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## *Psychological predisposition of Cuban heptathletes and decathletes, evidence of its association with competitive performance*

*Predisposición psicológica de heptatletas y decatletas cubanos, evidencias de su asociación con el rendimiento competitivo*

*Predisposição psicológica dos heptatletas e decatletas cubanos, evidência de sua associação com o desempenho competitivo*

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### **ABSTRACT**

Psychological preparation for competitions is a process that enhances the capacities and qualities of the athlete during the preparation to reach the optimal state of mental predisposition. There are few researches that offer empirical evidence of the relationship between the state of mental predisposition and the competitive performance of athletes in combined events. The objective of this work was to determine how the state of psychological predisposition and the competitive performance of Cuban athletes in combined events are related. The research was non-experimental and cross-sectional. The sample was made up of eight athletes from the combined events of the Cuban national athletics team. The Questionnaire of Psychological Predisposition for Competition and the Performance Scale in the competition of combined tests were used. Goal clarity was positively and directly correlated with competitive performance in hurdles (.793 sig. = .019). The significance of the athletes' perceived competition was positively and directly correlated with hurdles and high



jump (.826 sig. = .012 and .717 sig. = .045). As the clarity of objectives increased in the athletes studied, so did the performance perceived by their coaches in the hurdles races they carried out in the 2020 Cuba Cup. As the significance of the competition was greater, so was the performance in hurdle races and high jump.

**Keywords:** Athletics, Cuba Cup, psychological preparation, combined events.

## RESUMEN

La preparación psicológica para las competencias es un proceso que potencia las capacidades y cualidades del deportista durante la preparación para alcanzar el estado óptimo de predisposición psíquica. Son escasas las investigaciones que ofrecen evidencias empíricas de la relación existente entre el estado de predisposición psíquica y el rendimiento competitivo de atletas de pruebas combinadas. El objetivo de este trabajo fue determinar cómo se relacionan el estado de predisposición psicológica y el rendimiento competitivo de los atletas cubanos de pruebas combinadas. La investigación fue no experimental y transversal. La muestra la integraron ocho atletas de pruebas combinadas de la selección nacional cubana de atletismo. Se emplearon el Cuestionario de Predisposición Psicológica para la Competencia y la Escala de rendimiento en la competencia de pruebas combinadas. La claridad de objetivos correlacionó de manera positiva y directa con el rendimiento competitivo en las carreras con vallas (.793 sig. = .019). La significación de la competencia percibida por los atletas correlacionó de manera positiva y directa con las carreras con vallas y el salto de altura (.826 sig. = .012 y .717 sig. = .045). A medida que aumentó la claridad de objetivos en los atletas estudiados también lo hizo el rendimiento percibido por sus entrenadores en las carreras con vallas que realizaron en la Copa Cuba 2020. A medida que fue mayor la significación de la competencia, también lo fue el rendimiento en carreras con vallas y salto de altura.

**Palabras clave:** Atletismo, Copa Cuba, preparación psicológica, pruebas combinadas.

## SÍNTESE

A preparação psicológica para as competições é um processo que aumenta as habilidades e qualidades do atleta durante a preparação para alcançar o estado ideal de predisposição psíquica. Há poucas pesquisas que ofereçam evidências empíricas da relação entre o estado de predisposição psicológica e o desempenho competitivo dos atletas em eventos combinados. O objetivo deste trabalho foi determinar como o estado de predisposição psicológica e o desempenho competitivo dos atletas cubanos em eventos combinados estão relacionados. A pesquisa foi não-experimental e transversal. A amostra consistiu de oito atletas de eventos combinados da equipe nacional de atletismo de Cuba. Foram utilizados o Questionário de Predisposição Psicológica para Competição e a Escala de Desempenho em Competição de Julgamentos Combinados. Clareza de propósito correlacionada positivamente e diretamente com o desempenho competitivo em obstáculos (.793 sig. = .019). A percepção do significado da competência dos atletas se correlacionou positiva e diretamente com obstáculos e saltos em altura (.826 sig. = .012 e .717 sig. = .045). medida que



a clareza das metas aumentava nos atletas estudados, também aumentava o desempenho percebido por seus treinadores nas corridas de obstáculos que realizaram na Copa Cuba 2020. medida que a importância da concorrência aumentava, aumentava também o desempenho em obstáculos e saltos altos.

**Palavras-chave:** Atletismo, Copa Cuba, preparação psicológica, eventos combinados.

## INTRODUCTION

The optimal performance in sports competitions lies in the capacity to mobilize all the physical, functional and technical-tactical potential achieved during long periods of training. This topic is one of the main problems of sports science, particularly psychology, today. In all sports disciplines, it is vitally important to carry out psychological interventions that stimulate the psychological potential of athletes (Moreno *et al.*, 2019). Conceiving and pedagogically conducting the means and contents of the sports preparation process, so that they promote performance at the highest level in competitions, constitutes the instrumental substrate of psychological preparation (Espinosa, 2021).

The purpose of psychological preparation for sports competitions and its main scientific indicator is the formation of the ideal mental state of performance or psychological predisposition (Puni, 1969). The state of psychic predisposition for the competitions constitutes a complex and integral manifestation of the personality of the athletes. This is characterized by a firm security in one's own sporting potential, by a firm decision to strive actively, passionately, self-sacrificingly and without haggling efforts throughout the competition to achieve the objectives set.

It is also distinguished by the reproduction of a level of autonomic excitation that makes it easier to fight actively and firmly against unfavorable external and internal influences, especially against the most important ones for the athlete. It supposes a high capacity to guide the actions, feelings and all the conduct, in the infinitely changing conditions of the sports fight (Puni, 1969).

Since it is a subjective content, corresponds to psychology its knowledge, in the methodological foundations that establish how to achieve it, preserve it and recover it, underlies the interdisciplinary work of coaches and sports psychologists. It requires elementary notions of psychology from the coaching pedagogues, while psychologists must have in-depth knowledge of the sporting activity in question (Puni, 1969 p5).

Sports performance is a concept referring to the result of a sporting action or activity considering standards achieved, times elapsed and/or points achieved by athletes in a competition (Ursino *et al.*, 2019). This is closely linked to competitive sport, since athletes are required to exploit their resources to the maximum (Núñez and García, 2017). Hetero-perceived sports performance refers to the perception that a person outside the group of athletes, such as the coach, has about the sports performance of the team's players (Bohórquez *et al.*, 2017).



The heptathlon and decathlon are combined specialties within the field and track that comprise seven and ten athletic events respectively. At the Olympic Games, the ten decathlon tests are held in two daily sessions, first day: 100-meter, long jump, shot put, high jump, 400 meters. Second day: 110-meter hurdles, discus throw, pole vault, javelin throw, 1500 meters. The women's heptathlon test consists of seven tests in two daily sessions, first day: 100-meter hurdles, high jump, shot put, 200 meters. Second day: long jump, javelin throw, 800 meters.

These modalities are governed by the same regulations that apply in athletic competitions of each specialty that composes it. Victory in these events is decided by the final accumulation of points that are awarded according to the times, heights and distances achieved by the athletes in each test, to which a partial score is assigned (Woolf *et al.*, 2007).

The decathletes and heptathletes face very heavy physical loads during two competitive days, for which the overall physical development of the athlete must be considered, where the most relevant factors are the preparation of speed, strength or explosive power capacities, and endurance. (Wang and Lu, 2007). They are disciplines where a high potential for movement is required, as well as the coordination that allows these movements to be quickly managed and adapted by improving internal and external conditions. Specific skills for individual disciplines are decisive and achieving adequate psychological preparation is necessary to achieve aggressiveness and self-confidence during competition (Vindusková, 2003).

In bibliographical reviews which purpose was to locate studies aimed at resolving technological demands related to psychological preparation in the Cuban national athletics pre-selections, works were found where variables such as coping with stress (González, 2001), self-assessment adaptation and psychological disposition to training in field conditions (González, 2001a).

Some of these researches have as their main objective the characterization of the psychological state of athletes prior to facing the demands of the training activity (González, 2001a; Barrios, 2010). Above all, the issue of emotional response and some of its modulators has been thoroughly investigated (González, 2007) in Cuban athletics. More recent work with Cuban track and field throwers has also addressed self-efficacy for activity tasks as an independent variable, identifying the impact on the competitive performance of these athletes (Montoya *et al.*, 2020).

However, no studies have been found in this sports discipline that delve into the components that, according to Puni's (1969) conception, make up the state of psychological predisposition for competitions.

Despite the fact that there are research precedents (Núñez and García, 2017, Montoya *et al.*, 2020, Whittembury and Espinosa, 2020) that illustrate the relationship between psychological variables and performance, there is a lack of empirical evidence to confirm it in the combined modalities.



The objective of this study was oriented, therefore, to determine how the components of the state of psychological predisposition and the competitive performance of Cuban athletes in combined events are related. The study is of interest, since it describes the characteristics that distinguish the state of psychological predisposition of athletes practicing combined field and track events in our country and details some issues that determine their training and control.

## **MATERIALS AND METHODS**

### *Type of study*

Non-experimental research, the variables were not intentionally and deliberately manipulated, only their behavior was evaluated. The study was carried out from the data of the pre-competitive psychological control developed during the Cuba Cup competition of the year 2020, therefore, it is of a cross-sectional type.

The way in which the psychological predisposition and competitive performance variables behaved was deepened, and relationships were established between them through the use of statistical methods, so the scope of the study was descriptive and correlational. In the process of data analysis and discussion of the results, the fundamentals of quantitative methodology were used, complementing these with qualitative analyzes of the subjects that made up the sample.

### *Population and sample*

The study was developed in the athletic population corresponding to the Cuban national athletics team, specifically with athletes from combined events.

The sample consisted of eight athletes who constituted 88.8 % of the population. The small number of subjects that make up the sample was the main limitation in this research. This was intentionally set up. The inclusion criterion was belonging to the group of athletes from the combined events of the Cuban athletics team and the exclusion criteria for not having participated in the 2020 Cuba Cup. Only one athlete belonging to the population was excluded, since she did not participate in the competition.

Of the total athletes that were studied, three are women and represent 37.5 % and five are men for 62.5 %. The average age of the group of athletes was 21.8. The average sports age was 11.6 years.

### *Instruments and techniques*

Among the empirical methods used for the study was the "Questionnaire of Psychological Predisposition for Competition". The instrument was elaborated *ad hoc*, it was inspired by the definition of Alexander T. Puni (1969) about the state of psychic predisposition for competition, where the characteristics of this peculiar psychological state were emphasized, the sensations that the athlete experiences and favor competitive performance, as well as in the links described by this same author that ensured its obtaining.



The instrument consisted of six dimensions of exploration: *self-confidence, clarity of objectives, achievability of objectives, level of physiological and emotional activation, social significance of competence, and psychological invulnerability or ability to face unforeseen events.*

In each dimension, the athlete had to respond to an item, which consisted of a global question, directly related to the categorical core of the dimension. To do this, they were offered five response options with ordinal scaling, thus reflecting an increasing intensity of the presence of the dimension. The dimension of the questionnaire, related to the degree to which the objectives are considered achievable, was considered with a nominal measurement level, its response options were categorical. Then the athlete had to respond to several items or intradimensional arguments (intended to delve into each dimension), using a Likert-type scale from 0 to 3 (0 little, 1 somewhat, 2 quite a bit, 3 a lot) that penetrated into details about the overall response. emitted in dimension.

Based on the overall responses expressed by the athlete in each dimension of the questionnaire and the intradimensional arguments, the evaluator had to integrate the information and draw conclusions about the state of psychic predisposition of the evaluated person.

The instrument contained content validity, while its dimensions fully represented the variable that was explored. The psychologists of the national athletics preselection considered that the test items were adequate to measure the different dimensions of the test, which gave it appearance validity according to specialist criteria. In an internal consistency analysis of the test items, a Cronbach's alpha coefficient of .803 was obtained.

The "*Scale of performance in the competition of combined tests*" was also used. It is an *ad hoc* tool for collecting data related to the performance of athletes under field conditions of an empirical nature. It consisted of the presentation of a Likert-type scale (1 Poor, 2 Fair, 3 Good, 4 Very Good) through which the coaches had to judge the performance of their athletes in each of the tests of the heptathlon and decathlon events.

The coach had to judge whether the athlete was able to approach the pre-established educational and competitive objectives or purposes, based on the technical performance and the concrete result in each of the tests, considering their level of development reached in the preparation, the performance standards achieved by him in training and in previous competitions.

The coach reported the level of performance of the athlete, based on an integration of what was observed during the competitive activity, in which he considered the technical efficiency and the mobilization of conditional and coordinative capacities and their expression in the activity during each test of the event. It was applied as an interview and the reports were recorded by the researcher on a response sheet.



## Process

The athletes were called to the psychology room of the Pan American Stadium, where they answered the items of the psychological predisposition questionnaire the day before the first day of competition of the heptathlon and decathlon events corresponding to the 2020 Cuba Cup.

The coaches were asked to respond to the competition performance evaluation scale after the performance of their athletes in each of the tests of their event.

The data were statistically processed using the statistical package SPSS, version 20 for Window. Descriptive and correlational analysis (Spearman's rho correlation coefficient) were used. The dimension of the questionnaire related to the degree to which the objectives were considered achievable did not receive statistical processing relative to the measures of central tendency and variability; otherwise, it was analyzed separately, obtaining the frequency for each response category.

## RESULTS AND DISCUSSION

### Analysis of the results

The average scores obtained in the dimensions with ordinal measurement level of the psychological predisposition questionnaire (Table 1).

*Table 1. - Descriptive statistics, ordinal dimensions of the psychological predisposition questionnaire*

Dimensions	No.	Minimum	Maximum	Medium	Typical deviation
Security as a competitor	8	2.00	4.00	3.0000	.53452
Clarity of objectives	8	3.00	4.00	3.5000	.53452
Physiological arousal level	8	2.00	3.00	2.1250	.35355
Significance of the competition	8	2.00	4.00	3.3750	.74402
Psychological invulnerability	8	2.00	4.00	3.2500	.70711

The data observed in the table showed that the competitive objectives of the athletes studied turned out to be between quite clear and very clear. They also considered that the competition had a social relevance between high and very high. The registered psychological invulnerability showed that the athletes felt that, in the face of possible unforeseen events (changes in the competition schedule, unexpected opponents that represented greater demands, unpleasant news, difficulties with teammates or with the coach), they could remain focused and performing. The average score obtained by the group in the security dimension as a competitor indicated that they faced the competition with medium self-confidence.

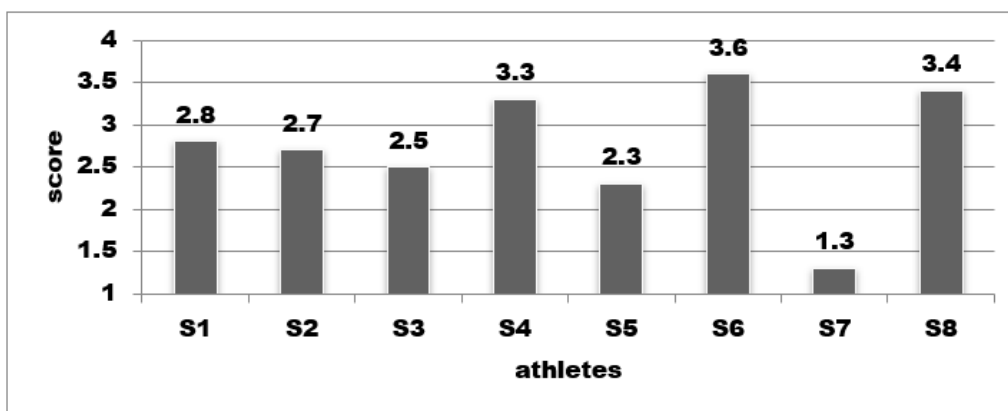




The dimension of the questionnaire with the lowest average score was level of activation (2.12). This result revealed that the arousal generated by the competition in the group of athletes studied had an intensity that ranged between ideal for performing to the maximum of possibilities and a little more intense than what normally favors performance.

In the dimension of the questionnaire, related to the degree to which the objectives are considered achievable, one hundred percent of the athletes (8) considered that the objectives for the competition would force them to make an effort, but they were achievable.

Figure 1 offers the average competitive performance index obtained, based on the value reported by the coaches on the performance in all the heptathlon and decathlon events respectively, of each of their athletes (Figure 1).



*Fig. 1 - Average competitive performance index of the subjects studied in all the tests of their events*

As seen in the graph, the athlete with the highest score had a competitive performance equivalent to an evaluation between good and very good. The lowest score obtained was between poor and fair. The competitive performance of the total study sample showed an average score of 2.7, equivalent to an evaluation between fair and good, with a standard deviation of 0.73.

For a more detailed analysis of the data collected that would allow, in addition to delving into aspects related to the main sources that contributed to the formation of the psychological state with which the athletes studied faced the competition, we proceeded to examine the items or arguments offered by the questionnaire. of psychic predisposition for the competence on the answers that are emitted in each dimension of the test. Table # 2 offers descriptive statistics of these results.

As can be seen in the table, of the 25 intradimensional arguments contained in the questionnaire (distributed among the six dimensions), the athletes estimated that 52% (13 arguments) contributed between quite a lot and a lot (score of two or more) to the overall response issued in its corresponding dimension. The dimension of the questionnaire whose intra-dimension arguments contributed less to the overall response issued was the level of activation (Table 2).



**Table 2. - Descriptive Statistics of intra-dimension items of the questionnaire**

<b>SAFETY AS A COMPETITOR</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
Compliance with training quality	8	2.00	3.00	2.50	.53
Previous competitive frequency	8	1.00	3.00	1.75	.88
Criteria of the coach and the technical group	8	1.00	3.00	2.00	.75
Knowledge of how to act and think about the competition	8	.00	3.00	2.12	1.12
<b>CLARITY OF OBJECTIVES</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
In-depth analysis and discussions with the coach	8	1.00	3.00	2.37	.91
Personal reflections on its meaning	8	2.00	3.00	2.62	.51
Habitual character	8	.00	3.00	1.75	1.28
Definition in the form of concrete performance	8	1.00	3.00	2,0000	.75
<b>REACHABILITY OF OBJECTIVES</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
Correspondence with the current preparation	8	2.00	3.00	2,5000	.53
Correspondence with the opponents to face	8	.00	2.00	1,0000	.75
Correspondence with the sporting level reached	8	2.00	3.00	2,2500	.46
Correspond with the conditions of the competition venue	8	.00	3.00	1.3750	1.18
<b>ACTIVATION LEVEL</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
Heart and respiratory rate	8	.00	2.00	1,5000	.755
Control of the intensity and accuracy of technical actions	8	.00	1.00	.6250	.51
Change in appetite and/or frequency with which you go to the bathroom	8	.00	3.00	.8750	1.35
Difficulty falling asleep	8	.00	2.00	,5000	.75
Ability to focus on tasks	8	.00	2.00	,5000	.75
Frequency of thinking about competitive performance	8	1.00	3.00	1.8750	.64
<b>SIGNIFICANCE OF THE COMPETITION</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
It is the most important of the macrocycle	8	2.00	3.00	2,5000	.53
National and international social connotation	8	1.00	3.00	2,2500	.70
Meaning of the performance for the team, delegation or country.	8	2.00	3.00	2.3750	.51
<b>PSYCHOLOGICAL INVULNERABILITY</b>	<b>No.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Medium</b>	<b>Dev.</b>
Awareness of personal self-control and performance Resources	8	.00	3.00	1.7500	.88
Previous immediate experience	8	1.00	3.00	2,0000	.92
Previous mediate experience	8	.00	3.00	1.2500	.88
Verification of practical effectiveness of personal resources	8	1.00	3.00	2.1250	.83

A correlation analysis was carried out to verify if the different dimensions of the psychological predisposition questionnaire were associated with the evaluations made by the coaches of the performance of their athletes in the five tests common to the heptathlon and the decathlon. Table 3 provides these results (Table 3).



**Table 3.** - Spearman's Rho correlation Ordinal dimensions of the Questionnaire of Psychological Predisposition and Competitive Performance in five tests

Spearman's Rho		Self confidence	Clarity of objectives	Achievability of objectives	Emotional arousal level	Significance of the competition	psychological invulnerability
Hurdle race	Coef. correlation	.679	<b>.793*</b>	.086	.086	<b>.826*</b>	.250
	Next.	.064	.019	.840	.840	.012	.550
High jump	Coef. correlation	.375	.250	-.472	-.472	<b>.717*</b>	.418
	Next.	.360	.550	.237	.237	.045	.302
Shot put	Coef. correlation	0,000	-.252	-.095	-.095	.188	.105
	Next.	1,000	.547	.823	.823	.655	.804
Long jump	Coef. correlation	.289	.289	.436	.436	.380	-.311
	Next.	.488	.488	.280	.280	.354	.454
Javelin throw	Coef. correlation	-.283	-.226	-.086	-.086	.081	.365
	Next.	.497	.590	.840	.840	.848	.373

As can be seen in the table, the tests that obtained correlations with the dimensions of the questionnaire were the hurdle races and the high jump. The results showed that as the clarity of objectives was greater, so was the competitive performance in the hurdles races (.793 sig.= .019). It was found that the higher the significance of the competition perceived by the athletes, the performance in the hurdles and high jump tests increased (.826 sig. = .012 and .717 sig. = .045).

### DISCUSSION

It was eloquent that the clarity of the objectives constituted the dimension with the highest score reached by the group of athletes studied. Clearly defining the competitive objectives was transcendental in the process of psychological preparation of the multi-athletes to face the competitions. The way in which the combined modalities of athletics are competed, where competitors are rewarded with a score equal to their performance in each test, based on equations and tables derived from the best historical performances of specialized and multiple athletes (Woolf *al.*, 2007) required the participants to predefine a systemic competitive strategy, where performance objectives by specialty were its core.



The orientation of human behavior was expressed in the management function, which is an integral part of the management cycle and which purpose was the conscious and systematic influence on individuals in order to achieve predetermined objectives (Tristá, 2019). The objectives played an important role in guiding the behavior that ensures the conscious and active participation in the sporting activity, the concentration of the available attentional resources in the main purposes and the consequent alignment of the volitional efforts in the appropriate directions. They allowed discriminating between fundamental and secondary claims for an efficient investment of energy reserves.

The clear planning of the objectives to be achieved in each test of the heptathlon and decathlon events, its approach in the form of specific sports performances (time, distance, height) became a fundamental requirement of these field and track modalities. This same dimension proved to have a direct and positive relationship with one of the tests (hurdle races) common to the decathlon and heptathlon events.

The reviewed studies on the clarity and/or specificity of the objectives and their convenience associated with sports performance were not entirely conclusive. Some authors (Locke and Bryan, 1966; Barnett and Stanicek, 1979; Davis and Spennewyn, 1983, cited in Díaz and Mora, 2013) offered evidence of the positive effects of specific goals in strength-endurance tasks.

Others (Mento, Locke, & Klein, 1992; Boyce, 1994; Souza & Santos, 2006, cited in Díaz & Mora, 2013) not only did not show significant differences between goal-setting groups (experimental) and another under the condition of doing it as better than you can (control), but unexpectedly, the subjects in the control group performed slightly better than those in the experimental group.

Thus, it was concluded that setting objectives in a specific way could be related to the achievement or process goals, and not directly to the performance or result goals. The foregoing leads to finding answers in the classic distinction between expectations of efficacy (self-efficacy) and expectations of results from Bandura (1977).

Self-efficacy is distinguished from expectations of results, insofar as the former is the perception of competence to carry out a behavior (confidence that a certain execution can be successfully carried out), while the latter are based on judgments about the probability that the expected results will occur (Bandura, 1977, cited in Montoya *et al.*, 2020). The higher the perception of self-efficacy, the better the individual's performance tends to be, which can also lead to more generalized positive feelings about oneself (Whittembury & Espinosa, 2020).

The results of the study revealed that the purposes to be achieved in the competition were perceived as demanding, but at the same time achievable by the subjects studied. In this regard, Puni (1969) highlighted that the objectives for the competitions could slightly exceed the athletic potential, but never seem superior to the strength of the athlete, while at the same time they should not be excessively easy, so much so that they could be achieved without making an effort. In either case, he specifies, the possibility of creating in the athlete



a firm security in his forces and the aspiration to make an effort until the last moment is almost completely excluded.

Weinberg *et al.* (2000) in a study with Olympic athletes about goal setting habits, found that setting them at a level slightly above their best performance was preferred by 185 men and 143 women who competed at that sporting level.

The process of establishing the objectives to be achieved in the competition should also promote the active participation of the athletes. The principle of active and conscious character guaranteed that each athlete knew clearly what they wanted to do, how they should do it, and why they do each task (Enríquez *et al.*, 2017).

For this, the precise assessment of the coaches on the physiological and technical possibilities of the multiathletes, based on the specific demands of the sports tasks, together with the adequate self-assessment (Ordoqui *et al.*, 2021) made by the athlete of their qualities. associated with performance was decisive.

A conscious attitude towards training should also be reflected in the setting of precise and achievable goals, which increased interest during training and greater enthusiasm in participating in competitions (Bernal *et al.*, 2014).

The high scores obtained in some of the intradimensional arguments of the dimensions clarity and achievability of the objectives, respectively, endorsed the value of these reasonings. The systematic pedagogical activities carried out by the pedagogues during the macro-cycle of work, became the cornerstone for the conception of a system of competitive objectives. In them, the athletes were analyzed and provided feedback on the progress and projection of the preparation, which ensured the strategic dosing of the functional reserves of the multiathletes during the two days of competition.

The results of this study revealed that the competence had a high social relevance perceived by the subjects evaluated. The Cuba Cup is one of the most significant official events organized by the National Athletics Commission (CNA) in our country. Thus, the volumes of intensity of the loads planned for the different stages of the training are programmed and distributed by the coaches so that several of the main athletes of this sport on the island achieve their most notable results in this competition, thus culminating the first of a double periodization structure.

In 2020, this event also granted qualifying places to the Tokyo Olympic Games to several of the athletes with the possibility of participating in the event under the five rings, some of them belonging to the combined events, which justifies the socially significant nature of this competition.

To study the socially significant motives, González (2007) differentiated the categories social-sporting context and personal meaning. The first one refers to the degree of importance that the results of a competition have for society or the human groups that are represented by the athlete. These can be crucial, medium, or low.



The second is the degree to which the competition satisfies a high-level need for the athlete. Its particular meaning can be more or less intense and, from a qualitative point of view, be stimulating, aversive or conflictive.

When the competition is considered crucial and stimulating, outstanding results can be expected, on the other hand, when the social-sporting context is considered crucial but the athlete gives it a diminished personal sense and the results may be unexpectedly low and the occasion may be alienating for the athlete. athlete (González, 2007).

It was verified that the social significance of the competition showed significant correlations with two of the tests common to the decathlon and heptathlon events (hurdle race and high jump).

In a research with high-performance Cuban throwers, Montoya (2012) found a lower-than-expected sports performance in most athletes, a phenomenon that was associated with a state of indifference at the start during a competition of little significance and personal meaning, where the absence of opposition was known in advance, which reduced the need to mobilize all potentialities.

The proximity of sporting events of high social significance and personal meaning are generators of a certain amount of tension or restlessness in the athletes who star in them (González, 2007; Montoya, 2012). One of the most important sources of subjective ergogenic contribution for the participation of athletes in competitions are precisely the reasons related to their social significance. They impact the emotional and physiological state before and during the actions (Núñez and García, 2017).

The results showed that the 2020 Cuba Cup caused a level of physiological activation in the group of athletes studied which intensity was between ideal to perform to the maximum of their possibilities and a little more intense than what normally favors performance.

In a systematic review on the relationship between the level of activation and performance, Núñez and García (2017) concluded that each individual needs a specific level of activation/anxiety to perform optimally. These authors understood this relationship in light of the theory of the Zone of Optimal Functioning by Hannin, Y. (Chia, 2019). What was expressed could explain, in this case, the non-correlation between activation and performance.

According to the data obtained, the group of athletes faced the competition with competitive confidence that behaved at medium levels. The analysis of the intradimensional self-confidence arguments, on the other hand, revealed that the argument with the highest score was the one related to compliance with the training sessions with the proper quality; however, the one concerning the previous competitive frequency was the one with the lowest index.

For the discussion of these results, it was agreed to recapitulate that Puni (1969), when referring to the characteristics of the state of psychic predisposition for competitions, emphasized the ability that the athlete should show to conveniently regulate feelings,



thoughts, actions and all behavior. during the competition, based on the knowledge of certain procedures, as well as the ability to apply them.

Referring to the way in which this state is acquired or formed, he insisted that it does not arise by itself, but is formed in the process of sports activity, resembling the conditions of preparation and training work to typical circumstances. of the competitions in general and the particularities of each sport.

What has been expressed leads us to assess the competitive opportunities or models with sufficient equivalence in which the studied multiathletes participated, prior to the competition in question. Puni (1969) highlights security in one's own forces as the first constitutive element of the state of mental predisposition for competitions. For this author, self-confidence expresses the athlete's conviction in his possibilities to achieve his objectives in the face of the challenge that competition represents.

Bandura (1977, cited in Montoya *et al.*, 2020) coincidentally pointed out that self-efficacy are the beliefs about what can be done based on one's own capabilities, that is, what level of performance a subject believes he can achieve, based on of them and the demands that the activity imposes on them. He added that this variable is influenced by four sources, where previous success or failure experience is the most influential. Own executions are the main sources of information on self-efficacy because they are personal experiences about the self-perceived ability to perform a specific task (Valencia, 2006, cited in Montoya *et al.*, 2020).

It was deduced that the causal elements of the security shown by the studied athletes can be associated with the few competitive opportunities of a specific nature that they had prior to the evaluation. The preparatory competitive experiences that are usually planned for these athletes were located within the calendar organized by the technical-methodological commission of the CNA, in consultation with the coaches of the event.

These spaces were the individual technical tests of the so-called "Confrontations" for specialized athletes. They faithfully reproduced the specific requirements of each test; however, they failed to simulate the specific regulatory requirements of the decathlon and heptathlon, which limited the possibility of reproducing the functional and subjective demands that these events provide, preventing a realistic experience of the fundamental competition.

In the specific case where it was identified that the races with hurdles and high jump tests of the decathlon and heptathlon events, which scores given by the coaches correlated significantly with the one obtained in the clarity of objectives and the significance of the competition -the two dimensions of the questionnaire with the highest score- and which offer evidence on the relationship between the state of psychological predisposition and competitive performance, were based on two fundamental arguments, the first of which is associated with the characteristics of the tests that were analyzed and the other with the preponderance of the components of the state of psychological predisposition.



The priority given by the coaches to both tests during the preparation was amply justified. The hurdle races and the high jump in the case of the heptathlon were the first two tests of the event, while awarding the most points (Brodani, Czaková and Kováèová, 2020). In the decathlon, the 110-meter hurdles race was the first test of the second day. The training systems directed efforts to enhance the result of this test in a very special way.

The systemic competitive strategy to face the competition emphasized the achievement of a satisfactory result in these tests. It was assessed that the impact that their performance in the debutant modalities of each day has on multiple athletes was decisive in the overall score aspirations. The insistence on strictly complying with the preconceived strategy was greater as the significance of the competition.

On the other hand, the demands and complexity of each test transversalized the way in which multiathletes prepare for competitions on the mental level. The vertical jumps within the combined tests (high jump and pole vault), for example, were modalities that presented a high degree of difficulty that lay not only in the biomechanical demands of the technique and the optimal physical qualities required by the event, but also in the particularities of the regulations and the way in which they compete (Woolf *et al.*, 2007).

The objective in this type of test was to get the jumper's anatomy to exceed a bar located at a certain height from the ground, which was previously set and constituted the record achieved in each execution. This peculiarity represented a level of difficulty comparatively higher than that of events whose mark made by the athlete was not pre-established, but was verified through measurements after the execution.

Each competitor also had three attempts to overcome each altitude and these ascended in portions of three centimeters. In turn, in the IAAF scoring table, the high jump was one of the tests with the greatest difference in points between records (Brodani, Czaková and Kováèová, 2020).

This implied the design of a thoughtful competition strategy that allowed reaching the highest record with relative economy of effort (fewer number of jumps), based on a deep self-knowledge as well as a high willingness to deliver.

Aware of the complexity of the high jump test, the collection of efforts that it required and the magnitude of its contribution to the overall score, it could be inferred that the athletes faced it mobilizing all their motivational resources and volitional efforts to achieve the best results in it.

In the sense of the components of the state of psychological predisposition, it could be inferred that those that contributed the most to the mental disposition for the performance of the athletes in the combined tests were precisely the clarity of the objectives for the competition, closely related to the significance of the same. As stated before, these are aspects which importance has been demonstrated. This relevance gravitated around the integrating and at the same time guiding essence of these contents.





As a summary, the group of athletes studied faced the competition with duly defined competitive purposes, which became a system of strategic objectives for the efficient and productive investment of efforts in each test, especially in two of the most decisive of their respective events which directed the behavior during the two days of competition.

These objectives were conceived from constructive debate processes between the educators and the rest of the work group, with the active participation of the athletes themselves, who, through self-assessed judgments about their level of real sports development, combined with personal aspirations and sports, guaranteed their legitimately demanding nature, in an event of high social and personal significance.

It is advisable to continue this line of research to obtain confirmatory results of what was found, guaranteeing a broader data collection. The samples of the studies that are carried out in high performance sport are usually small due to the very selectivity of the population.

The design of methods for obtaining information and analysis of the psychological dimensions that are explored from an ecological or field perspective is also a perfectible aspect of this research.

The results also illustrated the convenience of designing a competition calendar adjusted to the demands of this type of modalities that allows consolidation, not only through training and modeling, but also through the accumulation of real competitive experiences, from the so necessary security or self-confidence as an intrinsic component of the state of psychological predisposition and of the sporting form of the athletes of combined events.

### THANKS

This work illustrates a part of the work carried out by sports psychology specialists, who actively participate and together with the coaches, in the psychological preparation of the athletes of the combined events of the Cuban national athletics' pre-selection.

The results presented here are part of the psychological control work that they carry out in competitive mesocycles, which data is reported to the coaches of these modalities to contribute to the process of sports preparation.

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The authors declare not to have any interest conflicts.

**Authors' contribution:**

The authors have participated in the writing of the work and analysis of the documents



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