

A Pattern of Efficiency of Actions in Soccer Based on Observations of the European Championships 2008 Finals

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Abstract

Background: *The purpose of this work was to present a model which shows the efficiency of the actions in the game of soccer, based on observations of 7 final tournament matches during the European Championships in 2008. The successful teams were analyzed from the quarterfinals to the final match. Activity, effectiveness and reliability, during both offensive and defensive actions, were subject to this examination.*

Material/Methods: *The material consisted of the audio-visual records gathered from 7 matches which had been played in the final tournament in the 2008 European Championships. The gathered data was put on the special observation sheet in accordance with the Panfil's design.*

Results: *It has been ascertained that the most effective actions are those of possessing the ball and the actions of gaining the field, while the rate of scoring goals is similar to that which had been observed during finals in other top soccer tournaments. Additionally, in the defensive actions the best players manifest higher reliability in co-operation than in individual actions.*

Conclusions: *In the top-level competitions, group/team actions prevailed over individual ones. The examined players manifested nearly the same efficiency in scoring like those who took part in the finals of the World and continental championships. The players regarded as champions made use of various individual actions against their opponents with a ball, depending on the implemented game tasks.*

The models which illustrate the efficiency of actions in soccer, at the top-level competition should be used for creating ideal models which will design the game of players of lower sport competence.

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Introduction

A systematic and objective observation of the best players' actions, in real competition, is the basis for reliable influence on players during the training process. Variability of situations has to be considered while assessing a match. Assuming that and considering the importance of particular actions during a match, one can distinguish some situations, so called pattern models. The pattern models are used for creating design models, which can be helpful in improving players' actions by indicating the types of situations and the ways of solving them.

Within the praxiological models of sport team game we can find: tabular and mathematical standards (indexes), graphic (plate or computer) and simplified real models (small games, parts of games, task and selection games). Simple mathematical models embrace the basic indexes – effectiveness of actions, reliability, and auxiliary indexes – activity of actions, activity of moving and loading of the area of a pitch [1]. The efficiency of action in a sport team game in terms of synthetic meaning, is the whole of practical qualities in a game, i.e. positively assessed features of that action such as: general activity (a number of all actions taken to implement the tasks of a game), particular activity (a number of selected actions carried out by the players in a match), effectiveness (a number of positive actions related to the implementation of the tasks of a game) and reliability (the ratio of the effective actions to all the actions performer in a match). Other forms of the efficiency of actions are as follows: reasonableness (cognitively motivated actions), evaluation (a coefficient which is the evaluation of the effectiveness of action) and economic (the ratio of widely interpreted result – assets, to expended cost – loss) [1].

The purpose of this work was to present a pattern model of efficiency of actions in soccer on the ground of observation of the teams that won all the final phase matches of the tournament in the 2008 European Championships.

Material and Methods

The material consisted of the audio-visual records taken from 7 matches which had been played in the final tournament in the 2008 European Championships. The successful teams were analyzed from the quarterfinals to the final match (Table 1). The gathered data was put on a special observation sheet in accordance with the Panfil's design [1]. Dependability and total accuracy rates of his method of gathering data (based on earlier studies concerning the objectivity of the proposed method) were 97.07% and 96.0%, respectively [2].

Activity, effectiveness and reliability of a particular offensive and defensive actions were examined (co-operation and individual actions). Successful attempts in scoring, creating situations at the goal, gaining field and possessing the ball were assessed. Defensive actions assessed included prevention from scoring, creating situations for taking over the ball, gaining field, possessing the ball. Simple cognitive models were constructed.

Tab. 1. Observed matches and their results

No.	Teams	Tournament stage	Results
1	Spain vs. Germany	final	1:0
2	Germany vs. Turkey	semifinal	3:2
3	Spain vs. Russia	semifinal	3:0
4	Germany vs. Portugal	1/4 of final	3:2
5	Turkey vs. Croatia	1/4 of final	0:0 (0:0 play-off, penalty shots 3:1)
6	Russia vs. Holland	1/4 of final	1:1 (3:1 play-off)
7	Spain vs. Italy	1/4 of final	0:0 (0:0 play-off, penalty shots 4:2)

Results

Attacking

We can see from the Table 2, that the actions of possessing the ball (48%) and those related to gaining field (36%) prevailed. 12% of situations was connected with shooting at the goal and 4% with scoring.

Tab. 2. A model related to the offensive efficiency of actions

Features	Actions	Effectiveness	Reliability	% of all actions	Average number of actions per match
Kinds of actions					
Possessing the ball	1233	1051	0.85	48	176.14
Gaining field	928	685	0.74	36	132.57
Creating situations at the goal	327	197	0.60	12	46.71
Scoring	93	11	0.12	4	13.29

The champions were very effective at possessing the ball (on average almost 176 actions during a match at 85% of reliability) and gaining space (on average about 132 actions in one match with 74% reliability). The champion team created on average 47 situations at the goal of which 28 resulted in scoring. Out of 93 scoring actions they made use of hardly 11. The examined players had 12% of scoring efficiency, nearly the same reliability manifested by the players who played in the finals of the World and continental championships [3, 4, 5, 6].

In Table 3 and Fig. 1 we can find the data about possessing the ball. The team actions prevailed during *Euro 2008* (team work). There was a predominance of playing the ball prior to receiving it (93% of reliability) and without receiving the ball (87%). Individual actions (running with a ball, dribbling, and 1 v 1 situations) were occasionally performed, and their reliability was lower as it ranged between 38% and 70%.

Tab. 3. A model showing the efficiency of actions in possessing the ball, in gaining field, and in creating situations for scoring

Mode of actions	Features*	Activity			Effectiveness			Reliability		
Individual	running with the ball	30	89	12	21	79	9	0.70	0.89	0.75
	passing to himself	47	9	2	18	5	0	0.38	0.55	0
	dribbling	79	48	29	54	27	13	0.68	0.56	0.45
	1v1 situations	62	47	63	38	23	24	0.61	0.49	0.38
Co-operation	playing the ball after receiving	620	458	99	578	348	68	0.93	0.76	0.69
	playing the ball without receiving	395	277	122	342	203	83	0.87	0.73	0.68

*The numbers of the left – actions in possessing the ball, inside-actions in gaining field, and the numbers of the right – actions in creating situations for scoring

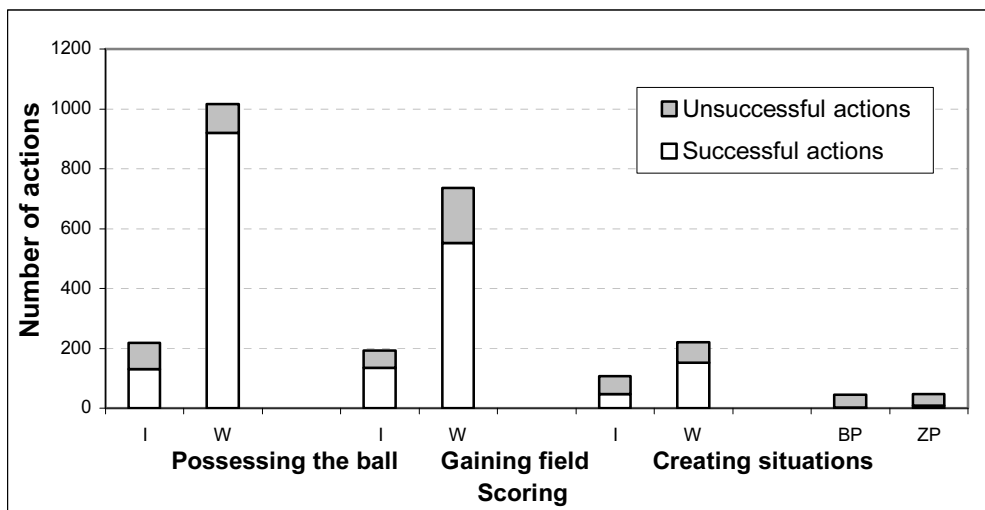


Fig.1. A model showing the offensive actions reliability, considering game tasks and mode of actions (I – individual, W – team work, BP – without an opponent, ZP – with an opponent)

The data gathered in Table 3 and showed in Figure 1 illustrate the efficiency of actions performed individually in order to gain field by running with a ball. Out of 89 such actions 79 were successfully performed (89% of reliability). Other individual ways of gaining field (passing to oneself, dribbling, 1 v 1 situations) were rarely effective due to contact with an opponent (49%...56% of reliability). In team work (co-operation), playing the ball after receiving was more often performed (348 effective actions out of 458), then without receiving the ball (total 277 actions, and 203 effective). The champions had 74% of reliability in team-work gaining a field.

The detailed models of creating situations at the goal (Tab. 3, Fig. 1), clearly show that the best players co-operate or perform team work in order to create situations which will result in scoring. However, out of all 221 attempts 153 were successful, which resulted in a low 69% of reliability (playing the ball without receiving 68% and prior to receiving it 69%). Individual attempts to score (1 v 1 situations, dribbling, and running with the ball) were rarely performed (106), but they were less effective than team-work attempts. The most successful individual action was creating situations at the goal by running with a ball (75% of reliability). Very low reliability was reached as a result of one versus one situations or in dribbling (38% and 45% respectively).

A model, which shows successful scoring is illustrated in Table 4. The data shows that most scores were attempted by hitting the ball with a foot/leg without physical contact with an opponent (36) and by hitting a ball with a foot/leg with physical contact by an opponent (31). Next in succession was “heading” with contact with an opponent (13) then “heading” without physical contact with an opponent (8). Situational shots were very effective at 25% reliability rate. Other kinds of shots (with foot/leg or by heading) ranged between 5% and 16% of reliability.

Tab. 4. Model showing the efficiency in scoring

Mode of actions		Features	Activity	Effectiveness	Reliability
Individual in close contact with an opponent		hitting with a foot/leg	31	5	0.16
		“heading”	13	2	0.15
		situational shot	4	1	0.25
As above but without contact		hitting with a foot/leg	36	2	0.05
		“heading”	8	1	0.13
		situational shot	1	0	0

Defending

From the model showing efficiency in defensive action – counteractions (Tab. 5, Fig. 2), we can see that players were most active in counteractions (46 a match), then preventing: gaining field (45 a match), creating situations at the goal (about 39 a match) and scoring (about 14 a match). Whereas they had the highest reliability in actions of blocking the goal – 71%; lower reliability in counteractions: at the goal – 69%, gaining field – 62% and possessing the ball – 48%.

Tab. 5. A model showing efficiency of actions in defending

Indexes	Actions	Effectiveness	Reliability	% of all actions	Average number of actions per match
Kinds of counteractions					
Possessing the ball	322	156	0.48	32	46.00
Gaining field	318	197	0.62	31	45.43
Creating an occasion for scoring	278	193	0.69	28	39.71
Lost goal	96	68	0.71	9	13.71

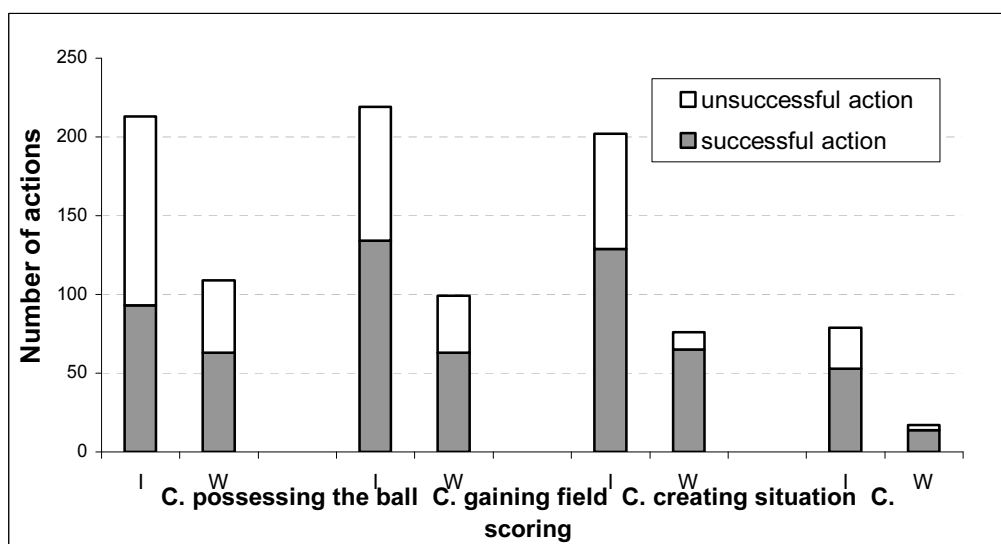


Fig. 2. Graphic model showing the defensive actions reliability, considering game tasks and mode of actions (I - individual, W - team work)

The obtained results illustrate a very high efficiency of actions which prevents a goal. The results of 71% of reliability were similar to those which had been observed in other important tournaments [7].

The efficiency of actions related to preventing the possession the ball has been shown in Table 6. The winning teams had higher activity of individual actions (213 actions in observed matches) than co-operation actions (109 doubling or tripling in all matches); on the other hand, group actions were more efficient than individual ones (58% and 44% reliability respectively).

The analysis of those actions shows that in individual actions the following were predominant: stepping up in front of an opponent and kicking-out (clearing) the ball (74) and taking over (50) and kicking out (clearing)-interrupting the opponents' action (46). Intercepting the ball (29) was rarely performed. Blocking a ball was highly reliable – 75%. Group counter-actions (double, triple) had also high 58% of reliability.

Tab. 6. A model showing the efficiency of counteractions of possessing the ball and in gaining field

Mode of actions		Features*	Activity		Effectiveness		Reliability	
Individual	Stepping up in front of opponent – kick-out (clearance)		74	82	27	54	0.36	0.66
	interception the ball		29	26	15	17	0.52	0.65
	kick-out (clearance) – interrupting		46	42	17	18	0.37	0.43
	taking-over the ball		50	34	25	23	0.50	0.68
	blocking		8	16	6	9	0.75	0.57
	shielding		6	19	3	13	0.50	0.68
Total individual actions			213	219	93	134	0.44	0.61
Co-operation	double, triple		109	99	63	63	0.58	0.64

*The numbers of the left – counteractions of possessing the ball, and the numbers of the right – counteractions in gaining field

From the tabular model, showing the efficiency of counteractions in gaining field (Table 6) we can see that the examined players had higher individual actions (82 kick-outs in all matches, 66% of reliability). They rarely counteracted gaining field as a result of kicking-out a ball from their opponents (42 actions, 43% of reliability), and taking-over the ball (34 actions, 68% of reliability), then intercepting the ball (17 successful actions out of 26 attempts; 65% of reliability). Hampering the opponents' actions, hardly used, was the most effective way of preventing opponents from gaining field (13 effective actions out of 19 ones in all 7 matches, 68% of reliability). The reliability of co – operation (64%) was lower in comparison with individual actions.

The efficiency of counteract in situation for scoring (scoring chances) has been shown in Table 7 and Fig. 2. The champion players were able to stop such situations twice as often acting individually than co-operating (202 and 76 respectively). Individual efficiency was lower in comparison with co-operation actions (double, triple). The examined players had 67% of individual actions reliability, and 82% of those performed in a group. The most frequent action was stepping in front of an opponent and kicking out the ball (62), then kicking out the ball from their opponents (49 times), then taking over the ball (37), intercepting the ball (27), blocking the ball (18) and shielding the ball (9).

The most effective were such actions as stepping up in front of opponents and blocking and taking over the ball (73% and 66% and 62% of reliability, respectively), but the lowest efficiency was observed while intercepting (52% of reliability).

Tab. 7. A model showing the efficiency of counteractions of creating scoring chances and in scoring

Mode of actions		Features*	Activity		Effectiveness		Reliability	
Individual	Stepping up in front of opponent – kick-out (clearance)		62	11	45	10	0.73	0.91
	interception the ball		27	1	14	1	0.52	1.00
	kick-out (clearance) – interrupting		49	28	30	19	0.61	0.68
	taking-over the ball		37	4	23	2	0.62	0.50
	blocking		18	32	12	19	0.66	0.59
	shielding		9	3	5	2	0.55	0.66
Total individual actions			202	79	129	53	0.64	0.67
Co-operation	double, triple		76	17	65	14	0.85	0.82

*The numbers of the left – counteractions of creating scoring chances, and the numbers of the right – counteractions in scoring

From the data in Table 7 and Fig. 2, we can learn that the best players of the *Euro 2008* had 67% of reliability in individual counteractions in preventing from scoring. All interceptions were successfully executed. One action out of 11 attempts of stepping up in front of an opponent-kick-out failed; and 2 actions failed out of 4 attempts of taking over. They had 82% of reliability in co-operation (double, triple); they successfully executed 14 such actions out of 17.

Discussion

The carried-out analysis of offensive actions proved the importance of team-work actions which may result in leading up to expected targets in modern soccer. Thus, the opinion which has been formulated by experts [8, 9] on advantages of team work in achieving the final success in a sport team game was confirmed by this examination.

Analyzing models of defensive actions we can see that the champion-players manifested significant efficiency when they co-operated (team-work). The obtained results are not surprising, considering the fact that in our efficiency of co-operation analysis, we have only assessed activity and effectiveness in double and triple actions (we have omitted the other actions which are extremely difficult to be objectively assessed, i.e. active zone, shortening of the field, etc.) It may be speculated that if we consider other actions, group or team, the prevalence of group/ team action over individual ones will clearly be manifested.

Conclusions

1. In the top-level competitions, group/team actions prevailed over individual ones.
2. The examined players manifested nearly the same efficiency in scoring like those who took part in the finals of the World and continental championships.
3. The players regarded as champions made use of various individual actions against their opponents with a ball, depending on the implemented game tasks.
4. The models which illustrate the efficiency of actions in soccer, at the top-level competition should be used for creating ideal models which will design the game of players of lower sport competence.

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