Diagnosis of the concentration of the attention in sprinters of the national equipment of cycling

Abstract

The concentration of attention is a variable that affects the rapid execution of the snatch. In practice, it has been verified that in training and competition situations, the sprinters of the Cuban National Track Cycling Team show difficulty in breaking the inertia for the execution of the snatch, they are impatient and eager to get out of the block of started, leading to false starts. The objective of this study was oriented to evaluate the indices of attention concentration in a sample of sprinters from the national preselection. Methods and techniques were used: analytical-synthetic and inductive-deductive, observation, interview, Toulouse-Pierón cross-out test, and the Numerical Grid test to assess attention concentration indices, triangulation of information, and descriptive statistics. The main results allowed to verify deficiencies in the concentration of attention in the sprinters by team, prevailing the regular category and poorly with the highest figures. It was concluded that the difficulties manifested by the largest number of athletes affect the rapid execution of the snatch. These results demand a psychological intervention program to develop certain concentration characteristics.

Keywords*: attention, concentration of attention, cycling and track cycling.*

Introduction

Cycling is a competitive sport that, when it takes place in structures known as velodromes, is called track cycling. There are different modalities or tests, including team speed. In this modality, two rival teams of 3 runners for both sexes face each other, each team will race against the clock, a winner is achieved by the best time. They sprint without prior impulse (start stopped) and are only allowed two starts, according to the International Cycling Union (ICU, 2021).

It is worth noting what is supported by Pinzón and Mendoza (2022) who point out professional cycling as one of the sports that most requires physical and mental condition when practicing it since the body exercises many simultaneous activities in those who practice it, where it is used all kinds of strength and resistance so that in this way the athlete can constantly improve the levels of time used to practice it.

Among the most important psychological skills in high-performance sport, the attention and concentration process occupies outstanding relevance as a variable under study, influential in sports performance, being of great importance for this science, including that of Aguirre, "et al" (2015).

There are various investigations developed in Cuba, in which those of Soler (2018) stand out; Ocaña "et al" (2020); Del Monte (2017); Cañizares "et al" (2020); among others, providing strategies that facilitate the optimization of the concentration of attention.

For their part, González, D. F. and González, V. R. (2021) propose a methodology for improving artistic gymnastics coaches for the psychological preparation of athletes by understanding its importance in sports results. When an athlete has a good physical preparation and his technical and tactical skills are acceptable, the fact of knowing and mastering the attentional processes facilitates the execution of the task and the probability of sporting success increases remarkably.

According to Ponce (2018) the concentration of attention, defined as a whole as the ability to maintain focused attention on a task or object, generating a concentrated persistence of attention.

Corrales, "et al" (2021) states that it is a process that allows the focus of all attention on the relevant aspects of a task to be carried out, it consists of voluntarily focusing all the attention of the mind on an objective, object or activity that is carried out or intends to be carried out at that moment, by leaving aside the entire series of events or other objects that may be capable of interfering with its achievement or with its attention.

There are various studies carried out on the processes of attention in athletes, such as Soler (2022); Ponce (2018); Cañizares "et al" (2020); particularizing the concentration of attention, according to the characteristics of the different sports, in which they address the importance that it acquires for athletes to achieve an adequate level of attention, allowing to analyze, interact and execute sports actions with a greater degree of optimization.

One of the most relevant studies in terms of cycling is the article by Olmedilla "et al" (2018) prepared in Spain, whose objective was to describe the psychological profiles of two cycling sports: triathlon and road cycling. The results showed statistically significant differences between the two groups of athletes.

Currently, the Cuban national track cycling team does not have the necessary training conditions, the velodrome does not meet the established standards, in addition to not being constructively in good condition. They do not have a starting block with the electronic

system that simultaneously activates the stopwatch. Although they have a qualified technical group, the objectives set have not been achieved.

Taking into account the information obtained in the observations of training and controls, in conversations held with athletes and coaches, notable difficulties are perceived to focus attention on the snatch, which prevent them from effectively carrying out executions and running races in the shortest time, without there being an action that contributes to the solution of this problem. That is why this research aims to evaluate the concentration of attention in this sports population.

Materials and methods

To fulfill the objective of the research, a mixed (quali-quantitative), descriptive, cross-sectional study was carried out (Hernández - Sampieri, Fernández and Baptista, 2014).

Number of athletes	Sex		Average chronological age	Sport age range		Average sports age
	F	M	years	years	years	years
7	4	3	18 a 21	19.5	4 a 7	5.4

The sample is of an intentional type, as inclusion criteria it was considered that they were athletes enrolled in the Giraldo Córdova Cardín training school for high-performance athletes in the 2021-2022 academic year and that they were part of the Cuban National Track Cycling Team; that also presented the problematic situation, the following techniques and instruments were used:

Observation to verify the presence of difficulties in relation to the concentration of attention in the snatch both in training and in competition. For this, an observation guide was prepared (technical-tactical, physical and psychological elements), which was applied from the beginning of the special preparation stage until the end of the stage. A total of 50 observations were made; 45 of them in a training situation and 5, in competition.

Individual interview with athletes in order to know their self-assessment; and to the two team coaches, with the aim of knowing their assessment in relation to the behavior of concentration of attention, specifically in the start. For its application, an interview guide consisting of five questions was prepared, which was applied in the special preparation stage.

Triangulation: It facilitated summarizing the results of the diagnosis obtained from observation, tests and interviews with coaches and athletes.

The following tests were used for measurement:

Toulouse-Pierón Cross-out Test: Its objective is to measure perceptive and attentional skills, that is, the ability to concentrate and resistance to attentional fatigue, as well as perceptual speed and persistence. The sample of the test contains 460 graphic elements (squares that have a dash attached perpendicular to one of its sides or on one of its vertices) that is distributed in 23 rows with 20 elements. The task is to detect which of them are the same as model 1 presented at the top of the sheet. The duration time is 1 minute.

Assessment

I **INDEX OF THE INTENSITY OF ATTENTION (INDEX OF PRODUCTIVE WORK)**		**E** **CORRECT WORKING RATIO (CONCENTRATION INDEX)**
368 OR MORE	Excellent	1.00 ------- 0.90
367 ------- 276	Very good	0.89 ------- 0.80
275 ------- 230	Good	0.79 ------- 0.70
229 ------- 184	**Regular**	0.79 ------- 0.70

Numerical Grid (38 digits): allows to evaluate the capacity and stability of the concentration of attention, to identify the behavior of internal-close attention. The score obtained is divided into three categories: first 30 seconds (attention concentration capacity), 60 seconds and 90 seconds (attention concentration stability). The evaluation method is:

Category	***WOMEN***		
	30 seg.	**60 seg.**	**90 seg.**
Excellent	19 or more	29 or more	———
Very good	18 a 15	28 a 24	38 a 32
Good	14 a 10	23 a 17	31a 24
Regular	9 a 6	16 a 11	23 a 17
wrong	5 or less	10 or less	16 or less o menos

Category	***MAN***		
	30 seg.	**60 seg.**	**90 seg.**
Excellent	17 or more	28 or more	———
Very Good	16 a 14	27 a 24	38 a 33
Good	13 a 11	23 a 18	32 a 26
Regular	10 a 8	17 a 14	25 a 21
wrong	7 or less	13 or less	20 or less

The study took place during the special preparation stage. It was decided to apply the tests before starting the training session in the morning session, the days that the start will take

place, considering that it is the most propitious moment to apply with all the conditions created, controlled environment, good lighting, in addition to not interfere with their schedules.

Descriptive statistics were used to process the information using the average statistician, the empirical distribution of absolute and relative frequency with its corresponding percentage calculation. The data was collected in spreadsheets to later digitize them in Excel.

Results and discussion

Through the application of the techniques the following results were obtained.

Table 1. Results of the Toulouse-Pierón Cross-out Test

N.° of athletes	E: Correct working coefficient (concentration index)		I: Attention intensity index (productive work index)		General evaluation
	Quantitative evaluation	qualitative evaluation	Quantitative evaluation	qualitative evaluation	
1	0.62	R	180	W	**W**
2	0.70	G	191	R	**R**
3	0.65	R	210	R	**R**
4	0.70	G	220	R	**R**
5	0.65	R	214	R	**R**
6	0.67	R	180	R	**R**
7	0.75	G	228	G	**G**
Half	**0.68**	**R**	**203**	**R**	**R**
%	**--**	**57.14**	**--**	**71.42**	**71.42**

Source: self made

As can be seen in Table 1, the quantitative and qualitative data reveal low indices in terms of concentration, as well as the speed and perceptual persistence that allows the evaluation of the test. The results show difficulties in resistance to attentional fatigue and in the ability to concentrate attention, showing that the predominant evaluation is the regular category with more than 50% of the sample studied.

Figure 1 shows that five of the athletes evaluated reached regular values for I (attention intensity index or productive work index), a regular evaluation, likewise behaved in indicator E (correct work coefficient or concentration index) with a total of four subjects. It is followed by the category of good and bad for both indicators. There was no evaluation of excellent or very good.

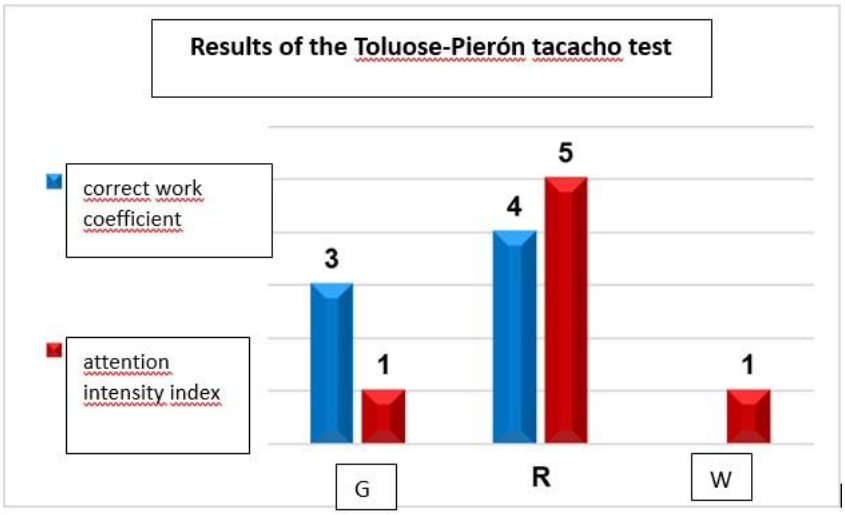

Figure 1. Results of the Toulouse-Pierón Cross-out Test

The results indicate that I (intensity of attention) reaches 71.4% in the regular category, followed by the good and bad category with 14.29% for both cases. Regarding the E (concentration index), the regular category predominates in the same way with 57.1% of all athletes, in second place, the good category with 42.9%.

These results allow us to infer that the quality of care in the studied sample is insufficient, specifically its intensity, consequently, it affects the execution of the start to achieve performance.

A second measurement of the concentration of attention is made up of the application of the Numerical Grid Test (38 digits).

Table 2 shows a qualitative assessment, considering that the regular category is the one that prevails. It can be seen that there is a decrease in the concentration of attention consecutively, from 60 to 90 seconds and figures were raised to categories of regular and bad respectively, at the same time that the categories of excellent, very good decreased. and good. These results denote the decrease in terms of the stability of the attentional capacities of the athletes as time progresses and difficulties in solving the task.

Table 2. Results of the Numerical Grid Test (38 digits).

N.º of athletes	30 seconds		60 seconds		90 seconds		General evaluation
	Quantitative evaluation	qualitative evaluation	Quantitative evaluation	qualitative evaluation	Quantitative evaluation	qualitative evaluation	
1	12	G	16	R	26	G	G
2	9	R	14	R	19	W	R
3	9	R	15	R	21	R	R
4	7	R	10	W	15	W	W

5	7	W	15	R	20	W	W
6	6	W	13	G	21	R	R
7	10	G	17	G	20	G	G
Half	**9**	**R**	**12**	**R**	**20**	**R**	**R**
%	**--**	**57.14**	**--**	**71.42**	**--**	**42.85**	**42.85**

Source: self made

In relation to the results, when analyzing the average for every 30 seconds in the test, the category of regular increases, which reveals that the athletes show difficulties essentially in the ability to concentrate, so that a decrease is evidenced until no more. There are evaluations of excellent and very good. The fact that the results present negative values indicates difficulties in the behavior of the ability and stability of attention concentration.

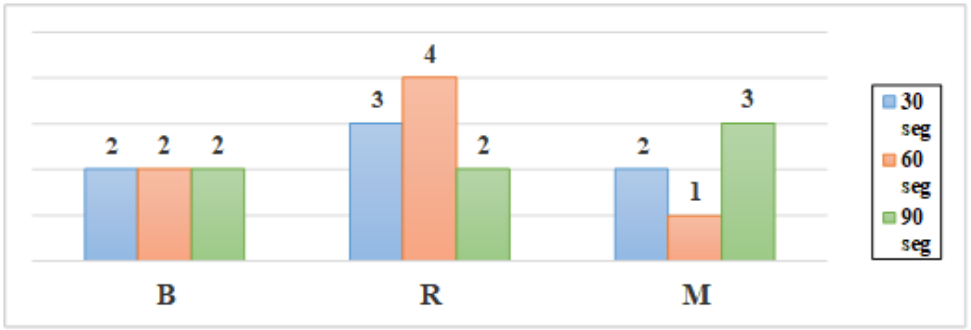

Figure 2. Results of the Numerical Grid Test (38 digits).

On the other hand, figure 3 reflects the comparison of the data obtained in the tests carried out, it can be seen that in both similar results are obtained that show affectation in the concentration of attention, where the evaluations focus on the category of regular with 5 and 3 cases respectively, three athletes are evaluated as bad, in both tests three cases obtain the category of good. It should be noted that there were no athletes with an evaluation of excellent and very good.

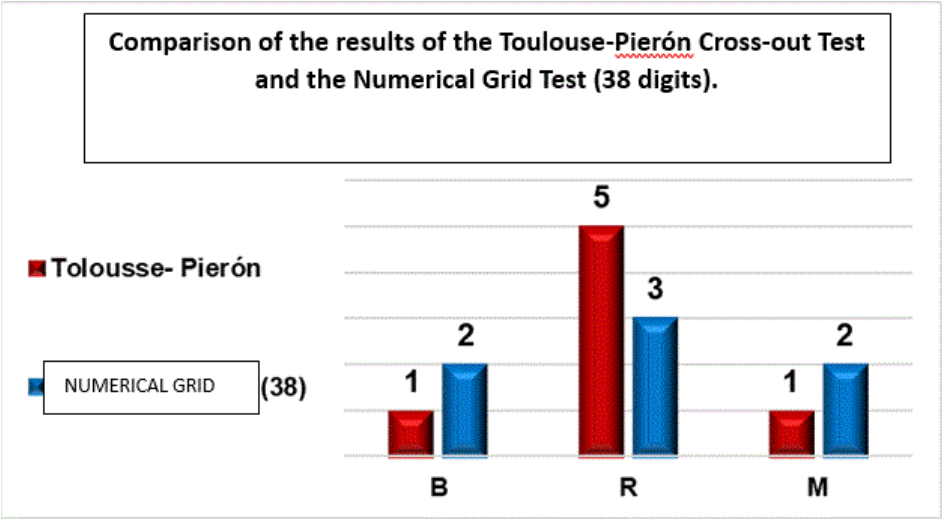

Figure 3. Comparison of the results of the Toulouse-Pierón Cross-out Test and the Numerical Grid Test (38 digits).

In the qualitative analysis of the results of these techniques, a tendency towards increased exhaustion in performing them can be observed predominantly in the group. Both at the beginning and at the end of each test the results were unfavorable. In the opinion of the authors, the existing difficulty in the capacity and stability of the concentration of attention is due to the scarce knowledge in relation to the concentrative abilities for the preparation of the technical execution.

Figure 4 reflects the descriptive analysis corresponding to the percentage in both tests, no significant differences were found in the evaluations. In both cases, the category of regular is the one that stands out, hence the athletes require that those that are oriented to confront the sporting activity be included in the intervention actions; also for the resistance to the physical and psychological exhaustion that precedes when they spend minutes of being in function of highly demanding activities for them.

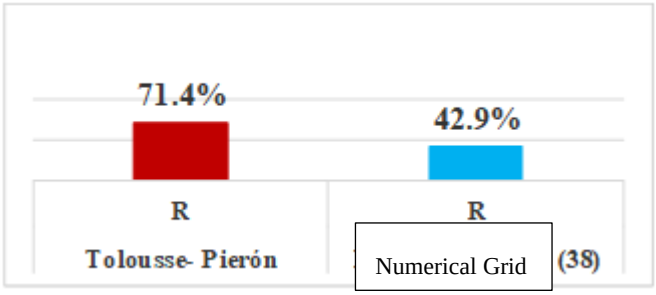

Figure 4. Comparison of the results of the Toulouse-Pierón Cross-out Test and the Numerical Grid Test (38 digits).

In the same way, in the observation it was possible to verify behaviors in the studied cyclists that show difficulties in concentrating attention on the start, both in training and competition situations. In the snatch training it was evidenced that 28.57% of the athletes started a quick start after having taken the full and definitive position; 14.29% had all the false start attempts and 57.14% despite having taken; full position and having a quick start, they had some false starts.

Thus, for example, it was verified in the observation a lower level of concentration of attention in athletes of younger sports age, which represents 57.14% of athletes, this reinforces the criterion of the value that sports experience has in the achievement optimal functioning of different psychological variables that affect the athlete's performance.

Likewise, in the interview it was verified that 71.43% of the athletes have knowledge of what concentration of attention is and recognize situations, emotions and behaviors in them that show their decrease or absence during the execution of the snatch. For their part, the two coaches who were interviewed report that track cyclists at the time of the start are indecisive, delayed in time to carry out the impulse and carry it out.

The results previously referred to give rise to the objective set out in the investigation, the deficiencies found in the concentration of attention, obtained in the applied techniques, both in the results of the Toulouse-Pierón Cross-out Test and the Numerical Grid Test (38 digits). ; as for the execution of the snatch, they express difficulty in the existence of low levels of concentration of attention and intensity of it, according to the criteria obtained through the interview and observation. It can be inferred that there is a decrease in the attention capacities of the athletes as time progresses.

These results correspond to those found in other investigations, among which are:

Soler (2016) based his research on 20 school athletes in the 15-16 year-old category of the EIDE Mártires de Barbados in Havana. The main results in the diagnostic stage were a concentration evaluated as poor and regular in 50% and 40% of the sample, respectively, and the indicators most self-perceived by the athletes as disturbing the concentration of attention were letting themselves be provoked by the contrary. and listen more to the public than to the coach.

Del Monte (2017) in his study to diagnose the concentration of attention in altitude training in judokas of the Cuban national team in 1998 and 1999, with a view to the 2000 Sydney Olympic Games, found that both in the cross-out tests numerical table of the grid as with the Landolt rings, differences in attention (concentration) were observed in the following periods: before leaving, three days of stay (less concentration) seven days of

stay (already better than before leaving) fourteen days and twenty-one days of stay (more or less the same results for these two study moments, but with a greater improvement at 21 days compared to before leaving for the altitude in the two preparations, and even better at 21 days in the preparation of 1999 where all the methods of psychological intervention proposed in this investigation are applied).

The results of this study coincide with that of this investigation, finding differences in the concentration of attention in the tests, although it is a study that applies psychological interventions through different techniques.

Pérez "et al" (2018; 2021) in both studies the sample consisted of 8 rhythmic gymnastics athletes of the school category (10-12 years) from Havana. The main results of the study revealed insufficiencies in the concentration of attention in these athletes, caused by different internal and external distractors. Likewise, it refers to the causes unlike the author of this study that is presented.

The results of this study agree with others previously carried out by various authors, all agree that a psychological intervention program is necessary to strengthen and increase this ability in order to achieve better psychological performance and sports performance; which will be useful both for the coach as a complement in his work methodology, and for the system of psychological tools to be used by athletes.

In the present investigation it is possible to carry out a diagnosis of the concentration of attention, which allows to identify that there are deficiencies in this indicator. This allows guiding the psycho-pedagogical procedure and identifying the need to explore the causes; in turn, it allows the design of psychological interventions for training concentration of attention in this sports team.

Conclusions

Through the study carried out, deficiencies were found in the concentration of attention in athletes of the Cuban national track cycling team, with a predominance of poor and regular evaluations.

The most distracting incidence factors in the concentration are the stability of the objective conditions of the competition, within which the postponement of the competition is perceived by the athletes as elements of greatest distraction.

The results of this research show the need to develop a proposal for psychological interventions with exercises in this skill that allow maintenance of attention with the use of different techniques.

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