ASSOCIATION OF THE NEUROCOGNITIVE VARIABLE OF ATTENTION AND DECISION MAKING IN GRASSROOTS FOOTBALL PLAYERS U9 TO U12 OF CLUB ATLETICO BUCARAMANGA S.A

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ABSTRACT

This project emphasizes the Association of the Neurocognitive variable of Attention and Decision Making in grassroots football players U9 to U12 from Club Atlético Bucaramanga S.A. With this study, it was intended to determine which Neurocognitive variables such as attention and decision making are associated in soccer players from 9 to 12 years of age through instruments such as the D2 attention Test (Brickempkamp, Rolf, 2018) that studies selective and sustained attention as units of measurement; the Sports Decision Style Questionnaire (CETD) (Ruiz, Graupera, & Sanchez, 2000) which determines the possible decisions that players make in different game situations from a theoretical study, taking into account measurement units such as Engagement in Decisional Learning, Anxiety, Overwhelmedness when Deciding and Perceived Decisional Competence. The players took the D2 Attention Test and the Decisional Styles in Sport CETD Questionnaire in a comfortable and quiet environment. The purpose of this degree project was to determine the influence of the neurocognitive variable of attention and decision-making that children U9 to U12 carried out from theoretical measurement instruments and thus know which variable acted with more relevance in the present study. However, it was intended to leave a legacy related to neuropsychology applied to grassroots football and in this way, it can serve as a basis for future projects and more sustainable and solid research. In this way, the present project carried out a brief study of the relationship of the Association of the neurocognitive variable of attention and decision making of grassroots football players U9 to U12 from Club Atlético Bucaramanga S.A.

Keyword - *Football, Grassroots Football, Physical Education, Sport, Attention, Decision Making, Neurocognition, Brain….*

1. INTRODUCTION

Football is the most famous and practiced sport on planet earth by people from all continents, ethnic groups, cultures, beliefs and socioeconomic strata, with more than 270 million supporters and practitioners, 4% of the world population that plays football. actively, according to the International Federation of Football Associated (FIFA) (FIFA, 2006), a figure that is believed to have increased considerably due to the inclusion of national teams with projection, new football teams at an amateur and professional level, opportunity to education for children and adolescents through access to foundations and new grassroots and youth football training schools, through constant training for coaches, technical directors, sports trainers with an emphasis on football, parents, and the entire football community in general. Football is synonymous with enjoyment, entertainment and passion for millions of people worldwide, and through technology, color and the passion of the supporters, they make this an attractive sport for

millions of people from many nations and all the continents that make football a welcoming, exciting sport and one of the most popular sports on the planet. Behind football as a sport of relevant importance worldwide, there are surveys, studies and research to promote its scientific development, on the improvement of its game at a strategic, tactical, physical, technical-coordinative and emotional level in players and even in coaches (FIFA International Football Federation, 2011) (Vilamitjana, et al., 2017) (Ciriacos de Almeida Leme, Barben, Junqueira Curiacos, & Valim Rogatto, 2008). These thoroughly studied areas are important, beneficial and positive for scientific development, football medicine and sport in general. There is an important area in sports and specifically in football that for years has been gaining importance in the sports context: the study of the brain, the most mysterious and complex organ in the human body that weighs around 3 pounds and is in charge of control and manage all functions of the body with the help of the cerebellum and the nervous system (Alzheimer's Association, 2018) (Oncohealth Institute, 2016). The brain sends millions of electrical signals in less than nanoseconds to all parts of our body through neurons, brain cells, responsible for collecting, processing and transmitting information by means of electrical and chemical currents carried through the myelin sheath to the axons and passing to the dendrites that will be in charge of sending electrical or chemical signals called synapses that allow information to be carried to other neurons, the hippocampus and of course the entire body.

1.1 STRUCTURAL DESIGN PHASE

Football and its history, its different research topics, the brain as a research topic from its neurocognitive variables, attention and decision-making as research variables and association through quantitative and qualitative studies.

2. LITERATURE REVIEW

Behind football as a sport of relevant importance worldwide, there are surveys, studies and research to promote its scientific development, on the improvement of its game at a strategic, tactical, physical, technical-coordinative and emotional level in players and even in coaches (FIFA International Football Federation, 2011) (Vilamitjana, et al., 2017) (Ciriacos de Almeida Leme, Barben, Junqueira Curiacos, & Valim Rogatto, 2008). These thoroughly studied areas are important, beneficial and positive for scientific development, football medicine and sport in general. There is an important area in sports and specifically in football that for years has been gaining importance in the sports context: the study of the brain, the most mysterious and complex organ in the human body that weighs around 3 pounds and is in charge of control and manage all functions of the body with the help of the cerebellum and the nervous system (Alzheimer's Association, 2018) (Oncohealth Institute, 2016). The brain sends millions of electrical signals in less than nanoseconds to all parts of our body through neurons, brain cells, responsible for collecting, processing and transmitting information by means of electrical and chemical currents carried through the myelin sheath to the axons and passing to the dendrites that will be in charge of sending electrical or chemical signals called synapses that allow information to be carried to other neurons, the hippocampus and of course the entire body, making this process a synchronous orchestra and commanded by the brain and its millions of neurons and axons that make this one of the most important and mysterious organs of the human body.

3. METHODOLOGY

The present investigative study is of a quantitative approach, correlational in scope, with a non-experimental and cross-sectional design.

4. SELECTION TECHNIQUE

The present investigation uses the non-probabilistic sampling technique because the data is not homogenizable or standardizable, since it is not necessary to standardize the information for everyone. Likewise, the present investigative study is of a quantitative type, since the results are of a numerical nature, as well as the type of test, by numbering, of a correlational scope because the two variables will be correlated or associated, with a non-experimental design, for convenience, since by own choice the Atletico Bucaramanga football club was chosen for

being the most representative club in the region, for contacts and because the football club chooses and takes into account much more the most outstanding players so that they perfect their skills in their training centers.

5. GENERAL OBJECTIVE

To analyze the correlation of the Neurocognitive variable of Attention and decision making in Grassroots Football players U9 to U12 of Club Atletico Bucaramanga S.A.

5.1 SPECIFIC OBJECTIVES

- Establish the degree of Attention (selective) of the Grassroots Football players U9 to U12 through the D2 attention test created by Rolf Brickempkamp (Brickempkamp, Rolf, 2018).
- Define the degree of decision-making that a Grassroots Football player from U9 to U12 would take by means of the Decision Style Questionnaire in Sport (CETD) (Ruiz, Graupera, & Sanchez, 2000).
- To compare the results of the association of attention and decision making obtained by each Grassroots Football players U9 to U12 of Club Atletico Bucaramanga S.A through the Statistical Package for the Social Sciences program or Statistical Package for Social Sciences IBM SPSS Version 25 (IBM, s.f.).
- To analyze the correlation between attention and decision making through statistical results in the Grassroots Football players U9 to U12 of Club Atletico Bucaramanga S.A.

6. DESCRIPTION OF THE PROCEDURES, TECHNIQUES AND INSTRUMENTS.

6.1 TECHNIQUES

For the assessment of the level of attention in children soccer players U9 to U12 of Club Atlético Bucaramanga, the study was carried out through the D2 Test created by Rolf Brickempkamp of Germany in 1962, accepted by TEA (Brickempkamp, Rolf, 2018) and improved in 2002. This is a test of attention valued and improved in Europe and is applied to children from 8 years of age up to adults of 88 years of age, where first with categories U9, U10, U11 and U12 with all categories separated per days each category, and the CETD questionnaire created by Ruiz and Graupera from the Polytechnic University of Madrid and the University of Alcalá (Spain) in 1997 but improved in 2005 (Ruiz, Graupera, & Sanchez, 2000), which It consists of 30 questions valued each question from 1 to 4, being 1 strongly disagree and 4 strongly agree. Next, the statistical study was carried out using the IBM SPSS software version 25 (IBM, s.f.) where a description, analysis and organization of data obtained in the research studies was carried out.

7. INSTRUMENTS

For the present investigative study, the following measurement instruments were carried out:

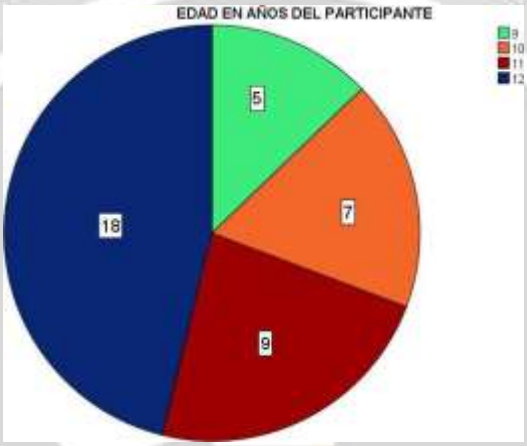
- Test D2 of attention created by Rolf Brickempkamp in 1962 endorsed to measure attention, especially sustained in children from 8 to adults of 88 years of age. (Brickempkamp, Rolf, 2018)
- Questionnaire on Decisional Styles in Sport created by Luis Miguel Ruiz, Sanchez and Jose Luis Graupera in 1997 to assess the decision making of a player of any sport modality. (Ruiz, Graupera, & Sanchez, 2000)

8. STATISTIC ANALYSIS

The statistical data treatments will be carried out in the SPSS version 25 software (IBM, s.f.) where a descriptive statistical analysis of decision-making was used through the measurement instrument Decisional Styles Questionnaire in Sport CETD (Ruiz, Graupera, & Sanchez, 2000) and the D2 Test to measure attention (Brickempkamp, Rolf, 2018). Likewise, the homogeneity and correlation of the data was determined from the Pearson statistical program.

9. GENDER OF PARTICIPANTS

The present sample consisted of 39 male participants (n=39) with a mean of 11.03 (n=1 1.03) and a standard deviation of 1.008c, with ages ranging from 9 to 12 years. and that represents 100% of the sample. The following graph shows the total sample.



Age in years of male participants

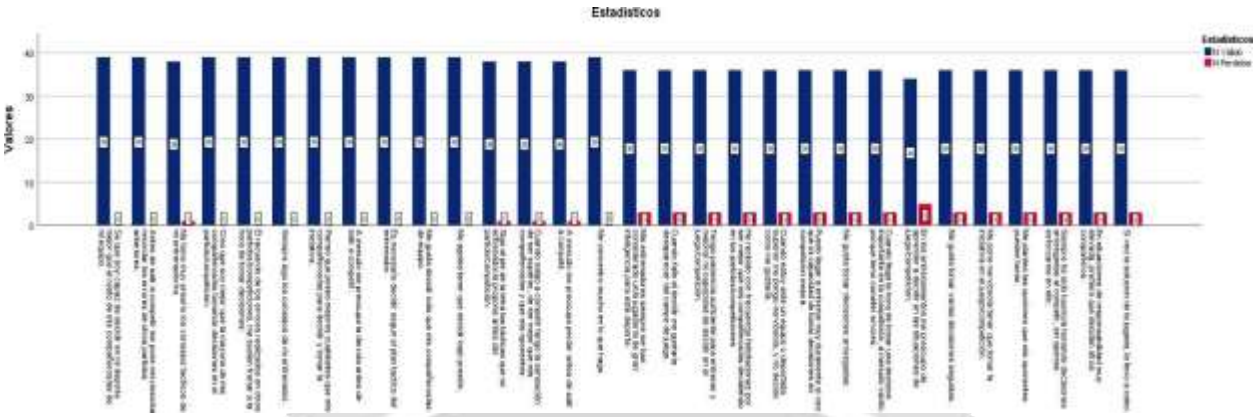
10. AGE OF THE PARTICIPANTS

Data collection was carried out from the 39 male participants where the mean in years was 11.03 (min=9; max=12), a mean of 11.03 (n=1 1.03) and a standard deviation of 1.008. The following table describes the data in relation to the age of the participants.

N	Valid	39
	lost	0
Mean		11,03
Dev. Deviation		1,088
Minimum		9
Maximum		12

Distribution of age data in years of male participants.

11. DESCRIPTIVE ANALYSIS OF THE QUESTIONNAIRE ON DECISIONAL STYLES IN SPORT CETD



Graph No. 2. Statistics global values correct and lost in the Questionnaire of Decisional Styles in Sport CETD, carried out by players Sub 9 to Sub 12

12. RESULTS AND CORRELATIONS OF THE MEASUREMENT INSTRUMENTS: ATTENTION D2 TEST AND QUESTIONNAIRE OF DECISIONAL STYLES IN SPORT CETD.

12.1 CORRELATIONAL VALUE

Value	Meaning
1	Large and perfect negative correlation
0,9 a-0,99	Very high correlation
0,7 a-0,89	High correlation
0,4 a -0,69	Moderate correlation
0,2 a -0,39	Low correlation
0,01 a -0,19	Low negative correlation
0	Null correlation

Value of Correlations. Prepared by PhD. Edgar LaTorre

12.2 CORRELATION OF THE ITEMS CPD, AAD, CAD OF THE DECISIONAL STYLES IN SPORT CETD QUESTIONNAIRE.

		Z score: PERCEIVED DECISIONAL COMPETENCE.	Z score: ANXIETY AND OVERWHELMED	DECIDE. Z score: COMMITMENT IN DECISIONAL LEARNING.
Z score: PERCEIVED DECISIONAL COMPETENCE.	Pearson correlation		,302	,124
	Next (bilateral)		,078	,493
	N	36	35	33
Z score: ANXIETY AND OVERWHELMED.	Pearson correlation	,302		,388'
	Next (bilateral)	,078		,028
	N	35	35	32
DECIDE. Z score: COMMITMENT IN DECISIONAL LEARNING	Pearson correlation	,124	,388'	1
	Next (bilateral)	,493	,028	
	N	33	32	33

CORRELATIONS. Results of the correlation of the items CPD, AAD, CAD of the Questionnaire of Decisional Styles in Sport CETD.

12.3 CORRELATION OF THE ITEMS TR, TA, 0 AND C OF THE ATTENTION D2 TEST.

According to the correlation table N°85 of the D2 Attention Test, a significant result of 730** could be observed, which is equivalent to a high correlational value between the item or C value that measures the precision of processing and inhibitory control and the O value that measures attentional control and compliance with a rule, which shows that there is a high significant correlation between the results of the two items. Likewise, the result -.999** was observed, which corresponds to a significant level due to its proximity to the value 1, which corresponds to the total significant correlational result between the items or values 0 that measures attention control and compliance with a rule and the TA value that measures the effectiveness in the task and precision of the processing.

12.4 FINAL CORRELATION OF RESULTS OBTAINED IN THE MEASUREMENT INSTRUMENTS: QUESTIONNAIRE OF DECISIONAL STYLES IN SPORT CETD AND TEST D2 OF ATTENTION.

According to the correlation table of the Decisional Styles in Sport CETD Questionnaire and the D2 Attention Test, a result of .730** was observed, which is significant and a high correlation value between the value or item O that measures Attentional control, compliance with a rule and item C that measures the Precision of processing and inhibitory control, which is a highly significant correlational result. Also, the result -.999** was observed, which is highly significant level correlation between the values or items Effectiveness in the task and precision of processing and Attentional control, compliance with a rule, which demonstrates a supremely significant correlation. positive because it is close to the significant and total result 1. Therefore, the result .241 was observed, which demonstrates a significant low-level correlational result between the items Engagement in decisional learning and Effectiveness in processing precision and, likewise, is the highest correlation presented between items of the Attention D2 Test and the CETD Questionnaire. Also, negative or null results were found between the correlation values of each

questionnaire, such as the result -.327 corresponding to the values of anxiety and overwhelm when deciding from the CETD Questionnaire and the value Processing speed, of the amount of work done and of motivation.

13. EVIDENCES

Photographic and video records were obtained with the permission of the respective club, parents, coaches and players regarding the explanation and implementation of the measurement instruments, as well as the processing of informed consent.

14. DISCUSSION

The results obtained in the present study and degree research project show that attention rates are high and the results of the CETD questionnaire yielded positive responses in the population studied. Even so, the correlational results yielded indices of low correlation and low negative correlation between the correlation of the values that the D2 test of attention measures. However, the correlational results presented in the values of the Decisional Styles in Sport Questionnaire yielded null, low, and low negative results, which shows that the correlation of the results is low. Likewise, the levels of correlation between the D2 attention test and the Decisional Styles in Sport Questionnaire presented low, low negative, and null correlations, which rules out a hypothesis of a relatively high association between the two variables. Therefore, the hypothesis of the association that exists between some attentional items and others where there is no association is accepted, according to the correlation made in the youth football players U9 to sub U12 of Club Atletico Bucaramanga S.A, they are scarcely positive, presenting indices low and null negatives. The measurement instruments were carried out theoretically with the respective informed consents and the total disposition of the club, coaches, parents and players. The present investigative study is a beginning for future research in the area of physical education for the study of neurocognitive variables such as attention, perception, decision making, concentration, emotions, aptitudes and mood factors fissioning capacities. physical, coordinative, matrices and techniques, aptitudes and mood factors and associating them with physical, motor, coordination and technical abilities associated with grassroots and youth football and also in professional football.

CONCLUSION

The studies yielded positive results in decision-making and attention from the taking of individual samples but low, low negative, and null results in the respective correlations. However, much remains to be investigated in terms of neurocognitive processes and their influence on performance in physical exercise and in sport in general. Therefore, all students and professionals in physical education, recreation and sports are invited to design programs and methods focused on developing and training physical, coordination, technical and motor skills in general, merging the development and benefits that can have for the population, the design of training and training programs for soccer and all sports with the aim of improving neurocognitive processes in soccer players and grassroots sports fused with the other facets of Physical Education so that in this way, it can be improved in the decision-making process, game intelligence and problem solving and this is complemented with good actions on the playing field, since the sport must be seen from the educational and investigative/scientific perspective, which It will help to understand more thoroughly how the brain and precisely the neurocognitive processes are associated and are so important in the actions we perform in the game, and day after day. This study began with enthusiasm, starting from the theoretical field, but hoping that in the future research focused on associating this area with sports performance and formative training of grassroots sports will begin, in this case, Colombian and regional football. (Santander). Finally, I want to first thank God and all the professionals and students of Physical Education, psychology and neuropsychology at a national and international level who supported me, support me and believe in my project and long-term research term, to my research tutor, an expert in statistics, and to my family for all their support, since I was not alone and I also hope to improve and potentiate this research study in the master's degree. Remember what Horts Wein said: "Everything starts from the brain, in charge of processing and commanding the actions to be carried out, it goes to the heart and the nervous system to transmit passion and ending in action." (Wein, Horst, 2004).

6. REFERENCES

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BIOGRAPHIE

- Alvaro is 29 years old and has 12 years of professional experience as a grassroots, youth and professional football coach at a national and international level, university professor, sports supervisor and coordinator, Physical Education teacher at a private and governmental level, assistant and researcher in stadistical data about football science, member of national and international football organizations and speaker in Latin America on football and formative sports, winning several awards and scholarships for his contribution to sports, to the academy in his country, contributing to the development of football in Colombia and internationally .
- Specialist/Expert in Digital Physical Well-being. Open University of Applied Sciences of South East Finland XAMK
- BSc. Physical Education, Recreation & Sport. Universidad Cooperativa de Colombia UCC
- Pedagogy in physical education. Universidad de Concepcion UdeC (Chile)
- Football Coach Pro CONMEBOL License. Argentine Football Association / Association of Argentine Football Technicians / School 193 Rosario "Cradle of Football"
- Technologist in Football Technical Management. National Learning Service SENA
- Diploma in Football Medicine. FIFA
- Student candidate for the UEFA C License Course. The FA
- Football Coach Level 1 Coaching Football. The FA
- UEFA iCoach Kids Coach
- Professional Scholarship for academic excellence, contribution to sports and experience in Research by the Ministry of Science and Education of Colombia and COLFUTURO to study the MSc. Sport & Exercise Science at Manchester Metropolitan University (UK)
- Member of the Editorial Committee of the Multidisciplinary Research Center for Research and Studies in Sciences CIMEC (Chile)

	○ Professional with Professional Card of the Colombian College of Sports Training COCED