

THE USE OF VIDEO ANALYSIS IN FUTSAL AS A TOOL IN PHYSICAL EDUCATION AND SPORT TEACHING METHOD

Gaetano Raiola and Pio Alfredo Di Tore

University of Salerno, Italy

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Abstract

Futsal originated in Uruguay in 1930, als known as "Five-a-side soccer" and in South America it is known as futbol de salon, which means indoor football. The official international denomination is Futsal, derived from two words: futbol (soccer) and salon, that is the hall or covered place. In Futsal, one of the most important variables to perform an effective action, it is the time needed by the athlete to complete his own movement. Futsal is beneficial to develop unique motor skills due to the technical characteristics of the game, such as the rules and the playing field in which the time to analyze, evaluate, elaborate, and execute is limited when compared to other team sports. Futsal is particularly fashionable for children because they are going to learn the futsal skills. For this reason, the Italian Soccer Federation (F.I.G.C.) has instituted futsal schools and has mandated Soccer 5 in its own basic programs. Furthermore, sport skills may be learned if they are included in the weekly training program. The aim is to verify whether members of a sample are better at learning specific skills, as compared to a control group. The sample players watch and review videotaped actions or skills taken from the video recorded while they play futsal skills module twice a week for one year. Only 10 players view training videos before each practice. The two groups have the homogeneous skills and each group is tested at the beginning, during, and at the end of the study period on three skills of the game, selected from fundamentals of play: 1) Control of the ball: oriented ball control with the bottom foot (called "stop by sole" or "sole control"); 2) Driving the ball: moving the ball with the sole; 3) Shooting: tip shoot. Two experts and the highly skilled sample player evaluate the videotape together. Evaluation is done using multiple regression analysis of the curves of the two groups. Significant increases in the execution of the playing techniques should be found in the videotaped sample group and should lead to an in-depth study with a larger study sample. These positive findings would suggest the using of video analysis as a tool in training soccer for both educational and performance purposes.

Key words: performance analysis, teaching method, soccer skills

Introduction

The "five a side soccer" was originally invented in Uruguay, where it is traditionally known as Futbol de salon. Instead it is internationally known as futsal, (Portuguese pronunciation: [fut'saw]) is a variant of association football played on a smaller pitch and mainly played indoors. Its name is a portmanteau of the Portuguese futebol de salão, which can be translated as "hall football" or "indoor football". It is the International Fotheotball equivalent of the US's Arena Football. During the sport's second world championships held in Madrid in 1985, the name Fútbol Sala was used. Since then, all other names have been officially and internationally changed to futsal. Futsal was created in 1933, when a professor from ACM Montevideo, Juan Carlos Ceriani Gravier, needed his students to play soccer using hockey or basketball courts. His goal was to invent a team sport feasible for indoor and outdoor facilities, using numerous existing basketball courts, which could resemble the traditional soccer that was very popular after Uruguay national team won the World Cup in 1930 and the Olympic games in 1924 and 1928. The first Italian translation of futsal was essentially "calcetto" as suggested by some Italian teams like "Marino Calcetto", winner of the Italian league in 1986/87 and BNL Calcetto. Later, with the

advent of FIFA and the creation of five-football, which gradually became known as futsal, in Italy it was called "Calcio a 5". In recent years, in Italy it is spreading the habit to use the word "futsal" to refer to "Calcio a 5" (FIFA). Instead, the "futbol de salon", sport run by the AMF, is referred to as "indoor soccer". In Futsal, one of the most important variables for the effectiveness of the game-play is the amount of time required byan athlete to make its move (Nicoletti and Borghi, 2007). In fact, Futsal is particularly suited to the development of motor skills in their technical, space and rules of the game where the time of analysis, evaluation, processing and execution is limited compared to other team-sports (Schmidt et al. 2000) and it may be particularly suitable for children at age of 8-10 years (Winter, 1984) to obtain game-specific techniques. Therefore, the Italian Soccer Federation (FIGC) has made mandatory for their "Serie A" sport clubs basic activities of futsal by establishing Schools of Futsal. In addition, motor imagery induced by playing futsal (Sanders et al., 2004, Bandura, 1997) can enhance quality-motor learning if practiced on weekly basis. The purpose of a pilot study is to establish whether a sample group of players, who are asked to regularly watch video recordings of their own games or motor

performance patterns, can improve learning capabilities of specific techniques (Menichelli, 2010) compared to the a control-group which has not been subjected to view such videos. Too often now, the new scientific discoveries do not translate into innovation in everyday life. This is even more true if you consider the motor-sport field, where rules and game-play are not based on scientific assumptions, but based on personal experiences or long standing practices.

This gap, that we may call "post-discovery", is the space where we are going to place our research work, which consists of translating recent neuro-cognitive-learning discoveries into practice-methodology for teaching sports in the juvenile context, also to provide an operational model to analyze and evaluate the quality of technical learning. In the world of youth football it is common to use some simple technical and tactical tests to make valid and reliable determinations to be included in the overall process of programming and allow proper monitoring of individual learning paths for those undergoing the evaluation. In Futsal, likewise other sports, the athlete's technical skills are considered mostly rely on innate capabilities and not easily modifiable by learning, especially in experienced players.

Therefore, the work in the youth sector is very important because the play experience in children is still limited and evolving. From reviewing existing literature in this regard, there are no significant studies concerning the application of ideo-motor training in children and the assessment through the performance analysis of the learning process in this age group.

How can we improve the learning process? How can we possibly measure the skills improvement? We will try to address these questions 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-old, a category called "Chicks", with bi-weekly practice plan.

Methods and material

The approach method is experimental and is made by the following steps. The participants are 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.

First Step

Analysis of pre-assessment of the habilitation capabilities for checking homogeneity of the groups is made by three phases:

- In the first phase (input), we conducted a pre-assessment of the habilitation capabilities through some basic technical tests on fundamentals (Table1: control of the ball with oriented sole,

shooting the ball with the tip and run the ball with the sole).

- In the second phase, which lasts the entire tournament-year (nine months), the sample group ($n = 10$) is involved in watching video-recorded technical gestures executed by a professional futsal player (Italian National Under-21). During this phase, we will verify and assess the evolution of technical learning (ongoing).

- In the last phase, we will evaluate the two teams to understand and describe the incisiveness of the learning methodology object of this study. Such assessment will be done by the same professional player (model), by filling out specific assessment sheets during the observation of the students as they perform the three predetermined technical gestures.

Executive proceedings

The sample group will meet at the sports facility 30 minutes before the control group. The team will be exposed to the video projection of three technical gestures, chosen from the game fundamentals:

1. Control of the ball: oriented ball control (to left and to right side) with the bottom foot (called "stop by sole");
2. Driving the ball, moving the ball with the sole;
3. Shooting: tip shoot

The prearranged video clips are presented by the trainer, mainly focusing on the body segments relations and the most common execution mistakes. The first 5 minutes will be dedicated to relaxation by listening to relaxing music and projected images, as the kids come to the field with a very high emotional charge that could adversely affect their ability to concentrate and focus.

The next step is based on playing the video footage of the technical model in its entirety, inviting children to their highest attention while watching the video-clips in order to catch and learn as much information as possible.

The last 5 minutes will be dedicated to students. They will be asked to close their eyes and imagine themselves in executing the same gestures observed in the video. At the end of this phase, the sample group will begin the entire workout with the rest of the group, namely the control group, in such a way as not to jeopardize the technical-educational program of the entire team.

Hypothesis and objectives

The assumptions and objectives of this research are the following:

- Describe how a child's learning process is affected by practicing 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 the observation of videos of technical gestures executed by a professional player (model).

- Identify when / how the ideomotor training impacts on the learning process, thus allowing to study the individual's technical skill enhancements, object of this research.
- The students' capability of self-assessment will be improved by the acquisition of skills of observation and self-observation of motor gestures, either online (immediately after an execution) and offline (by video recording and observing themselves while performing the gestures).

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

Results

The expected results are the following:

1. The use of ideo-motor learning as a methodology is more effective in the technical development of young players in the age group between 9-10 years old;
2. A more rapid and correct acquisition of technical gestures by the kids part of the sample group in relation to the control group;
3. Video recording and reviewing gestures is a suitable tool for evaluating motor execution. It is also an analysis methodology that helps to identify the most common mistakes and their correction by a qualified trainer.
4. Improved ability in self-assessment and self-correction by the kids' part of sample group, acquiring the tendency to imagine a point of observation outside in a dynamic form.

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	Technical gestures	Oriented sole control to left side					Oriented sole control to right side					Shoottip					Driving the ball: moving the ball with the sole					Total score
	Descriptors	Domina ntfoot	Worki ngleg	Suppo rtleg	Tru nk	Ar ms	Domina ntfoot	Worki ngleg	Suppo rtleg	Tru nk	Ar ms	Domina ntfoot	Worki ngleg	Suppo rtleg	Tru nk	Ar ms	Domina ntfoot	Worki ngleg	Suppo rtleg	Tru nk	Ar ms	
68	Player 1	4	3	3	4	3	3	3	4	4	3	3	2	4	3	3	3	4	4	4	4	68
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	3	4	3	3	3	4	5	4	4	71
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

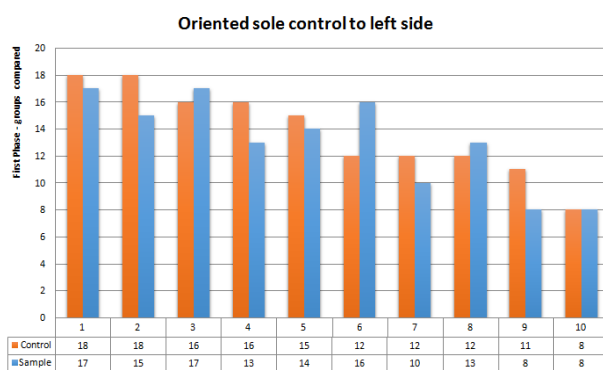


Figure 1. Oriented sole control to left side

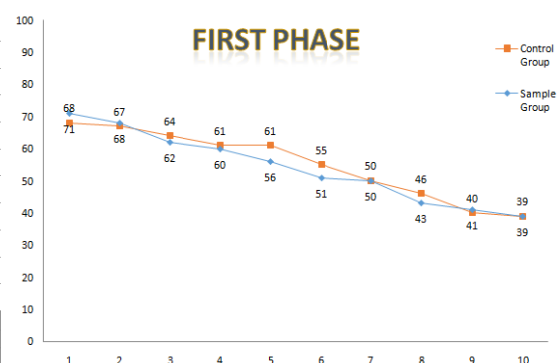


Figure 2. Group phases

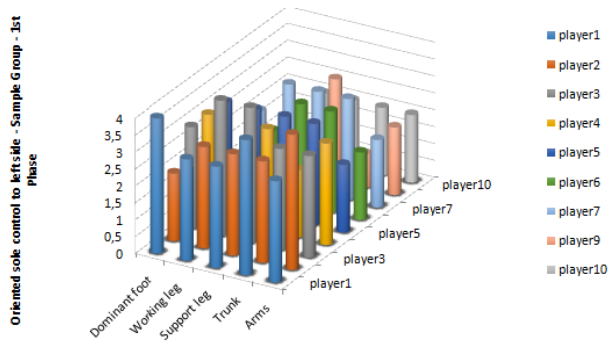


Figure 3. Sample group - 1st phase

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

Discussion and conclusion

Too often, the process of teaching and learning is taken for granted, inevitable and considered automatic when a person shows to another what he knows.

The scientific evidence shows that this simplistic approach most of times undermines the efforts of educators, indeed it generates frustration in students, making both parties unhappy. Here, once again, the virtuous circle theory-practice-theory can prove to be a winning, making the learning process engaging and fascinating at the same time. This research aims to provide a valuable tool and a starting point for coaches and scholars of learning process in the field of youth sports. The results show how this study can help the trainer with coaching the team in refining and analyzing their technical skills in a different and original way, by creating a set of methods that help improve consciously learning the technical fundamentals, specific to a sport such as Futsal. The inclusion of video analysis, as a methodological approach for educational purposes, in the technical training program, can also stimulate the self-assessment of the young student, to be considered the true starting point for the correct construction of the technical-motor skills. The small size of our sample/control group does not allow us to generalize the results in statistical terms. However, it certainly lays the foundation of observation for research development on a much larger scale and representative.

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KORIŠTENJE VIDEO ANALIZE U FUTSALU KAO ALAT U TJELESNOM ODGOJU I METODI NASTAVE SPORTA

Sažetak

Futsal je nastao u Urugvaju 1930. godine, poznat i kao "Pet-po-strani nogomet", te u Južnoj Americi je poznat kao *futbol de salon*, što znači mali nogomet. Službena međunarodna denominacija je futsal, potječe od dvije riječi: *futbol* (nogomet) i *salon*, dvorana ili prekriveno mjesto. U futsalu, jedna od najvažnijih varijabli za obavljanje učinkovite akcije je vrijeme potrebno od strane sportaša za završiti svoje kretanje. Futsal je koristan za razvoj jedinstvene motoričke sposobnosti, no zbog tehničkih karakteristika igre, kao što su pravila i igralište u kojem je vrijeme za analizu, evaluaciju, razradu, i izvršavanje je ograničen u usporedbi s drugim momčadskim sportovima. Futsal je posebno u modi za djecu, jer oni su idući u redu za naučiti futsal vještine. Iz tog razloga, talijanska nogometna federacija (F.I.G.C.) pokrenula je futsal škole te je propisala Nogomet 5 u svojim osnovnim programima. Nadalje, sportske vještine se mogu naučiti, ako su uključene u tjednom programu obuke. Cilj je provjeriti jesu li članovi u uzorku bolji u učenju specifične vještine, kao što je u usporedbi s kontrolnom skupinom. Uzorak igrača pregleda snimane akcije ili vještine preuzete iz videa, snimljene dok oni igraju futsal vještine modula dva puta tjedno za jednu godinu. Samo 10 igrača pogleda video kazete prije svake prakse. Dvije skupine imaju homogene sposobnosti i svaka grupa je testirana na početku, tijekom i na kraju promatranog razdoblja na tri vještine igre, odabranih od osnove igre: 1) kontrola nad loptom: orijentirana kontrolu lopte donjim dijelom noge (pod nazivom "stop donom" ili "jedina kontrola"); 2) Vožnja lopte: pomicanje lopte potplatom, 3) Gađanje: bacanje. Dva stručnjaka i vrlo vješt uzorak igrač ocijene videokazetu zajedno. Ocjenjivanje se vrši pomoću multiple regresijske analize krivulja dviju skupina. Značajan porast u izvršenju tehnike sviranja treba se naći u snimanom uzorku i treba dovesti do dubinskog istraživanja s većim uzorkom studija. Ti pozitivni rezultati predlažu korištenje analiza kao alata u treniranju nogometa u obrazovne i izvedbene svrhe.

Ključne riječi: analiza performansi, metode poučavanja, nogometne vještine

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Correspondence to:

Assoc.Prof. Gaetano Raiola, PhD.

University of Parthenope 80133,

Napoli, Via Medina 40, Italy

Tel: 0039 081 547 4111

E-mail: raiolagaetano@libero.it