Video Analysis for the improvement in the Didactic of Sports Performances

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Abstract

This chapter includes a series of studies conducted on different sports, using video analysis as a tool for literacy and technical training and to improve sports performance, and in particular we will present a study on tactics in water polo, a study on the use of the image motor gymnastics and finally the use of video analysis as a training tool in futsal.

Introduction

In water polo, situation sport, an analysis of the correct application of the tactics provided by the coaches is not yet very developed, hence the need to create systems for decoding the tactics applied in the various game situations. Motor imagery is a cognitive process of mental simulation of actions in the absence of movement. In literature there are two methods to improve the learning of skills through motor imagination: first-person and third-person. This approach based on the theory of motor images is formed by: mirror neurons. The objective is to evaluate the effects of the practice of motor images for the improvement of sports performance but above all for technical alphabetization. In Futsal, a sports discipline born in Uruguay in the 1930s, one of the most important variables to perform an effective action is the time needed by the athlete to complete his technical gesture [9]. The futsal is useful in the development of specific motor skills due to the technical characteristics of the game, such as: the rules and the playing field for which the time to analyze, evaluate, process and perform is limited compared to other situation sports [6]. Futsal is particularly suitable for children between the ages of 8 and 10 [10] who are learning specific game techniques and therefore for technical and technical technical alphabetization.

Aim

The aim of this research (water polo) is to verify the correct application of the game patterns prepared by the coach, in order to obtain objective data and start an investigation on the various tactics in water polo. The purpose of this pilot study (futsal) is to test if members of a sample are better at learning specific techniques [12] than a control group when the sample players observe and review the videotaped actions or skills acquire recorded video while practicing or video or a motor skills module.

Method

In the water polo study the method consists of 3 different phases
1 case study
2 action research
3 theoretical-argumentative approach.
Data were collected using Kinovea softwear.
In the study of motor images in gymnastics, on the other hand, the approach is experimental and consists of two steps:
1) Administration of a questionnaire.
2) Video analysis.
In study futsal protocol is, 20 players practice twice a week for a year. But only 10 players view workout videos before each workout. The two groups have the same technical characteristics (homogeneous). Each group is tested at the beginning, during and at the end of the study on three game techniques, selected from the basics of the game:
1. Ball control: control of the ball oriented with the lower foot ("stop by sole" or "Exclusive control");

2. Drive the ball: move the ball with the sole;

3. Shooting: peak shooting

Two technicians and the sampler expert evaluate the videotape together. Statistical evaluation is performed using multiple regression analysis of the curves of the two groups.

Results

For each water polo player, 20 game events were selected, for a total of 386 frames.

The data were compared with the diagrams provided by the coaches and for each athlete a sequence of images was elaborated in order to determine the correct play and the application indications during training. For each athlete based on the results obtained from the analysis of the collected data, his strengths and weaknesses in the approach to the various tactical situations of the game were identified, so it was possible to develop a codified methodology and a personalized tactical training. In the study on the motor image in gymnastics there have been improvements for about 80% of the evaluations that show how the training of motor images, in the first person, can be accompanied by a third person. In the futsal study, significant increases in the performance of game techniques in the group of video-recorded samples were observed, which should however lead to a more in-depth study with a larger study sample.

Conclusion

The results in the water polo tactics study showed a general effectiveness of the tactical models prepared by the trainer, but showed significant differences within the correlation coefficients of the individual schemes. It is necessary to have a broader database, in order to establish a direct, clear and general relationship between the calculated coefficient and the effectiveness of the scheme prepared by the coach, so we are aware of the internal validity of this type of qualitative analysis. , which with appropriate modifications can extend to other teams. The study use of motor imagery in physical education and sport, two aspects of performance were examined: motor performance and motor image, the study showed that this system is useful and effective for training the cognitive and physical skills of an athlete and providing a support tool in the race to improve performance, optimize time and reduce the margin of error. Finally, in the study of young futsal players, the positive results of the hypothesis would suggest the inclusion of video analysis in training programs as an educational and evaluation tool, but above all for the approach to the technical-tactical alphabet.

Keywords

Sports performances, Video-analysis, Didactis.

Introduction

Water polo is a sport of situation, the tactical aspect does not play a key role except in certain game situations. This work is based on the video analysis of the performance of both the individual athlete and the team as a whole and is an attempt to analyze the correct application of the tactics that a coach imparts to his team.

The situations of numerical superiority were analyzed in the 18 games of the National Series of Women Water Polo Series A1 of a single team.

The purpose of this research was to identify the individual events to assess the correct application of the scheme envisaged in these phases of the game and then to link the correct and correct application with the final outcome of the action taken into consideration.

Aim

The aim of the work was to verify whether the different numerical superiority attack patterns, when they were well executed, led to the expected results in order to create a training model methodology. Data were collected through the Kinovea system,

The results show a positive and statistically significant correlation coefficient between tactical compliance and outcome of events.

Motor imagery is a cognitive process of mental simulation of an action that takes place even if there has not been an active physical movement [2].

These processes are studied by Decety in 1996, Driskell and Copper in 1994, Gallese and Rizzolatti between 1996-2012, Lafleur in 2002, Sanders in 2004.

It is about exploiting mental training in favor of the cognitive process and technical tactical--technical alphabetization .

There are two types of motor images: first-person and third-person.

In the first person, the subject performs a movement and at the same time feels emotions, excitement, stress and changes of excitement. In the third person, the person sees himself or another person as an external image, as with the use of a video camera. The most effective for motor technical alphabetization is definitely the one in the first person. But there are studies in the literature that have shown that performance is optimized through the cognitive process of motor images. During the motor imaginary the cerebral areas of the pre-motor cortex are activated, the same ones that a muscular contraction would put in place. Mirror neurons are a category of neurons that are activated both when we perform a movement and when we observe it [3]. Mirror neurons were discovered in the '90s by a group of researchers in a macaque, the group's coordinator is Giacomo Rizzolatti.

The activation of the mirror neurons allows to map on the same nervous substratum the actions both performed and observed or imagined [4].

The ability to create an inter-subjective space that is then shared with the world is related to the role played by the embodied simulation, neurosciently based on mirror neurons. [5] The study aims to evaluate the potential benefits of motoring imagination on a group of gymnasts, in particular for the execution of the round off flick. (image 1).

Artistic gymnastics is a precision sport with complex technical gestures, skill-type abilities are used, the skills that are used in stable environments consist of a number of discrete abilities put in sequence to form a more complex movement and protracted; like a round hand shot.

The rounding is like the wheel but in the middle of the movement the legs come together. The shot is often performed after rounding and consists of two times: the first time you push with your legs and then put your hands on the ground, in the second time push for the upper limbs and then go back to the starting position. Artistic gymnastics uses the closed loop control model with the use of feedback [6]. In physical education and sports medicine In literature there were many studies on mental function and the results show the pre-eminent position on the imagination and its model in movement and performance [7]. Two image measurements were used (VMIQ and MIQ-R) to check if the automatic modeling video would affect the sharpness

and image capacity.

Futsal is a variant of football played on a smaller field and is mainly played indoors. Futsal was born in 1933 in Uruguay. In this sport, one of the most important variables for the effectiveness of the game is the reduced time that an athlete has to perform the technical gesture [8]. In fact, Futsal is particularly suited to the development of motor skills in their techniques, in space and in the rules of the game in which the time of analysis, evaluation, processing and execution is limited compared to other team sports [9] and may be particularly suitable for children 8-10 years [10] to acquire specific game techniques.

The purpose of this pilot study is to verify if a group of players, who are asked to regularly watch the video recordings of their technical gestures or motor performance models, can improve the learning abilities of specific techniques [12]. to a control group that has not been screened to view these videos. How can we improve the process of technical and tactical alphabetization? How can we measure the improvement of skills? We will try to answer these questions by analyzing case-studies such as learning basic technical gestures in the sport of football-5 during the annual program for a group of 20 children in the age group 9-10 years, with twice-weekly training

Method

In research on water polo tactics the methodology used consists of 3 distinct methods:
• case study
• action research,
• and theoretical-argumentative method.

Data were collected through the analysis of the performance of the individual athlete and the team as a whole. The evaluation of the correct execution of the tactical model is entrusted to the coach. The individual starting Kinovea systems were analyzed, isolating the individual key frames related to the events of numerical superiority, identifying the pattern used by the team and the performance of the individual athlete, then the coach assessed the correct execution of the attack scheme used [1] A spreadsheet has been processed with all the results for each individual event. The correlation coefficient between each attack pattern and the result of the event has been calculated . In total, the 7 attack patterns were analyzed on a total of 125 numerical superiority events during 18 games. They have been used two cameras to film the games. One laptop for analyze end prepare video lessons to show by projector to players during all meetings. Kinovea software was used for select most important part of videos and select the frames. The method used, as regards the study on the use of motor images is experimental and consists of two steps:

1. is a direct experimental type
2. it is an indirect experimental type.

In the first part of the study a questionnaire was used where in a first part the subject carries out a self-assessment in the third column the evaluation is carried out by the technician. Participants are asked to evaluate the sensation of their motor activity and then that of their partner using the evaluation methods of the Italian federation of artistic gymnastics.

The data will be compared with those of the technician. On the other hand, the medium used in the second part of the study is video recording. The participants analyze their motor skills and then that of the other. The participants are given an initial evaluation of an external type, which will be compared to the one by the technician and at the end a final prediction of the result of the performance will be requested. The forecast will be compared with the final results (internal, external and technical) and collective results according to an appropriate statistical model. The sample consists of two mid-high level athletes who practice gymnastics for at least 5 years of age between 12 and 15 years.

The research hypothesis is to provide a standard training methodology feasible on a large scale to develop technical alphabetization and train the cognitive and physical skills of an ath-

lete and provide a support tool in the race to improve performance, to optimize the time and reduce the margin of error.

Finally, the method and materials used for research on young futsal players are as follows
Participants:

Pre-teens 9-10 years-old organized by the coach in two homogeneous groups (sample group n = 10, control group n = 10 – Graph 1).

All the young players have practiced futsal from one or two years with the same team.

Graph 1. First Phase:
Analysis of pre-assessment of the habilitation capabilities
for checking homogeneity of the groups.
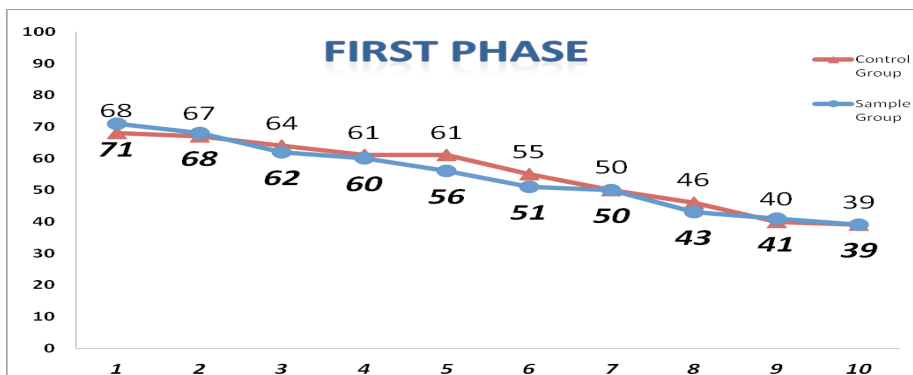
Research method - Project structure

The research study is divided into three phases:

• In the first phase (input), we carried out a pre-assessment of the qualification skills through some basic technical tests on the fundamentals (Table 1: control of the ball with oriented sole, ball shooting with the tip and ball stroke with the sole).

• In the second phase, which lasts the entire championship (nine months), the sample group (n = 10) is involved in viewing the recorded video technical gestures performed by a professional futsal player (Italian national Under 21). During this phase, we will check and evaluate the evolution of technical learning (in progress).

• In the last phase, we will evaluate the two groups to evaluate and describe the validity of the methodological learning and technical literacy of this study. The assessment will also be performed by the professional player (model), filling out specific evaluation sheets during the observation of the athletes while performing the three predetermined technical gestures.

Executive proceedings

The sample group will meet 30 minutes before the control group. The group will view the video of the three technical gestures, chosen among the fundamentals of the game:

1. Control of the ball: control of the ball oriented (to the left and right) with the lower foot (called "stop by sun");

2. Drive the ball, moving the ball with the sole;

3. Shooting: peak shooting

The prepared video clips are presented by the trainer, focusing mainly on the relationships between the body segments and the most frequent execution errors.

Then you will view the movie of the technical model in its entirety, inviting the children to pay close attention while watching the video clips to capture and learn as much information as possible. In the last 5 minutes i will be asked to close your eyes and imagine yourself performing the same gestures observed in the video. At the end of this phase, the sample group will start

the entire training with the rest of the group

Hypotheses and objectives

The conditions and objectives of this research are as follows:

• Describe the way in which a child's learning process is influenced by the practice of basic technical movements proposed with a mix of traditional training based on repetition of gestures, as well as "ideo-motor" training, which is based on 'video observation of technical gestures performed by a professional player (model).

• Identify when / how the ideomotor training influences the learning process, thus allowing to study the improvements of the individual technical skills, object of this research.

• Students' self-assessment skills will be improved by the acquisition of observation skills and motor-self-observation, both online (immediately after execution) and offline (recording and watching videos while performing gestures).

The tests proposed in this study are structured in a specific way to evaluate the accuracy and / or correctness of the gestural executions expressed by the young athletes, in relation to the basic skills of football as "control of the oriented sole" (left and right) , driving the ball with the sole and the tip of the shot (typical gestures of this discipline).

Table 1
FIRST PHASE: Pre-assessment of the habilitation capabilities
in sample group and control group.

FIRST PHASE: PRE-ASSESSMENT OF THE HABILITATION CAPABILITIES

Total score	Descriptors	Oriented sole control to left side					Oriented sole control to right side					Shoot tip					Driving the ball: moving the ball with the sole					Total score	Group
		Dominant foot	Working leg	Support leg	Trunk	Arms	Dominant foot	Working leg	Support leg	Trunk	Arms	Dominant foot	Working leg	Support leg	Trunk	Arms	Dominant foot	Working leg	Support leg	Trunk	Arms		
68	Player 1	4	3	3	4	3	3	3	4	4	3	3	2	4	3	3	3	4	4	4	4	68	Sample group
67	Player 2	2	3	3	3	4	3	2	3	3	4	4	3	4	4	4	3	4	5	3	3	67	
64	Player 3	3	4	4	3	3	2	4	4	3	3	4	2	2	4	3	3	2	4	4	3	64	
61	Player 4	3	2	3	2	3	4	3	3	4	4	2	2	4	3	2	3	3	3	4	4	61	
61	Player 5	3	3	3	3	2	3	3	3	4	3	2	4	3	3	2	3	4	3	4	3	61	
55	Player 6	3	3	4	2	4	3	3	3	2	3	2	2	3	2	3	2	3	3	3	2	55	
50	Player 7	-	2	3	3	2	3	3	3	3	3	3	3	2	3	2	2	2	3	3	2	50	
46	Player 8	2	3	3	3	2	1	2	2	2	2	1	3	3	3	3	1	2	3	3	2	46	
40	Player 9	1	1	3	1	2	1	2	3	2	1	3	3	2	2	2	2	2	3	2	2	40	
39	Player 10	-	2	2	2	2	2	2	2	2	1	3	3	2	3	3	1	1	2	2	2	39	
0	Player 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
71	Player 1	3	4	4	4	3	2	4	4	3	3	4	4	3	4	3	3	4	5	4	4	71	Control group
68	Player 2	4	3	4	4	3	3	2	4	3	3	5	3	5	4	2	4	4	4	2	2	68	
62	Player 3	3	3	3	4	3	3	4	4	4	3	2	3	3	2	3	4	3	2	2	4	62	
60	Player 4	3	3	4	3	3	1	3	3	3	3	1	3	3	3	2	3	4	4	4	4	60	
56	Player 5	3	4	3	3	2	2	3	2	3	2	2	3	3	3	3	3	3	3	3	3	56	
51	Player 6	2	3	2	3	2	1	3	2	3	3	3	3	2	3	4	2	2	3	3	2	51	
50	Player 7	3	2	2	3	2	2	2	3	2	4	2	2	3	2	4	2	2	3	2	3	50	
43	Player 8	1	2	3	3	3	2	2	2	2	1	2	3	2	2	2	1	2	3	2	3	43	
41	Player 9	1	2	2	3	3	-	2	2	2	2	2	2	2	3	3	1	2	3	2	2	41	
39	Player 10	-	2	2	2	2	2	2	2	2	1	3	3	2	3	3	1	1	2	2	2	39	
0	Player 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	

In this research, another important aspect is the motivations provided to young athletes, aiming to achieve the maximum effort in terms of concentration, focus and short and intense commitment.

Results

From the data collected in the water polo study we report below:

• Comparison with the model design with the Kinovea screenshot of the pattern used during the game;

- Basic descriptive statistics
- Straight linear regression plot for single models;
- Comparison of the correlation coefficients of the individual models.
- An evaluation table was constructed combining, for each individual event, the coach's assessment of the compliance of the patterns with the final result of the event

Statistics man up

Squadra	Tot s.n.	Gol s.n.	% s.n.	Tot Gol fatti	% Gol fatti in s.n.
Pro Recco	102	58	56,9	204	28,4
ASD Orizzonte	115	58	50,4	203	28,6
RN Imperia	119	52	43,7	167	31,1
Plebiscito Padova	104	41	39,4	132	31,1
Volturno SC	125	46	36,8	141	32,6
CC Ortigia	105	35	33,3	112	31,3
Fiorentina WP	134	43	32,1	127	33,9
Firenze pn	144	44	30,6	146	30,1
WP Messina	90	24	26,7	112	21,4
RN Bologna	102	18	17,6	81	22,2

Table n. 2

Squadra	Tot i.n.	Statistics man down	% i.n.	Tot Gol subiti	% Gol subiti in i.n.
Plebiscito Padova	123	32	26	87	36,8
Fiorentina WP	120	29	24,2	113	25,7
RN Imperia	125	41	32,8	117	35
Pro Recco	109	35	32,1	83	42,2
Fi Pallanuoto	120	44	36,7	177	24,9
ASD Orizzonte	82	30	36,6	135	22,2
RN Bologna	102	41	40,2	150	27,3
CC Ortigia	118	50	42,4	179	27,9
WP Messina	120	52	43,3	202	25,7
Volturno SC	117	63	53,8	182	34,6

Table n. 3

Statistics ASD VOLTURNO S.C.

SQUADRA AVVERSARIA	g.r.	s.n	%	g.r.	s.n	%	g.s.	I. N.
Plebiscito Padova	3	6	50,00%	4	8	50,00%	3	6
ASD Orizzonte	6	8	75,00%	3	9	33,33%	6	8
WP Messina	2	2	100,00%	2	5	40,00%	2	2
Fiorentina WP	4	6	66,67%	4	8	50,00%	4	6
RN Imperia	5	11	45,45%	0	10	0,00%	5	11
CC Ortigia	4	8	50,00%	4	8	50,00%	4	8
Pro Recco	5	9	55,56%	4	12	33,33%	5	9
RN Bologna	6	13	46,15%	5	15	33,33%	6	13
Fi Pallanuoto	3	10	30,00%	4	7	57,14%	3	10
Plebiscito Padova	0	4	0,00%	1	5	20,00%	0	4
ASD Orizzonte	7	10	70,00%	0	2	0,00%	7	10
WP Messina	3	5	60,00%	4	9	44,44%	3	5
Fiorentina WP	6	9	66,67%	3	9	33,33%	6	9
RN Imperia	5	7	71,43%	3	6	50,00%	5	7
CC Ortigia	4	9	44,44%	5	12	41,67%	4	9
Pro Recco	3	8	37,50%	1	5	20,00%	3	8
RN Bologna	3	7	42,86%	4	12	33,33%	3	9
Firenze Pallanuoto	4	6	66,67%	4	8	50,00%	4	10
TOTALE	73	138	52,90%	55	150	36,67%	73	144

Table n. 4

	1	2	3	4	6	7	P.P	1.2.
QUANTITA'	17	2	6	3	7	30	2	3
gol	7	1	0	2	2	16	0	1
non gol	10	1	6	1	5	14	2	2
B.E.N.R.	1	0	0	0	2	7	0	0
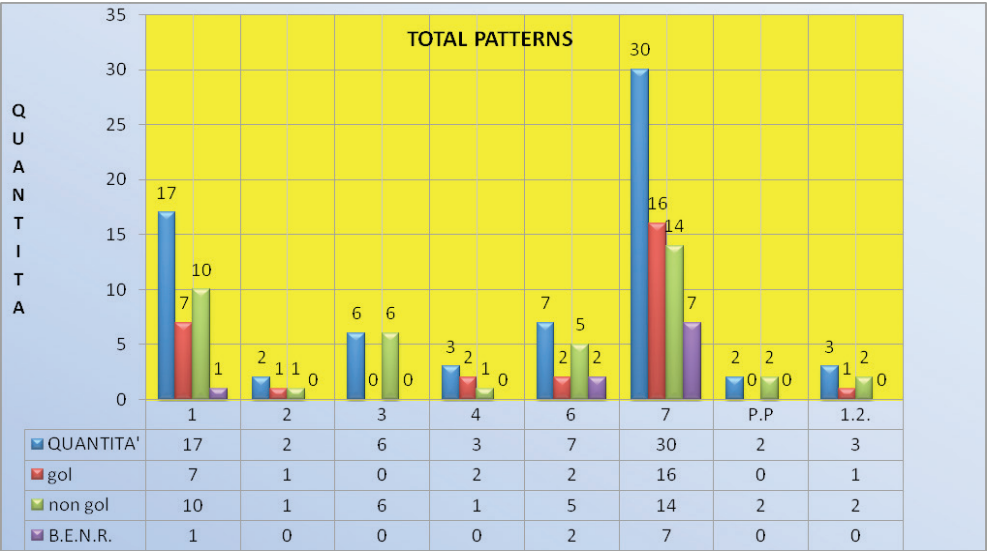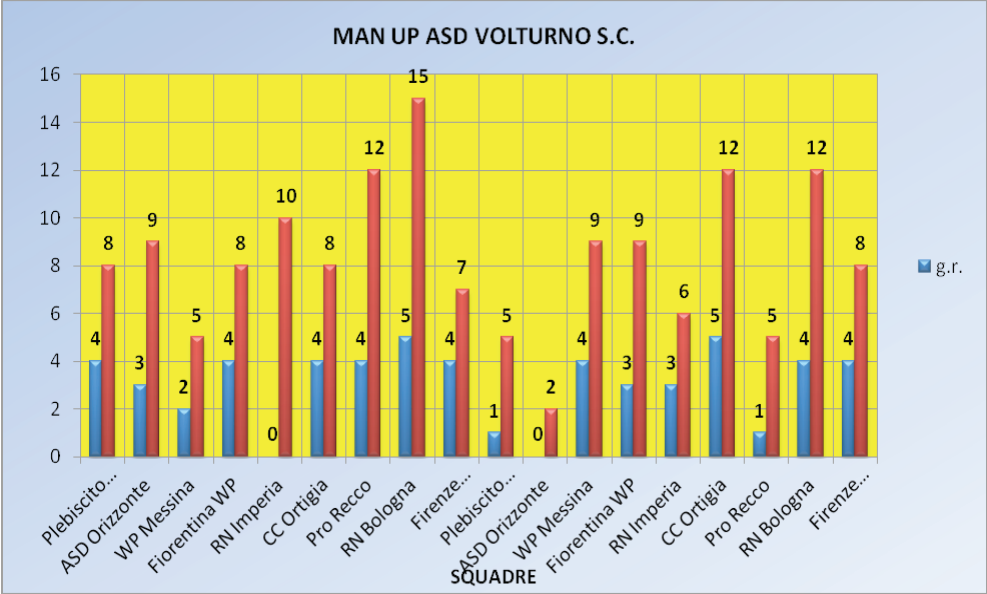
Graphic n. 2

Graphic n. 3
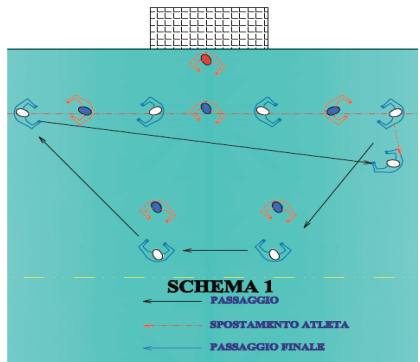
Figure 1
Design of pattern named «schema 1

Frames 1
Pattern «schema1»Screenshot

PATTERNS	AMOUNTS	gol	non gol	B.E.N.R.
1	17	7	10	1
2	2	1	1	0
3	6	0	6	0
4	3	2	1	0
6	7	2	5	2
7	30	16	14	7

P.P	2	0	2	0
1.2.	3	1	2	0
TOTALE	70	29	41	10
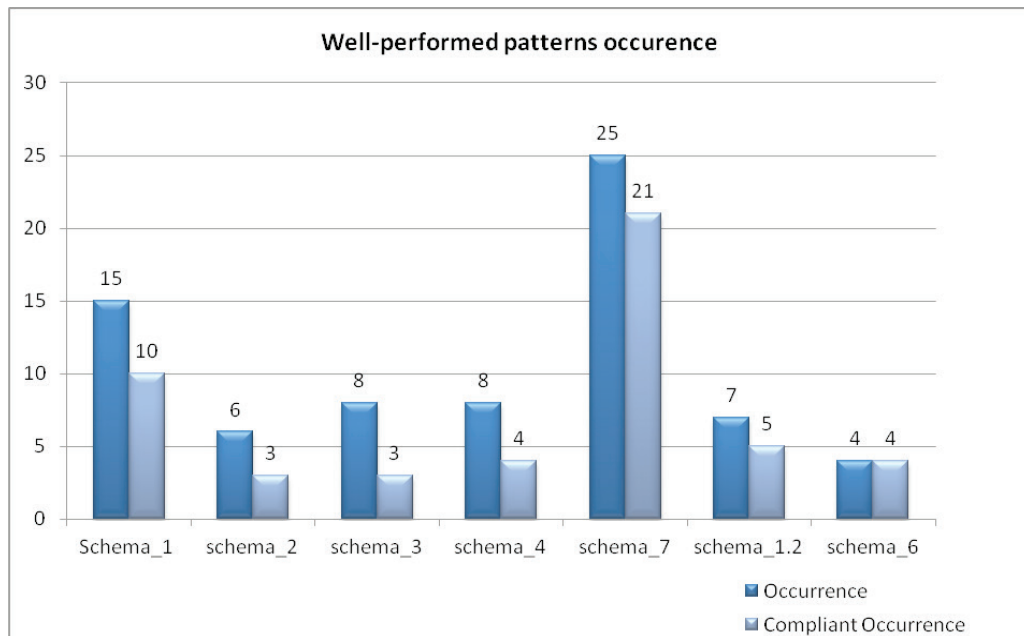
Graphic *4*

Pattern	stderr	correlation (well performed patterns / goals
schema_1	0.43678760300431	0.76332253361379
schema_2	0	1
schema_3	0.30860669992418	0.75592894601845
schema_4	0.11624763874382	0.98810492932246
schema_7	0.54916964736528	0.22360679774998
schema_1.2	0.34684398780965	0.22941573387056
schema_6	0.37796447300923	0.5976143046672

Table n. 6
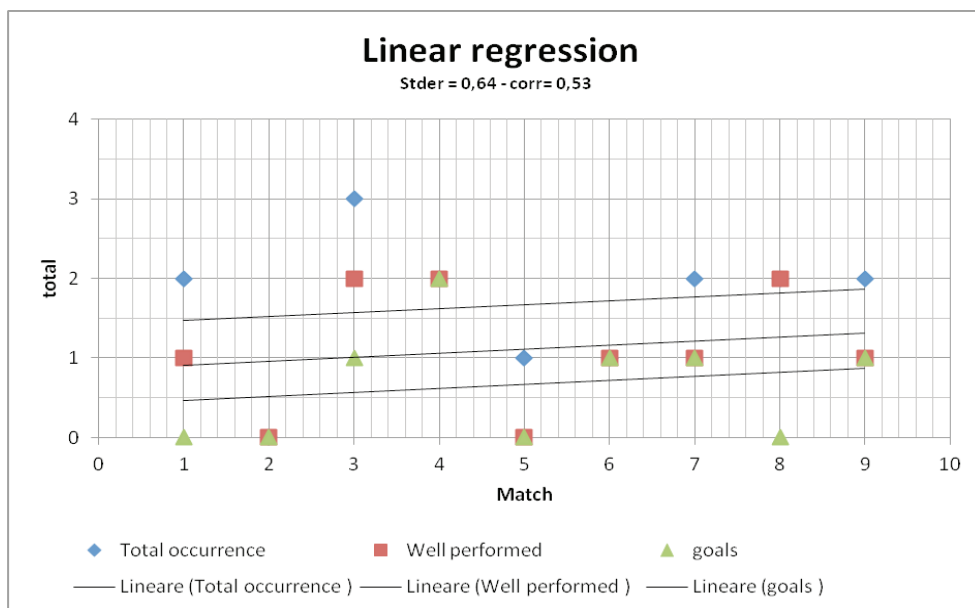
Graphic n. 5

The results obtained in the study on artistic gymnastics are based on the activity of mirror neurons that allow the use of the same nervous substrate for actions performed or observed or thought. From the analysis of the data relative to the evaluation of the others, a lower external awareness of the observed motor action emerges.

However, there are improvements for about 80% of the evaluations that show how the training of motor images in the first person can be accompanied by a third person. To help improve performance in training and running because the same neuronal synapses are activated for both actions you have thought or observed for both yourself (ie in the first person) and the other (ie in the third person).
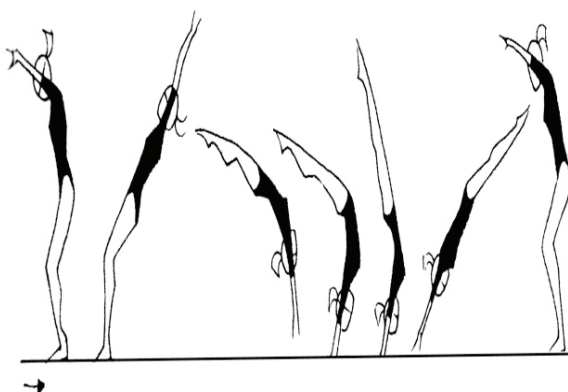

Figure 2

In the table 7 and 8 there are the evaluations of the athlete 1 and 2. In the table 9 there are the assessments of the technician.

In Figure 2 there is a comparison between hetero-evaluations and the evaluation of the technician. As can be seen from Figure 2, the evaluation by the athletes does not have assonance with those of the judge.

However, we note an improvement in performance and skills to be assessed in the second part of the study (month 4 and 5).

As can be seen from Figure 2, there is an improvement of 80% of assessment skills.

	Athlete 1	Athlete 2
1 ROND- OFF FLICK		3,5
2 ROND- OFF FLICK		3
3 ROND- OFF FLICK		4,5
4 ROND- OFF FLICK		4,5
5 ROND- OFF FLICK		5,5
6 ROND- OFF FLICK		8,6
7 ROND- OFF FLICK		8.5
8 ROND- OFF FLICK		7
9 ROND- OFF FLICK		8,2
10 ROND- OFF FLICK		7,9
11 ROND- OFF FLICK		8,2

Table 7: hetero-evaluation by the athlete 1.

	athlete 2	athlete 1
1 ROND- OFF FLICK		3
2 ROND- OFF FLICK		4
3 ROND- OFF FLICK		3,5
4 ROND- OFF FLICK		4,5
5 ROND- OFF FLICK		6,5
6 ROND- OFF FLICK		6
7 ROND- OFF FLICK		6
8 ROND- OFF FLICK		7,5
9 ROND- OFF FLICK		7,5
10 ROND- OFF FLICK		8,2
11 ROND- OFF FLICK		9

Table 8: hetero-evaluation by the athlete 2.

	athlete 1	athlete 2
1 ROND- OFF FLICK	6.3	6,5
2 ROND- OFF FLICK	6.2	7,9
3 ROND- OFF FLICK	6.5	6
4 ROND- OFF FLICK	6,9	7.5
5 ROND- OFF FLICK	7	7
6 ROND- OFF FLICK	7,5	7,5
7 ROND- OFF FLICK	8	7.8
8 ROND- OFF FLICK	8,3	7,9
9 ROND- OFF FLICK	7,9	7,5
10 ROND- OFF FLICK	8	8
11 ROND- OFF FLICK	8,5	8.5

Table 9: evaluation by judge

+
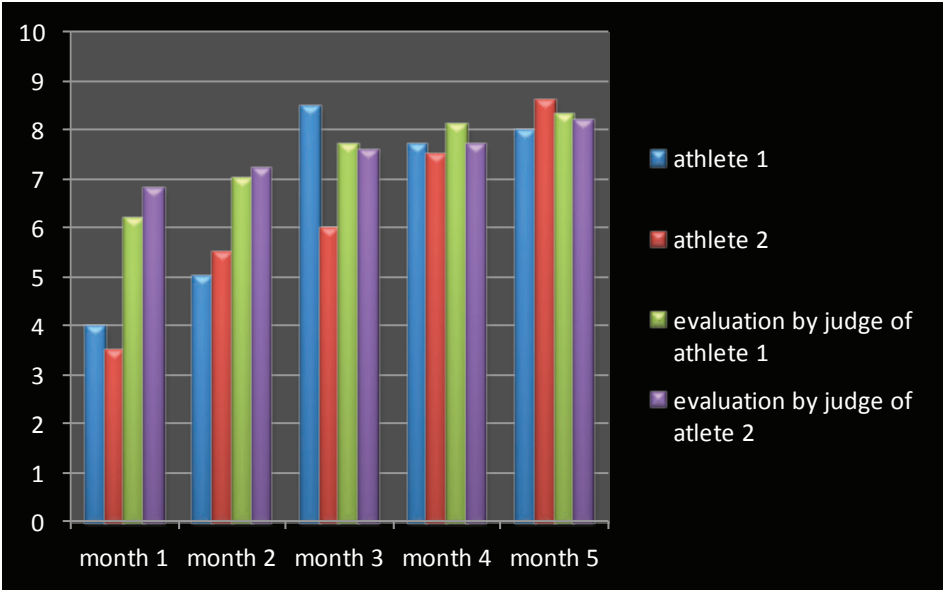
Graph 6: Comparison between hetero-evaluations and evaluation of the judge
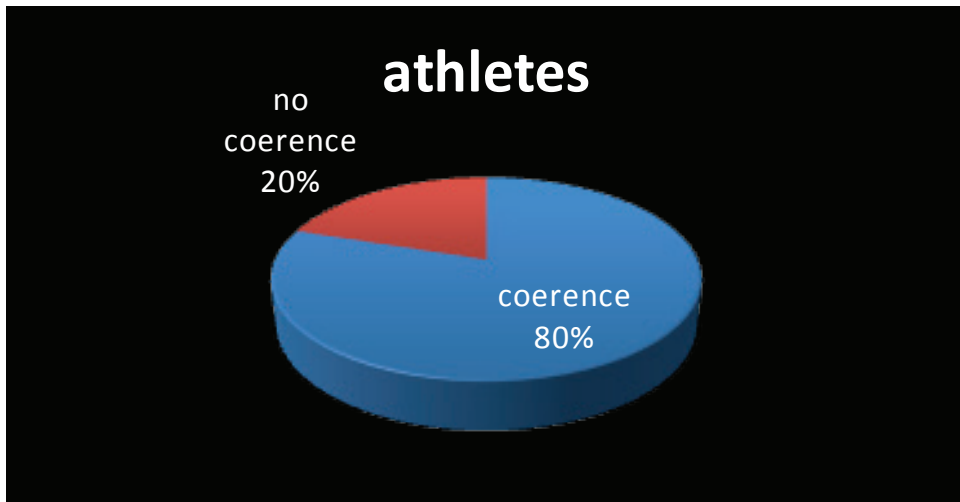
Graph 7: assonance between judge's evaluation and athletes' evaluation.

In this study the tool of hetero evaluation was used, which is a tool not often used, but the results obtained demonstrate improvements in performance, after having used this method for 5 months, but above all they are a valid support for the technician in the process of technical alphabetization.

The other tool used was the use of third-person motor images. These tools use the same nervous substrate used for the movements performed, thought or observed. In this way it stimulates neural connections and improves performance, racing and training. Awareness also improves in young athletes. The study provides a valuable tool to improve performance, minimally, but is a great place to start. In sports, the phenomenon of the influence of mental aspects usually works.

The results obtained, however, in the study on futsal are the following:

1. The use of ideo-motor learning as a methodology is more effective in technical development and in the technical and tactical alphabetization of young players in the 9-10 age group;

2. A more rapid and correct acquisition of technical gestures by the children of the sample group in relation to the control group;

3. Video recording and review of gestures are a suitable tool for evaluating motor performance. It is also a methodology of analysis that helps to identify the most common errors and their correction by a qualified trainer.

4. Improved self-evaluation and self-correction skills by the children of the sample group, acquiring the tendency to imagine an external observation point in a dynamic form.

Conclusion

The results obtained in the study on water polo, demonstrated a general effectiveness of tactical patterns when they are well executed.

There are, however, significant differences in the correlation coefficients of the various applied patterns.

The results obtained showed a relationship between the correct execution of the patterns and the final result.

There are, however, differences in the correlation coefficients of the various applied patterns.

To give greater validity to the study, the research should be extended by evaluating the

variable: adversaries.

The results of the analysis certainly represent a valid support for the coach, in order to perfect the specific training of the team

This methodology can certainly be used to develop the process of tactical and technical improvement in young athletes

In conclusion, this study examined two basic aspects of technical alphabetization and sports performance: performance and motor image.

The methodology used is very useful in artistic gymnastics both during training and during the competition. The motor image is an innate skill and therefore if trained, it is useful for performance improvement, but it can also be used precisely for those processes of Technical-Tactical Alphabetization of the young athlete. the study aims to provide a feasible standard training on a large scale to train the cognitive and physical skills of an athlete and provide a support tool in the race to improve performance, optimize time and reduce the margin of error. This tool aims to be perfected with the use of notational video methods that will allow the analysis of quantitative aspects (such as force, explosive force, resistance, etc.). Other than internal and external evaluation, in relation to the an effective role played by motoring imagery widely used for sports that use closed skills and therefore useful for artistic gymnastics.

Too often, the process of technical literacy is taken for granted and considered almost an automatic situation. This research has provided a useful tool and a starting point for coaches and scholars in the process of technical and tacticalalphabetization and learning in the field of youth sports. The results show how this study can help the trainer educate the team in refining and analyzing their technical skills in an innovative way. The inclusion of video analysis, as a methodological approach for teaching purposes, in the technical training and technical and tactical alphabetization program, can also stimulate the self-assessment of the young athlete and we can consider it the real starting point for the correct construction of skills technical-motor. The small size of our sample / control group does not allow us to generalize the results in statistical terms. However, it certainly lays the foundations of observation for the development of research on a much larger and more representative scale.

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