

# How ball distribution on individual and team level affects attacking performance and team success in elite futsal

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## ABSTRACT

The study examined the impact of technical-tactical attacking indicators on futsal performance and differences between players and clubs by performance level. It included 111 elite players from the 1st Croatian Futsal League who played at least 600 seconds in the 2020–2021 season. Competitive performance was rated on a 1–5 Likert scale based on players' and clubs' competitive performance index (PCPI:1–3; CCPI:1–3). Indicators included ball receptions and ACTIVE and PASSIVE passes. Multiple regression ( $p < .05$ ) and ANOVA with Bonferroni post-hoc were used for statistical analysis and group comparisons. Significant effect ( $b^* = -0.20$ ,  $p = .047$ ) was found between PASSIVE (UN) and CCPI. On the other hand, ACTIVE (S) ( $b^* = 0.24$ ,  $p = .031$ ) and PASSIVE (UN) ( $b^* = -0.23$ ,  $p = .016$ ) were significantly associated with PCPI. CCPI3 significantly differed in RECEIVE (S) compared to CCPI1 / CCPI2 (20.59 vs. 16.53 / 16.40). CCPI3 performed significantly higher in PASSIVE (S) compared to CCPI1 and CCPI2 (19.33 vs. 14.25/14.32). PCPI3 also differed from PCPI1 and PCPI2 in RECEIVE (S) and PASSIVE (S). PASSIVE (UN) negatively affects both team and individual performance, while ACTIVE (S) are linked positively to competitive performance. Additionally, clubs and players with better ball distribution (RECEIVE (S) and PASSIVE (S)) are more likely to be successful.

**Keywords:** Performance analysis, Offense, Situational efficiency, Competitive index, Performance indicators.

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## INTRODUCTION

Futsal, a smaller version of traditional football, is a standardized indoor sport recognized by both FIFA and UEFA. The term "*futsal*" is derived from the Portuguese phrase *futebol de salão* or the Spanish *fútbol de sala*, both of which translate to "*indoor football*" (Moore et al., 2014). Futsal is an intermittent sport that makes high physical, technical, and tactical demands on players (Castagna, 2009). Increasingly popular method for assessing situational efficiency is notational analysis. The primary aim of notational analysis is to optimize feedback for both players and coaches to enhance performance (Liebermann et al., 2002). Additionally, notational analysis provides opportunities to analyse the intrinsic characteristics of the teams to improve the quality of the training and quality of the opponent's observation (Clemente, 2012). According to Nemčić et al. (2016) a futsal match provides an abundance of data on various characteristic events that reflect the situational efficiency of both players and the team. By analysing these events, it becomes possible to understand how and why one player gained an advantage over another, as well as to trace the sequence of actions that ultimately determined the outcome of the game.

Finally, one of the most crucial pieces of information for coaches is understanding the differences in variables between winning and losing teams (Göral, 2018; Souza et al., 2013), as this helps identify the patterns and structures of the game that lead to the best results. However, Moore et al. (2014) stated that there is evident lack of research and understanding regarding situational efficiency, which consequently limits our understanding of the various factors influencing performance in futsal. Also, Sivrić et al. (2023) suggested that there is a limited amount of scientific research on performance indicators in futsal. According to Agras et al. (2017), most studies on futsal rely on simple descriptive analysis, the dynamics of the game, and its complexity, without investigating the differences in specific situational indicators. Guided by this context, the research conducted by Fukuda and De Santana (2012) aimed to analyse the ways in which goals are scored in futsal. Their findings revealed that 24.3% of goals were scored through organized attacks, 23.1% through counterattacks, 24.3% from set pieces, and 21.8% because of goalkeeper involvement. Chen (2011) examined attack patterns and success indicators, noting that 43% of attacks originated from individual actions, 30% from combination play, 12% from counterattacks, 5% from set pieces, 4% from steals, 3% from wing attacks, and 3% from dynamic play. Other studies have highlighted the use of break-out actions as a significant threat to the opponent's goal, with figures ranging from 37% (Irokawa et al., 2010) to 46% (Leite, 2012), although Bueno and Alves (2012) reported a slightly lower incidence of 23%.

While there is limited research examining the relationship between technical actions, such as passing, and the final outcome of a match, the work of Nemčić (2019) stands out. She categorized passes into constructive, critical, and assistive, and determined that 50% of the observed competitive performance indicators (including passes) in futsal were linked to the final result of matches in the Croatian 1st Futsal League. On the other hand, the study by Sivrić et al. (2023) focused on the connection between defensive efficiency and competitive success. The results showed a significant relationship between futsal players' defensive performance and teams' success, with a correlation of 0.40 ( $p = .022$ ) between the predictor variables and the goal difference representing competitive success. Research on attacking efficiency in futsal showed notable differences between elite and semi-elite players. Better technical skills, as well as more successful passing, have been observed among elite futsal players (Mohammed et al., 2014). Additionally, Santos et al. (2020) reported that the key indicators distinguishing all-star players from others are goals scored and balls won.

Overall, the literature on situational efficiency in futsal is somewhat limited, which results in a lack of comparability between studies due to the absence of a unified methodology and the fact that many studies

lack a comprehensive overview (Sivrić et al., 2023). Given the current gaps in knowledge about futsal, further research is essential. Additionally, there is a shortage of studies addressing futsal excellence (Sekulić et al., 2021). As a result, the scientific community needs new, precise information and findings that will provide a deeper understanding of the game. Futsal has long been recognized as a sport with high technical demands; however, the number of studies focusing on detailed analyses of technical parameters, such as passing (Sivrić et al., 2021), and their impact on individual and team success remains limited. For example, existing futsal research rarely distinguishes the impact of specific ball distribution actions such as active and passive passes on individual and team situational efficiency. There is a gap in the scientific literature regarding certain parameters of situational efficiency and offensive performance in elite futsal. Furthermore, the analysis of parameters such as active and passive passing represents a valuable opportunity to advance both theoretical and practical knowledge in futsal (Setiawan et al., 2021). However, there is still limited evidence on how different functional types of passing actions, particularly active and passive passes, are related to situational efficiency and competitive success in elite futsal. Previous research has rarely distinguished between these two categories of ball distribution within performance analysis frameworks. Therefore, the primary aim of this study was to determine the influence of various technical-tactical indicators of attacking play on the performance of clubs and players with different levels of competitive efficiency in futsal. Within the main goal, the study seeks to determine how different types of passes (active and passive) and ball receptions contribute to situational efficiency (on individual and team performance). Additionally, the research aims to identify key performance indicators (KPIs) in ball distribution that can serve as predictors of offensive effectiveness and competitive success in futsal. The second goal is to examine whether there are significant differences in attacking performance indicators between groups of clubs and players categorized by competitive performance level.

## **METHODS**

### ***Participants***

The study involved elite male futsal players (N = 111) with an average age of 25.5 years ( $\pm 4.7$ ), with 5.2 years ( $\pm 4.1$ ) of competitive playing experience. The players were from all ten clubs of the 1st Croatian Futsal league (UEFA Men's Futsal National Team Coefficients = 6) during the first part of the 2020/2021 season. Between October 2nd and December 16th, 2020, all 45 games (100%) in the 9th round of the half-season were played and recorded. The total game duration was observed, with 98.46% of the time in all 45 games being documented. The participant sample was based on players who met the criteria of at least 600 seconds of playing time during first half of a competitive season. As a result, 90.24% of the players were included in the study. On average, 11.1 players ( $\pm 1.66$ ) per club were measured.

### ***Procedures***

This study employed an observational cross-sectional design based on notational analysis of match footage.

### ***Variables***

Situational efficiency was assessed through notational analysis during all matches in the first half of the 1st Croatian Futsal league 2020/2021 season. The average value of selected performance indicators was calculated for all players, based on a minimum of 600 seconds of playing time during first half of a competitive season. A minimum inclusion threshold of 600 seconds of playing time was applied to ensure sufficient exposure to match situations and to obtain more stable estimates of performance indicators. Players with very limited playing time were excluded to reduce variability and potential bias in the analysis. Prior to data collection, all observers underwent training conducted by the principal investigator, during which the operational definitions and assessment criteria for all performance indicators were thoroughly explained and

standardized. Data coding was subsequently performed according to these predefined criteria and a standardized observation protocol, ensuring consistency throughout the analysis process. In terms of situational efficiency, the match success was represented by the club's competitive performance. This was measured by the points obtained and the table rankings. The predictor variables, were recorded during offense phase the game as performance indicators, included:

- i. Successful RECEIVE (S) / unsuccessful RECEIVE (UN) - The event in the game was tested during the attacking phase, in which the player accepts and places the ball in their possession and/or control using the allowed parts of the body according to the futsal rules.
- ii. Successful ACTIVE (S) / unsuccessful ACTIVE (UN) - The event in the game was tested during the attacking phase, in which the player directs the ball forward with the aim of continuing possession and / or preparing the team for an attack with the goal of activating the game and / or achieving a positive transition and/or creating a favourable opportunity to score (assist, pre-assist).
- iii. Successful PASSIVE (S) / unsuccessful PASSIVE (UN) - The event in the game was tested during the attacking phase, in which the player passes the ball to a teammate with the aim of retaining possession, which does not contribute to the activation of the game.

### **Situational success**

The competitive performance of futsal players was assessed on a Likert scale from 1 to 5 based on two parameters: the players contribution to the team's performance and the club's rank in the league. Although this approach allowed the inclusion of practical expert knowledge, the authors acknowledge that coach-based evaluations contain a subjective component that may introduce bias into the assessment of individual competitive performance.

Each coach categorized their players into three groups regarding their contribution to the team's performance: *above average* – key players, *average* – other starting players and substitutes who contribute to the team's performance, *below average* – players who rarely or never play.

Table 1. Description of situational success.

<b>Clubs rank</b>	<b>Members of national team</b>	<b>Above average players</b>	<b>Average players</b>	<b>Below average players</b>
CCPI3 1. – 3. place	5	5	4	3
CCPI2 4. – 6. place	5	4	3	2
CCPI1 7. – 10. place	5	3	2	1

The PCPI was developed as a composite indicator combining team competitive success and expert evaluation of individual player contribution. This approach was intended to provide a broader assessment of competitive performance than team ranking alone, taking into account both team achievement and the player's role within the team structure. Subsequently, players competitive performance index - PCPI was defined as follows: PCPI3 – players competitive performance index 3, on Likert scale 5 and 4; PCPI2 - players competitive performance index 2, on Likert scale 3; PCPI1- players competitive performance index 1, on Likert scale 2 and 1.

*Club ranking:* Determined by the team's performance in the first part of the 1st Croatian Futsal league 2020/2021 season. Clubs were grouped into 3 categories: 1st - 3rd places (CCPI3 – clubs competitive performance index 3), 4th - 6th places (CCPI2 - clubs competitive performance index 2), 7th - 10th places (CCPI1 - clubs competitive performance index 1).

### Description of the experimental procedure

In the initial phase of the study, an interview was conducted with the representatives of the 1st Croatian Futsal league, and the teams selected for testing. Concurrently, a team of three individuals responsible for conducting the measurements underwent training. Additionally, all relevant variables were determined and defined, and three independent matches were observed and measured together before the start of the measurements for the 1st Croatian Futsal league matches.

The second phase involved the collection of data through measurements. Performance indicators were obtained from the match videos, which are a requirement for every 1st Croatian Futsal league game. These videos were gathered after each match, in cooperation with the 1st Croatian Futsal league commissioner, and were randomly distributed to those performing the measurements. At the end of the first half of the 2020-2021 competitive season, for each player, total situational efficiency and playing time were summed. To obtain each players situational efficiency in 600 seconds of playing time, total values were divided by their total playing time (in seconds) and multiplied the result by 600.

### Data analysis

The data processing method involved calculating descriptive statistical parameters. Means (M), standard deviations (SD), range (Min - Max) were computed after checking the normality of the distributions using the Kolmogorov-Smirnov test. A significance level of  $p < .05$  was set for all statistical tests. To confirm a significant influence on criterion variable, multiple regression analysis was conducted. The data was analysed using the Statistics ver.13.0 ((Dell Inc., Round Rock, TX USA) software. To determine the differences between clubs and players with varying situational efficiency, a one-way analysis of variance (ANOVA) was used, with Bonferroni post-hoc test for significant comparisons. Magnitude-based Partial eta Squared ( $\eta^2$ ) was also used with measures: 0.01-0.05 indicates a small effect, 0.06-0.13 indicates a medium effect and  $\geq 0.14$  indicates a large effect.

## RESULTS

A significant influence on the criterion variable (CCPI) was found in Table 2 ( $R = 0.39$ ,  $F = 3.06$ ). The predictor variables explained 15% of the variation in the dependent variable. Looking at the partial results, the variable that showed a significant effect ( $b^* = -0.20$ ) on the criterion variable was unsuccessful passive passes (PASSIVE), while the variable PASSIVE (S) was close to statistical significance ( $b^* = 0.53$ ).

Table 2. Multiple regression for clubs of different Competitive Performance Index (CCPI).

Variable	$b^*$	$b$	$t$	$p$
RECEIVE (S)	-0.09	-0.01	-0.38	.702
RECEIVE (UN)	0.13	0.20	1.02	.311
ACTIVE (S)	0.07	0.07	0.57	.567
ACTIVE (UN)	-0.11	-0.13	-0.94	.347
PASSIVE (S)	0.53	0.06	1.94	.055
PASSIVE (UN)	-0.20	-0.17	-2.01	.047*
R	0.39			
R <sup>2</sup>	.15			
F (6, 104)	3.06			
$p$	.009*			

Note.  $b^*$ : partial regression coefficient;  $b$ : regression coefficient,  $t$ : t-test value;  $p$ : level of significance;  $R$ : multiple correlation coefficient;  $R^2$ : coefficient of determination;  $F$ : F test result; \* - statistically significant correlation at the level of  $p < .05$ .

In Table 3, a significant influence of independent variables on the criterion variable (PCPI) was recorded ( $R = 0.53$ ,  $F = 6.73$ ). The predictor variables explained 28% of the variation in the dependent variable. Successful active passes ( $b = 0.24$ ) positively influenced the criterion variable, whereas unsuccessful passive passes ( $b = -0.23$ ) exerted a significant negative influence.

Table 3. Multiple regression for players of different Competitive Performance Index (PCPI).

Variable	b*	b	t	p
RECEIVE (S)	0.25	0.03	1.12	.265
RECEIVE (UN)	-0.03	-0.01	-0.02	.977
ACTIVE (S)	0.24	0.25	2.18	.031*
ACTIVE (UN)	0.01	0.01	0.10	.920
PASSIVE (S)	0.11	0.01	0.44	.659
PASSIVE (UN)	-0.23	-0.19	-2.47	.016*
R	0.53			
R <sup>2</sup>	.28			
F (6, 104)	6.73			
p	<.001			

Note. b\*: partial regression coefficient; b: regression coefficient, t: t-test value; p: level of significance; R: multiple correlation coefficient; R<sup>2</sup>: coefficient of determination; F: F test result; \* - statistically significant correlation at the level of  $p < .05$ .

In Table 4, significant differences (ES: medium) were found in two out of the total six variables of attacking performance. The number of successful ball receptions (RECEIVE) significantly differed between CCPI3 compared to CCPI1/CCPI2 ( $F = 5.56$ ,  $\eta^2 = 0.09$ ). Furthermore, a significantly higher (ES: medium) number of successful passive passes (PASSIVE) was recorded in clubs with the highest competitive index (CCPI3) compared to CCPI1 and CCPI2 ( $F = 6.54$ ,  $\eta^2 = 0.108$ ). The other four variables unsuccessful receptions ( $F = 0.22$ ,  $\eta^2 = 0.004$ ), successful active passes ( $F = 2.77$ ,  $\eta^2 = 0.05$ ) unsuccessful active passes ( $F = 1.75$ ,  $\eta^2 = 0.03$ ), and unsuccessful passive passes ( $F = 1.24$ ,  $\eta^2 = 0.022$ ) did not show significant differences between observed clubs.

Table 4. Differences between clubs of different Competitive Performance Index (CCPI).

Variable	CCPI1 (n = 4)		CCPI2 (n = 3)		CCPI3 (n = 3)	
	M (SD)	RANGE	M (SD)	RANGE	M (SD)	RANGE
RECEIVE (S)*	16.53C (5.72)	3.41-31.65	16.40C (4.83)	5.98-26.61	20.59 (7.24)	10.25-33.01
RECEIVE (UN)	0.72 (0.60)	0.00-2.88	0.67 (0.42)	0.09-1.84	0.64 (0.47)	0.00-2.00
ACTIVE (S)	1.19 (0.66)	0.00-2.95	1.23 (0.71)	0.00-2.56	1.59 (0.99)	0.00-3.84
ACTIVE (UN)	1.14 (0.74)	0.00-3.64	0.94 (0.62)	0.00-2.53	1.20 (0.51)	0.45-2.15
PASSIVE (S)*	14.25C (6.11)	0.96-30.98	14.32C (6.04)	1.71-25.84	19.33 (7.92)	5.71-30.93
PASSIVE (UN)	2.31 (1.12)	0.00-5.34	2.36 (0.93)	0.87-4.42	2.02 (0.77)	0.65-4.19

Note. M: arithmetic mean; SD: standard deviation; RANGE: minimum and maximum result; CCPI3: club competitive performance index 3; CCPI2: club competitive performance index 2; CCPI1: club competitive performance index 1, a: denotes significant differences from IKU1, b: denotes significant differences from CCPI2, c: denotes significant differences from CCPI3, \* - statistically significant differences at the level of  $p < .05$ , F: F test result,  $\eta^2$ : Partial eta squared.

In Table 5, significant differences (ES: Large) were found in the variable of successful ball reception (RECEIVE), which distinguished players with the highest competitive performance index (PCPI3) from those with PCPI1/PCPI2 ( $F = 14.41$ ,  $\eta^2 = 0.199$ ). Furthermore, the most successful players (PCPI3) had a significantly higher (ES: Large) number of successful passive passes compared to the other observed groups ( $F = 11.40$ ,  $\eta^2 = 0.174$ ). Other variables: unsuccessful receptions ( $F = 2.00$ ,  $\eta^2 = 0.036$ ), successful active

passes ( $F = 2.80$ ,  $\eta^2 = 0.06$ ) unsuccessful active passes ( $F = 1.80$ ,  $\eta^2 = 0.03$ ), and unsuccessful passive passes ( $F = 0.86$ ,  $\eta^2 = 0.016$ ) did not significantly differentiate players with varying performance levels.

Table 5. Differences between players of different Competitive Performance Index (PCPI).

Variable	PCPI1 (n = 39)		PCPI2 (n = 35)		PCPI3 (n = 37)	
	M (SD)	RANGE	M (SD)	RANGE	M (SD)	RANGE
RECEIVE (S)*	14.94C (5.88)	3.41-31.65	16.73C (4.00)	7.88-25.47	21.38 (6.41)	10.28-33.01
RECEIVE (UN)	0.80 (0.64)	0.00-2.88	0.64 (0.42)	0.00-2.00	0.59 (0.37)	0.08-1.29
ACTIVE (S)	1.01 (0.65)	0.00-2.81	1.13 (0.60)	0.00-2.25	1.82 (0.87)	0.27-3.84
ACTIVE (UN)	0.91 (0.78)	0.00-3.64	1.07 (0.51)	0.15-2.53	1.28 (0.53)	0.45-2.15
PASSIVE (S)*	12.69C (6.43)	0.96-30.98	15.05C (5.21)	4.55-25.04	19.61 (7.34)	7.12-30.93
PASSIVE (UN)	2.27 (1.21)	0.00-5.34	2.39 (0.88)	0.86-4.38	2.09 (0.72)	0.65-4.19

Note. M: arithmetic mean; SD: standard deviation; RANGE: minimum and maximum result; PCPI3: players competitive performance index 3; PCPI2: club competitive performance index 2; PCPI1: players competitive performance index 1, a: denotes significant differences from PCPI1, b: denotes significant differences from PCPI2, c: denotes significant differences from PCPI3, \* - statistically significant differences at the level of  $p < .05$ , F: F test result,  $\eta^2$ : Partial eta squared.

## DISCUSSION

The main objective of this study was to determine the influence of attacking performance indicators on competitive performance index at both the club and individual levels in elite futsal. A secondary objective was to examine whether differences in these indicators exist between groups with varying levels of competitive performance.

Ball distribution parameters significantly influenced both club competitive performance index (CCPI) and players competitive performance index (PCPI) with 15% and 28% of the explained variance, respectively. Within the observed variables, PASSIVE (UN) influenced negatively both the team and individual performance. Additionally, significant positive influence of ACTIVE (S) on individual player performance was obtained. Furthermore, significant differences were obtained between different ranks of CCPI and PCPI in RECEIVE (S) and PASSIVE (S), further emphasizing importance of ball distribution during futsal matches.

Club competitive performance (CCPI) was negatively influenced by unsuccessful passive passes (PASSIVE (UN)). On the other hand, CCPI was positively influenced with successful passive passes (PASSIVE (S)), however, slightly missing statistical significance ( $p = .055$ ). Possible reason for these results is that a lower number of unsuccessful passes may reduce number of opportunities for opponents to regain possession and initiate counterattacks. Additionally, higher number of successful passes, even passive ones, contributes to team efficiency via ball possession and game control.

Significant influence at the individual level were found between PCPI and two parameters: successful active passes and unsuccessful passive passes. These findings are consistent with previous research and suggest that passing accuracy, especially in situations where players are under opponent pressure, is linked to individual success (Santos et al., 2020; Spyrou et al., 2023). Furthermore, mistakes in passive passes, which are most often made without substantial opponent pressure, were related to lower levels of individual performance. These results highlight the potential importance of ball-handling skills, as passing errors may negatively influence both individual and team performance.

Clubs with the highest competitive level (CCPI3) demonstrated a significantly greater number of successful ball receptions compared to clubs with lower competitive rankings (CCPI1 and CCPI2). According to

Dogramaci et al. (2015) a team's success lies in the fact that, if they manage to retain possession of the ball, they can more easily control and dictate the game. Ismael and Nunome (2020) showed that hybrid models of ball possession are effective in distinguishing more successful teams from less successful ones. Furthermore, a significantly higher success rate in passive passes (PASSIVE(S)) indicates that these clubs have better ball distribution and game control. A higher number of such passes can also be associated with a more deliberate tactical strategy by these teams, who rely less on risky passes and thus reduce the possibility of losing possession. The other variables did not prove to be significant, which may suggest that parameters such as ball reception mistakes and active passing are not critical for discriminating teams of different competitive performance levels (CCPI).

Similar to the differences in CCPI, differences were found in successful ball receptions and successful passive passes for individual PCPI. These results are supported by previous research, which also found significant differences between players of different quality in variables that assess successful passing (Mohammed et al., 2014; Santos et al., 2020; Spyrou et al., 2023). One characteristic of higher-performing players may be greater efficiency in receiving and distributing the ball. Consequently, players who perform these technical actions more effectively may be better positioned to maintain possession and support overall team performance. Certain indicators, such as active passing, are not as strongly associated with individual player success as ball reception and passive passing. The present findings indicate that ball reception and passive passing were among the variables most consistently related to individual competitive performance.

### ***Practical implications and limitations***

The results of this study provide additional insight into the influence of ball distribution on the performance at both the team and individual level. Certain technical parameters, like number of successful passive passes, appear to be related to competitive performance, which should be considered when reflecting on training process design and performance evaluation. These findings may contribute to more efficient and targeted planning and programming of the training process. Also, the number of successful passive passes and ball receptions may help distinguish more successful from less successful teams and players, which can serve as a useful tool during player selection process. This study had several limitations, primarily related to the fact that the time intervals of players on the field were summed regardless of the current score. For example, a problem may arise in situations where the team is losing, leading players to attempt riskier (active) passes, which can consequently result in a higher number of mistakes. Furthermore, tactical aspects of the matches were not controlled during this research. Another limitation of this study relates to the construction of the Player Competitive Performance Index (PCPI). Part of this index was based on coach evaluations of player contribution, which inevitably includes a subjective component. Although precise operational criteria were predefined, the lack of structured procedures and the absence inter-observer and intra-observer reliability calibration may have influenced the consistency of data coding. Consequently, some degree of classification bias cannot be excluded. Another limitation of the present study is the relatively low proportion of explained variance, particularly at the team level. This finding suggests that competitive success in futsal is influenced by numerous factors beyond the ball distribution variables included in this study. Future studies should incorporate a broader range of performance indicators to develop more comprehensive models of futsal success.

## **CONCLUSION**

The results of this study indicate that ball distribution is related to attacking performance at both the individual and team level during professional futsal competition. Clubs and players performance index were negatively influenced by unsuccessful passive passes, while PCPI was positively influenced by successful active

passes. Furthermore, ball control obtained through passive passing and ball receiving appears to contribute to differences between more successful and less successful players and teams. Results emphasize importance of accurate ball distribution, as one of important factors for futsal success both on the individual and on the team level. As such, it should be evaluated thoroughly during players selection process and match team analysis. For future research, it would be good to explore influence of *current score* during matches on the variables of situational efficiency for both clubs and players.

## AUTHOR CONTRIBUTIONS

All authors meet the criteria for authorship in accordance with established ethical guidelines. Contributions are specified according to the CRediT (Contributor Roles Taxonomy) as follows:

Conceptualisation: Hrvoje Sivrić. Methodology: Hrvoje Sivrić. Formal analysis: Jakov Marasović. Investigation: Hrvoje Sivrić, Tomislav Lopac. Data curation: Hrvoje Sivrić, Tomislav Lopac. Writing – original draft: Hrvoje Sivrić. Writing – review & editing: Jakov Marasović, Ante Rađa, Marko Erceg. Supervision: Ante Rađa, Marko Erceg. All authors have critically reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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## CONFLICT OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this manuscript.

## AI USE DISCLOSURE

In accordance with current publishing ethics and transparency recommendations, artificial intelligence (AI) tools were used solely to assist with translation and language editing, with the aim of improving clarity and readability. No AI tools were used in the generation of scientific content, including the study design, data collection, analysis, interpretation of results, or the formulation of conclusions. The authors retain full responsibility for the content of the manuscript and confirm its originality, integrity, and accuracy.

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