

## DIFFERENCES IN TEAM SITUATIONAL EFFICACY INDICATORS IN GROUP PHASE OF U-17 WORLD FOOTBALL CHAMPIONSHIP IN CHILE

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### Abstract

The goal of this research is to establish differences in situational efficacy indicators between teams who passed the group phase of U-17 World football championship in Chile and those who did not. Situational efficacy indicators used in analysis were downloaded from FIFA's official website. Analyzed were the differences in 12 variables between teams who passed the group phase of championship and those who did not. T-test and Mann-Whitney test results showed that teams who passes and those who did not had a significant difference in these variables: ball possession ( $p=0.016$ ), goals given ( $p=0.016$ ) and goals received ( $p=0.001$ ). Also, based on the results we established that these variables did not differ between teams who passed and those who did not: goal kicks ( $p=0.544$ ), kicks within frame ( $p=0.241$ ), kicks outside of frame ( $p=0.442$ ), corner kicks ( $p=0.749$ ), free kicks ( $p=0.676$ ), offside ( $p=0.053$ ), fouls ( $p=0.789$ ), yellow card ( $p=0.101$ ) and red card ( $p>0.5$ ).

**Key words:** situational efficacy, ball possession, world championship, youth players

### Introduction

Matches and team and individual sports competitions can be observed as complex dynamic systems where two entities (teams, pairs, or individuals) try to advance over each other in order to claim victory. The performance of these entities and its success is determined via skill level, characteristics, knowledge and capability level of players/competitors in their quest for victory. In a football play this occurs in a match. Systemic observing of a football match shows many characteristics that are repeated and can be analyzed.

These events and their outcomes show the situational efficacy level of players and the team, and the level of their performance. Analyzing these events one can determine why a certain team had an advantage and how did the match outcome come about. This is where notational analysis comes into play. It is a type of method for marking and noting events seen in a sports competition, which creates conditions for statistical analysis of gathered data. Its basic use is in the process of sports preparation for enhancing sports performance.

Based on notated events in the game and using statistics, we get performance indicators pointing to technical and tactical activity, e.g. quality of performance of certain players and teams. Performance indicators are seen via statistical analysis of game events and are used for estimating the performance of players and teams in one or more matches. Since a football match generates many events and many performance indicators, their usage can be difficult. That is why we need to select relevant indicators in order to make their use efficient.

A large number of authors (Lago and Martin, 2007; Lago-Penas, Lago-Ballesteros, Dellal and Gomez, 2010; Castellano, Casamichana and Lago, 2012; Yue, Broich and Mester, 2014; Lago-Penas and Gomez-Lopez, 2014; Broich, Mester, Seifriz and Yue, 2014; Liu, Gomez, Lago-Penas and Sampaio, 2015) analyzed matches to establish differences in certain situational efficacy indicators between teams with better and worse placements. In this research we will analyze indicators of situational efficacy of teams who passed the group phase and those who did not. If you notice relevant parameters of a football match, you can make better the complex training system and prepare players and teams for a match – which leads to enhancing their technical and tactical quality.

### Methods

#### Research materials

Data about situational efficacy parameters of teams competing in group phase of 2015 U-17 World football championship in Chile were downloaded from FIFA's official website (<http://www.fifa.com/u17worldcup/groups/index.html>).

#### Sample

Entity sample consists of 24 teams competing in group phase of 2015 U-17 World football championship in Chile: Nigeria, Croatia, Chile, USA, Republic of Korea, Brazil, England, New Guinea, Mexico, Germany, Australia, Argentina, Mali, Ecuador, Belgium, Honduras, Russia, Costa Rica, North Korea, South African Republic, France, New Zealand, Paraguay, Syria. Teams were divided into six groups of four.

**Variable sample**

Differences in situational efficacy parameters between teams who passed the group phase and those who did not were determined based on 12 variables: ball possession, goal kicks, kicks inside the frame, kicks outside the frame, corner, free kicks, offside, fouls, yellow cards, red cards, goals scored, goals received (according to Bašić and assoc., 2015)

**Statistical analysis**

Using SPSS (version 10.0; SPSS Inc., Chicago, IL) for all indicators of situational efficacy of teams, we calculated basic descriptive parameters: arithmetic mean (M), standard deviation (SD), maximum value (Max) and minimal value (Min).

Based on metrical characteristics of variables, we used certain parametric (T-test) and nonparametric (Mann-Whitney test) statistical methods.

**Results**

Table 1. Descriptive parameters of 12 variables—situational efficacy indicators of teams: arithmetic mean (AM), standard deviation (SD), minimal value (Min), maximum value (Max)

Variable	AM	SD	Min	Max
<b>BP</b>	50,01%	5,86	40,30%	62,70%
<b>GK</b>	14,30	4,13	6,67	23,33
<b>KIF</b>	4,94	1,82	2,33	9
<b>KOF</b>	5,96	2,12	2,33	10,67
<b>C</b>	5,58	1,65	2,33	9,33
<b>OFF</b>	2,10	1,57	0	6,33
<b>FK</b>	16,60	4,26	11,67	30,33
<b>F</b>	14,49	2,71	11	20,33
<b>YC</b>	1,51	0,62	0,33	2,67
<b>RC</b>	0,10	0,18	0	0,67
<b>GS</b>	1,43	1,02	0,33	4,67
<b>GR</b>	1,40	0,86	0	2,67

Legend: ball possession (BP), goal kicks (GK), kicks inside the frame (KIF), kicks outside of frame (KOF), corner (C), offside (OFF), free kicks (FK), fouls (F), yellow cards (YC), red cards (RC), goals scored (GS), goals received (GR)

Table 2. Variable name (Variable), group pass (Pass), arithmetic mean (AM), standard deviation (SD), minimal value (MIN), maximum value (Max), T-test/Mann – Whitney test value (t/U) and statistical error significance (p) of situational efficacy indicators for teams who passed the group phase of competition and those who did not.

Variable	Pass	AM	SD	Min	Max	t/U	p
<b>BP</b>	YES	52,78%	5,53	41,70%	62,70%	<b>2,589</b>	<b>.016</b>
	NO	47,23%	4,92	40,30%	55%		
<b>GK</b>	YES	14,83	4,44	8	23,33	0,617	.544
	NO	13,78	3,93	6,67	20		
<b>KIF</b>	YES	5,39	1,99	3,33	9	1,206	.241
	NO	4,50	1,59	2,33	7,33		
<b>KOF</b>	YES	5,61	2,02	2,33	10	-0,782	.442
	NO	6,31	2,33	3,33	10,67		
<b>C</b>	YES	5,69	1,84	3,33	9,33	0,324	.749
	NO	5,47	1,50	2,33	8,33		
<b>OFF</b>	YES	2,72	1,87	0,67	6,33	2,090	.053
	NO	1,47	0,89	0	3		
<b>FK</b>	YES	16,94	3,53	12	21,33	0,423	.676
	NO	16,19	5,02	11,67	30,33		
<b>F</b>	YES	14,33	2,50	11	18,33	-0,271	.789
	NO	14,64	3,01	11	20,33		
<b>YC</b>	YES	1,31	0,54	0,33	2,33	-1,702	.101
	NO	1,72	0,65	1	2,67		
<b>RC</b>	YES	0,12	0,22	0	0,67	0,932	>.05
	NO	0,08	0,15	0	0,33		
<b>GS</b>	YES	1,92	1,08	0,67	4,67	<b>2,600</b>	<b>.016</b>
	NO	0,95	0,71	0,33	2,67		
<b>GR</b>	YES	0,86	0,64	0	2,33	<b>-3,934</b>	<b>.001</b>
	NO	1,95	0,71	0,67	2,67		

Legend: ball possession (BP), goal kicks (GK), kicks inside the frame (KIF), kicks outside of frame (KOF), corner (C), offside (OFF), free kicks (FK), fouls (F), yellow cards (YC), red cards (RC), goals scored (GS), goals received (GR)

## Discussion and conclusion

Via statistical analysis we determined that teams who passed the group phase of competition and those who did not have a significant statistical difference in ball possession ( $p=0,016$ ), number of goals scored ( $p=0,016$ ) and number of goals received ( $p=0,001$ ) in a match. Variables with no statistical difference are: goal kicks ( $p=0,544$ ), kicks inside the frame ( $p=0,241$ ), kicks outside of frame ( $p=0,442$ ), corners ( $p=0,749$ ), offside ( $p=0,053$ ), free kicks ( $p=0,676$ ), fouls ( $p=0,789$ ), yellow cards ( $p=0,101$ ) and red cards ( $p>0,5$ ). This research confirms results of Lago-Penas and assoc. (2010) in which they concluded that more successful teams score more than less successful teams. We also confirmed Castellana and assoc. (2012) research where they analyzed matches from three different world championships and concluded that winners and defeated had a significant difference in ball possession but also the total number of kicks and kicks inside the frame.

Where these studies differ is the fact that teams who passed and those who did not pass the group phase of U-17 World football championship in Chile do not show a significant difference in the number of goal kicks ( $p=0,544$ ) and the number of kicks inside the frame ( $p=0,241$ ). Based on these results (Table 2) we can conclude there is a statistically significant difference in ball possession numbers between teams who passed the group phase of competition ( $AS=52,78\%$ ) and those who did not ( $AS=47,23\%$ ). This is a statistically significant indicator because the goal is to have a larger and more active ball possession than the opponent team in order to reach a full game potential – which is to score a goal.

Teams with greater ball possession have a better technical and tactical knowledge (receiving, passing, ball transfer, reveal, empty space run-in, change of place) which enables them to transfer the ball into the opponent half and control the match better. A greater ball possession creates a larger number of opportunities so they have a greater number of goal kicks ( $AS=14,83$ ) compared to the teams with smaller ball possession ( $AS=13,78$ ). These results are in accord with other authors (Castellana et al., 2012; Liu et al., 2015; Lago-Penas and Gomez-Lopez, 2014). Ball possession helps conquer parts of the field and keep the opponents far from the goal door so the match can be transferred to the opposite side. This disables the opponent in case they take possession of the ball and try to transfer it to the other goal. Also, teams that are in constant ball possession tire less and do less fouls while in defense ( $A=14,33$ ) unlike the other team that tire more and have a larger foul number ( $A=14,64$ ). Smaller ball possession number and more time spent in defense lead to defense tactics which can lead to more fouls and possible yellow cards ( $A=1,72$ ). Logically, teams on a higher level of technical and tactical quality exhibit higher values of offense tactics, while teams with less ball possession show higher values in parameters of defense tactics. Of course, there are certain individual cases where teams with more defense tactics win the match, but in a longer time period certain game segments linked to offense prevail. Applying the results of this research we can gain insight into domination of certain situational efficacy indicators in young football players which are applicable in the training process in order to enhance the quality of the player and the team. Also, it helps enlarge the knowledge about football notational systems.

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## RAZLIKE U INDIKATORIMA TIMSKE SITUACIJSKE EFIKASNOSTI U GRUPNOJ FAZI U-17 SVJETSKOG NOGOMETNOG PRVENSTVA U ČILEU

### Sažetak

Cilj ovoga istraživanja jest utvrditi razlike u pokazateljima situacijske efikasnosti između reprezentacija koje su prošle i reprezentacija koje nisu prošle grupnu fazu natjecanja na U-17 Svjetskom nogometnom prvenstvu 2015. godine u Čileu. Pokazatelji situacijske efikasnosti koji su korišteni u analizi skinuti su sa FIFA-ine službene stranice. Analizom su se utvrđivale razlike u 12 varijabli između ekipa koje su prošle i ekipa koje nisu prošle grupnu fazu natjecanja. Rezultati T-testa i Mann-Whitneyevog testa pokazali su kako se reprezentacije koje su prošle i reprezentacije koje nisu prošle grupnu fazu statistički značajno razlikuju u varijablama: posjed lopte ( $p=0.016$ ), postignuti pogoci ( $p=0.016$ ) i primljeni pogoci ( $p=0.001$ ). Također, temeljem dobivenih rezultata utvrđeno je kako se reprezentacije koje su prošle i koje nisu prošle grupnu fazu statistički značajno ne razlikuju u varijablama: udarci prema vratima ( $p=0.544$ ), udarci unutar okvira ( $p=0.241$ ), udarci izvan okvira ( $p=0.442$ ), udarci iz kuta ( $p=0.749$ ), slobodni udarci ( $p=0.676$ ), zaleđa ( $p=0.053$ ), prekršaji ( $p=0.789$ ), žuti kartoni ( $p=0.101$ ) te crveni kartoni ( $p>0.5$ ).

**Ključne riječi:** situacijska efikasnost, posjed lopte, svjetko prvenstvo, mladi nogometaši

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