



# Speed and Agility on Futsal Dribbling Ability: Correlation Study

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**Abstract.** Futsal is a well-liked team sport right now and is even a national sport in every nation. The aspects of futsal that allow players to freely display their skills while still being constrained by the applicable regulations of the game have contributed to the sport's development.

The goal of this study is to ascertain how speed and agility affect a player's ability to dribble in futsal. The research methodology combines correlational studies with a causal study design with three (three) variables. The goal of this study is to determine the contributions of independent and bound factors (dependent). Speed and agility are independent variables while the other variables are dependent (dribbling). The complete MBO futsal player population constituted the study's sample. Purposive sampling, a sample selection method with unique considerations, is applied, and the top players those with good speed, agility, and dribbling ability are chosen. The findings of this study can be summarized as follows: (1) speed contributes to futsal dribbling ability; (2) agility contributes to futsal dribbling ability; and (3) speed and agility together contribute to futsal dribbling ability. However, the study is required to take into account the psychological variables, social context, and additional physical aspects related to this study.

**Keywords:** Futsal · speed · agility · and dribbling

## 1 Introduction

Exercise is described as a structured and planned physical activity by following the necessary regulations with the purpose not only to make the body fitter but also to gain achievements [1]. Exercise is the best way to build a healthy physique. Islam places a high value on health since it is both the most valuable treasure that can never be swapped for anything else and one of the key variables that can affect fitness and physical beauty [2]. A scheduled, structured physical activity with repetitive bodily movements that aims to increase physical fitness is called an exercise [3]. Additionally, sports not only help to nourish the body and the soul, but they also help to develop collaboration and sportsmanship [4]. Sports serve as a platform for developing self-discipline by highlighting the value of diligence, perseverance, conscientiousness, and concentration [5].

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The game of futsal, which was invented in 1930 in Montevideo, Uruguay, by Juan Carlos Ceriani [6], is one of the sports associated with physical activity. Futsal's distinctiveness is becoming more widely known in South America, particularly in Brazil. Football is played indoors in the sport of futsal, which is played by teams of five players each. Futsal is a popular sport and is liked by all sections of society, notably men spanning from children, teenagers, and adults. This is clear from the fact that futsal continues to be preferred by the majority of people in society over other sports.

Futsal games use comparable fundamental game mechanics to soccer games, such as kicking, passing, dribbling, and shooting into the goal of the opposition [7–10]. When viewed in terms of futsal skill techniques, they are essentially identical to those used on a grass court. The only fundamental difference in futsal is that players must control or hold the ball using their soles due to the hard field surface; otherwise, the opposing player will simply grab it [11]. "Futsal is a dynamic sport that requires players to be constantly on the move, have good technical ability, and have high levels of dedication [12].

Playing futsal demands numerous components of suitable physical abilities such as strength, acceleration, speed, balance, and endurance. The use of skills and tactics both individually and as a team will be influenced by a player's physical condition, thus it goes without saying that the above physical components must be taught adequately without neglecting other physical components. Physical condition is a unity of various elements that cannot be divided, both in terms of improvement and upkeep, claims" [13–15]. Research has led to Strength, stamina, explosive power, speed, flexibility, agility, coordination, balance, accuracy, and responsiveness make up physical condition [16–18]. The speed and agility of the futsal MBO players at the Muhammadiyah University of Surakarta are two of the factors that were studied. Technique, tactics, and mentality need to be strong enough to support the physical condition. It takes consistent, ongoing training that begins at a young age to attain success in sports [19]. At the University of Muhammadiyah Surakarta, which has a futsal GOR field facility, researchers conducted their studies. The Campus MBO is interested in the futsal game itself. Scholars' own motivation The MBO To increase the predation of MBO futsal expansion, it is necessary to have exercise patterns and exercise programs whose structure can be formed from the results of data analysis of each athlete's abilities, based on the existing literature of futsal players influenced by several physical components and techniques dominant achievement conflicting by technical abilities. Predation has not yet reached the national level. Dribbling is one of the key strategies when playing futsal. Based on research findings, kids in sports education who play futsal MBO still have poor dribbling skills. Interviews with researchers and futsal coaches or coaches must be used to support the claim. It was felt necessary to conduct research to peel or analyze the factors that support and determine the speed and agility of dribbling futsal MBO players in sports education programs, so the researcher wants to take the title "Contribution of Speed and Agility to the Dribbling Ability of Futsal Mbo Players In Sports Education Study Program of Muhammadiyah Uni." The coach or coach mentioned that some players cannot forgive, especially dribbling techniques.

The goal of this study, which is based on the aforementioned formulation of the issue, is to identify: (1) the contribution of speed to the dribbling ability of futsal players at the Muhammadiyah University of Surakarta; (2) the contribution of agility to the

dribbling ability of futsal players at the Muhammadiyah University of Surakarta; and (3) the contribution between speed and agility to the dribbling ability of futsal players at the Muhammadiyah University of Surakarta.

## 2 Method

The survey approach utilized in this study for this sort of research is causal with correlational investigations employing 3 (three) variables. The goal of this study is to determine the contributions of independent and bound factors (dependent). Speed and agility are independent variables while the other variables are dependent (dribbling). The MBO volunteers who served as the study’s subjects in 2022 were given questionnaires as part of the data collection technique. During the MBO, these formal observations were made in the field. The MBO competitors’ dribbling speed and agility were observed and recorded.

## 3 Results and Discussion

### 3.1 Research Results

#### 3.1.1 Descriptive Analysis Results

The University of Muhammadiyah Surakarta research on MBO futsal found that speed and cleverness contribute to the ability to dribble, which is described in the conclusions of a descriptive analysis using average values, minimum values, maximum values, and range values. Regarding the explanation in Table 1:

According to Table 1’s descriptive analysis results, the average speed treatment is 35.33, the average agility is 4.0225, and the average dribbling skill is 40.92. This demonstrates that in futsal games, there is an average disparity in speed and agility in dribbling skills. After the findings of the descriptive analysis are detailed thoroughly, it is proceeded with the data normality test is a prerequisite for the research hypothesis test, as the results of the normality of the research data can be seen in the normality test Table 2.

**Table 1.** Frequency Descriptive Analysis Results

Statistics	Research variables		
	Speed (X <sub>1</sub> )	Agility (X <sub>2</sub> )	Dribbling Skills (Y)
Number of Samples	12	12	12
Average value	35.33	4.0225	40.92
Range	16	1.66	15
Minimum Value	25	3.16	33
Maximum Value	41	4.82	48

**Table 2.** Kolmogorov-Smirnov Z normality test results

Statistics	Research variables		
	Speed ( $X_1$ )	Agility ( $X_2$ )	Dribbling Skills (Y)
Number of Samples	12	12	12
Kolmogorov-Smirnov Z	0.769	0.520	0.602
Asymp. Sig. (2-tailed)	0.595	0,950	0.862

**Table 3.** Homogeneity test results

Group	$\chi^2$	$\chi^2$ tables $\alpha = 0.05$	Sig. (p)	Conclusion
Pretest *Posttest	10.498	21,026	0,509	Homogeneous

### 3.1.2 Data Normality Test

It was found to be higher than the value of  $\alpha = 0.05$  based on the findings of the data normality test in the Kolmogorov-Smirnov Z (KS-Z) value table in the complete data group. Thus, it may be said that the study's sample originated from a population with a regularly distributed population. This result implies that, since the first requirements for hypothesis testing have been satisfied, parametric statistical analysis can be utilized to assess the hypothesis put forth in this study. Furthermore, a homogeneity test was conducted out with the Barlett test at the threshold of  $\alpha = 0.05$ . Analysis's summary of the results of the Barlett test's homogeneity analysis Table 3 displays the results of the one-way Anova test for homogeneity of variances.

### 3.1.3 Homogeneity Test

The test results show that the Levene test yielded a value of 10,498 and a significant degree  $(p) = 0.509 > 0.05$ , or the test shows that the value of two counts is lower than the value of two tables with a significant degree  $(p) = 0.509$ , indicating that the eight groups of data tested are from a population with homogeneous variance. Based on the two tests' results, it can be determined that the analysis conditions needed for variance analysis are satisfied, making it possible to undertake additional research on how speed and agility affect upper dribbling skills in MBO futsal athletes. The findings of the hypothesis test to ascertain the importance of the influence of the contribution of speed and agility on dribbling skills in MBO futsal athletes are shown in Table 4 after the test conditions are met.

### 3.1.4 Hypothesis Test

#### 3.1.4.1 The Contribution of Speed ( $X_1$ ) to Dribbling Ability (Y)

After consulting with the importance of the guideline interpretation of the correlation coefficient Sugiyono in a strong category [20]. Koefisien correlation double (R) in Table

**Table 4.** Correlation coefficients and determination of Y over X<sub>1</sub>

R	R Square	Adjusted R Square	Std. the error in the Estimate
.693 <sup>a</sup>	.480	.428	3.569

**Table 5.** Guidelines for providing interpretations of correlation co-efficiencies

Coefficient interval	Relationship level
0,00–0,199	Very Low
0,20–0,399	Low
0,40–0,599	Keep
0,60–0,799	Strong
0,80–1,000	Very Powerful

**Table 6.** Correlation coefficient and determination (Y) over X<sub>2</sub>

R	R Square	Adjusted R Square	Std. the error in the Estimate
.780 <sup>a</sup>	.609	.570	3.095

5 acquired a value of 0.693. Table 5 provides more details regarding the interpretation of the correlation coefficient's significance.

Additionally, the R Square analysis (coefficient of determination) yielded a value of 0.480, indicating that the multiple regression contribution of the speed variable is responsible for 48% of the total variation in dribbling skills (Y) (X<sub>1</sub>). This indicates that 48% of speed data (X<sub>1</sub>) directly affects dribbling skills (Y) and that the remaining 52%, or (100% – 48% = 52%), is driven by other factors such environmental effects, student interests, student health conditions, student mental states, and related to futsal playing skills.

### 3.4.1.2 The Contribution of Speed (X<sub>2</sub>) to Dribbling Skills (Y)

After consulting the significance of the correlation coefficient interpretation guidelines Sugiyono in the strong category [20]. The correlation coefficient (R) in Table 7 was given a value of 0.780. Table 6 shows the findings of the interpretation of the correlation coefficient's significance in more detail. Additionally, the R Square analysis (coefficient of determination) yielded a value of 0.609, indicating that the speed variable's multiple regression contribution is responsible for 60.9% of the variation in the overall level of a futsal athlete's service skills (Y). (X<sub>2</sub>). This indicates that, of the speed data (X<sub>2</sub>), 60.9% directly contribute to dribbling skills (Y), and the remaining 39.1%, or (100% – 60.9% = 39.1%), is caused by other factors like environmental influences, student interests, student health conditions, student mental states, and related to futsal playing skills.

**Table 7.** Correlation coefficient and determination of Y over  $X_{1,2}$ 

R	R Square	Adjusted R Square	Std. an error in the Estimate
.792 <sup>a</sup>	.628	.545	3.184

### 3.4.1.3 Simultaneous Contribution of Speed ( $X_1$ ) and Agility ( $X_2$ ) to Dribbling Skills (Y)

After consulting the importance of the correlation coefficient interpretation guidelines Sugiyono in the strong category, the multiple correlation coefficient (R) in Table 7 was given a value of 0.792. Table 6 shows the findings of the interpretation of the correlation coefficient's significance in more detail. Additionally, the R Square analysis (coefficient of determination) yielded a value of 0.628, indicating that the multiple regression contribution of the speed and agility variables accounts for 62.8% of the overall variation in dribbling skills (Y). ( $X_{1,2}$ ). Accordingly, 62.8% of the speed and agility data ( $X_{1,2}$ ) directly influence dribbling skills (Y), while the remaining 37.2%, or ( $100\% - 62.8\% = 37.2\%$ ), is caused by other factors like environmental influences, interests, student health conditions, mental states, and those related to futsal playing skills [8].

Based on these results, it can be concluded that the termination coefficient (R) between velocity ( $X_1$ ) and agility ( $X_2$ ) simultaneously towards dribbling skills (Y) has a contribution, or  $H_0$  is rejected and accepted  $H_1$ . Thus it can be concluded that there is a contribution of speed and agility to dribbling skills in futsal MBO. This means that the coefficient can be generalized or can apply to the overall population of athletes where a sample of 12 people is taken.

The study's findings are based on research by Gunawan: In order to increase the fundamental technical abilities of dribbling, trainers or sports professionals must carefully establish training techniques, workout plans, and evaluations. The physical components, including leg strength and agility, might be the focus of developing dribbling skills. Gunawan's research strengthened the study. Speed and agility demonstrated a considerable positive correlation with the futsal balls' ability to dribble, and this correlation was significant [21]. The study was strengthened by the research Gunawan There was a significant relationship between speed and agility to the dribbling ability of futsal balls, and had a very strong positive relationship [8]. With a coefficient of determination of 85.4%, the magnitude of the association between speed and agility and the futsal ball's dribbling skill is 0.923. While Arham's team significantly contributed strength, speed, agility, and confidence to engineering skills in futsal games, together with SMA Negeri 8 Makassar kids, they also significantly contributed strength, speed, agility, and confidence [12].

## 4 Conclusion

Thus it can be concluded that (1) there is a contribution of speed to dribbling skills in futsal MBO; (2) there is a contribution of agility to dribbling skills in futsal MBO, and (3) there is a simultaneous contribution of speed and agility to dribbling skills in futsal MBO. Based on these findings, researchers believe that to improve the dribbling skills

and achievements of athletes, one of them is to identify speed, and agility. However, subsequent research is needed to determine futsal playing skills taking into account the social, psychological, and related environment in improving dribbling skills.

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