both teams.

In the women's team there are relationships with group tasks (trust); while for the male, a relationship was observed between age and knowledge of the members' roles. This coincides with Vives Ribó and Rabassa (2020) who, regarding trust, emphasized the importance of this quality for achieving high results.

On the other hand, it was found that the correlation between the dimensions of the teamwork variable did not behave in a similar way in the teams studied, since in the female team the fundamental dimensions for optimal teamwork behavior were communication and coordination together. to commitment and role; while in the men's team they were commitment and role and trust. This finding is similar to that mentioned by Ortiz (2021) when identifying the dimensions referred to as the most used to obtain effective teamwork.

It was noted that the correlation of communication with the dimensions coordination, trust, commitment and role in the male team and in the female team with the complementarity dimension, point to communication as the main dimension that favors

the appropriate climate during the development of tasks. joint in the studied selections; A result that coincides with what Quesada (2022) stated when referring that communication is a fundamental pillar of teamwork.

The correlation expressed by the dimensions coordination and complementarity in both teams was similar, highlighting the importance of the leader in the development of training and competencies. The result obtained differs from Quesada's (2022) approach by stating that the considerable presence of coordination and the weak correlation of complementarity indicate the need to enhance the work through favorable leadership that promotes the joint effort.

The dimensions trust and commitment and role behaved in a similar way in both teams, demonstrating that to streamline teamwork it is necessary that there be synergy between its members, in order to favor the improvement of everyone individually and jointly, as Franco defended. (2022) the mere fact of not having to hide the emotions and feelings that team members may experience reduces distractions and generates an environment of trust and security. However, in the men's team trust correlated with communication, this was not the case in the women's team, this result accentuating what Quesada (2022) reported about the effect of transparent communication on the team's results.

## **Conclusions**

The dimensions of the variable evaluated in the research showed that they do not have a statistically significant relationship with age, experience on the team, participation in competitions and age. Therefore, these are not determining factors for the development of teamwork.

On the other hand, there were significant relationships between the five C variables themselves, mainly those associated with communication with commitment, coordination, trust and complementarity. This demonstrates the importance of communication, the central process that determines the effectiveness of teamwork.

## **References**

- Ayovi, J. (2019). Teamwork: key to the success of organizations. *FIPCAEC*. 4(10) 58-76. DOI: 10.23857/fipcaec.v4i10.39
- Correa Recabal, M., Castelli Correia de Campos, L. F., Campos-Campos, K., Luarte Rocha, C. (2021). Psychological Characteristics of Sports Performance in Boccia athletes belonging to the Chilean Paralympic Committee. *RPCAFD*. 8(2) 1139-1146. DOI: <https://doi.org/10.53820/rpcafd.v8i2.138>
- Franco, C. (2022). The formation of work teams: a strategic step to fly higher and further. *Dissertare*, 7, 1-22. DOI: <https://doi.org/10.5281/zenodo.6617627>
- García-Más, A. (2001). Cooperation and competition in sports teams: a preliminary study. *Análise Psicológica*, 1(19) 115-130. DOI:10.14417/ap.347
- Ortiz, J. (2021). Teamwork and job performance in workers of the district municipality of Bellavista, Jaén. Degree thesis, Private University of Chiclayo, Jaén, Peru.
- Oviedo, C., and Campo, A (2005). Approach to the use of Cronbach's alpha coefficient. *Colombian Journal of Psychiatry*. ISSN: 0034-7450. <http://www.redalyc.org/articulo.oa?id=80634409>
- Paulas, O. (2004). Management of sports teams. In: Directorate of Physical Culture T-I. Havana: José Martí
- Quesada, L. (2022). Study of the teamwork behavior of the 4x400m relay. Cuban women's championship of 2021. Master's thesis. University of Physical Culture and Sports Sciences.
- Rabbie, J.M. (1995). Determinants of intragroup instrumental cooperation. In R. A. Hinde, & J. Groebel (Eds.), *Cooperation and prosocial behavior*. Madrid: Learning Visor. (Orig. 1991).
- Rodriguez, M., Isla, SD., Páez, YR., Alata, YI (2019). Psychological intervention to enhance psychological predisposition in artistic gymnastics girls. *CIAF Magazine*, Vol. 6, No. 1. <http://revistaciaf.uclv.edu.cu/index.php/revista/article/view/85/107>
- Roffé, M., & Rivas, C. (2013). *The mental match in 400 phrases and 45 topics*. Place Editorial. Buenos Aires.

Roffé, M. (2020) Psychology of the substitute player in football. *Journal of Psychology Applied to Sports and Physical Exercise*. 5(2) 1-7. DOI: <https://doi.org/10.5093/rpadef2020a11>

Verdier, N. (2020). Cohesion in the dynamics and performance of sports teams. Thesis. University of the Republic, Montevideo, Uruguay.