



## Examining the determinant factor of football technical skills

### *Análisis del factor determinante de las habilidades técnicas en el fútbol*

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#### Abstract

**Introduction:** Football sport has various factors that affect achievement, including physical condition, technique, tactics and mentality.

**Aim:** This study aims to examine Correlation between training motivation, physical fitness and motor educability with the level of football technical skills in football athletes.

**Method:** The method utilized a correlational statistical quantitative method. The sample in this study was 14 football athletes. The measurement of Training Motivation was carried out using a questionnaire. Physical fitness using Vo2Max test. Motor educability measurement using motor tests. Measurement of football skills using a football skill test.

**Data analyze** is operating the SPSS 21 application to examine the normality and linearity of the data. A correlational test is utilized to determine a correlation among the variables.

**Results:** The results revealed that the training motivation of football athletes displayed a score of 79.09 (good category). Physical fitness results showed an average score of 42.16 (good category). The motor educability results of football athletes display a score of 30.78 (good categories). The results of basic football technical skills scored 8.14 (good category).

**Conclusions:** The better the athletes' training motivation, physical fitness, and motor skills, the better the skill level for mastering basic football techniques.

#### Keywords

Football technique skill; motor educability; physical fitness; training motivation.

#### Resumen

**Introducción:** El deporte del fútbol tiene varios factores que afectan a los logros, como la condición física, la técnica, la táctica y la mentalidad.

**Objetivos:** Este estudio pretende examinar la correlación entre la motivación para el entrenamiento, la condición física y la educabilidad motriz con el nivel de habilidades técnicas futbolísticas en deportistas de fútbol.

**Método:** Se utilizó un método estadístico cuantitativo correlacional. La muestra de este estudio fue de 14 atletas de fútbol. La medición de la motivación para el entrenamiento se realizó mediante un cuestionario. Aptitud física mediante la prueba Vo2Max. Medición de la educabilidad motriz mediante pruebas motrices. Medición de la habilidad futbolística mediante un test de habilidad futbolística.

El análisis de los datos se realiza con la aplicación SPSS 21 para examinar la normalidad y la linealidad de los datos. Se utiliza una prueba correlacional para determinar la correlación entre las variables.

**Resultados:** Los resultados revelaron que la motivación para el entrenamiento de los deportistas de fútbol mostraba una puntuación de 79,09 (categoría buena). Los resultados de la aptitud física mostraron una puntuación media de 42,16 (categoría buena). Los resultados de la educabilidad motriz de los deportistas de fútbol mostraron una puntuación de 30,78 (buena categoría). Los resultados de las habilidades técnicas básicas del fútbol obtuvieron una puntuación de 8,14 (categoría buena).

**Conclusiones:** Cuanto mejor sea la motivación para el entrenamiento, la condición física y la capacidad motriz de los.

#### Palabras clave

Habilidad técnica futbolística; educabilidad motriz; condición física; motivación para el entrenamiento.

## Introduction

Football is a popular team sport in all circles, both children and adults. It is essential to master various basic football techniques to improve football playing skills (Hadiana, Syamaun, and Ratnawati 2023; Sucipto et al. 2019). The primary football techniques are stopping the ball, shooting, passing, heading, and dribbling (Danurwindo and Barry 2014). Many factors influence conducting an achievement, including physical condition, technique, tactics, and mental (psychic) (Wahyudi 2019). Generally, the factors determining maximum performance achievement are endogenous and exogenous (Apriansyah, Sulaiman, and Mukarromah 2017).

The most significant psychological factor influencing an athlete's performance is motivation. Motivation is goal-oriented human behavior, motivated by the desire to achieve specific purposes (Carsiwan 2016; Komarudin 2010). An athlete's learning and practicing football success is strongly influenced by structured and well-constructed learning motivation. Motivation is a drive to participate in football training for high achievement. Training motivation is closely related to the seriousness and determination of players to practice diligently and passionately.

Training motivation is also essential in improving passing ability in football; the higher the motivation to practice, the better the passing ability. The quality of training determines the achievement of athletes (Rinaldi et al. 2024). In contrast, quality training can be obtained if supported by various supporting sciences, including psychological, anatomical, physiological, biomechanics, statistics, measurement tests, motion learning, history of science, sociology, sports health, and nutrition (Harsono 2017; Kuan and Roy 2007).

Quality training is required and needs supporting sciences such as psychology. The psychological aspect significantly influences the athlete's desire to participate in training, even if the athlete already has a sufficient physique (Muskanan 2015). Motivation to practice encourages and directs behavior toward achieving goals in higher education (Gao et al. 2011; Wahyudi 2019). The results of similar studies state that increasing student learning motivation is in line with improving learning outcomes, and learning motivation has encouraged the achievement of training goals (Zulkarnain and Haqiyah 2018). Motivation affects skills in playing football; players with high motivation will quickly improve their ball-playing skills, and players with low motivation will find it challenging to improve their performance (Efendi 2016). Further, the high motivation of football players will increase their achievement, contributing motivation to achievement by 24% (Apriansyah et al. 2017).

Another factor related to the achievements and skills of football athletes is the level of physical fitness. Physical fitness is the body's ability to perform various physical activities without excessive fatigue and still feel fit to perform the next physical task (Listiandi et al. 2020; Monteiro et al. 2019; Suhartoyo et al. 2019). Furthermore, physical fitness is an essential aspect of the psychomotor domain that aims to develop biological abilities and functional functions of body organs (Giriwijoyo and Sidik 2012; Kusnandar et al. 2019).

Physical fitness requires consistent coaching to maintain the body healthy and fit. The essential component of physical fitness is aerobic endurance. Aerobic endurance is vital to maintain the body's ability to perform aerobic activities for a long duration. Excellent aerobic endurance is essential for athletes in complex game sports such as football due to the long duration, large field, high mobility, and complex movement skills (Bowman et al. 2020; Herdiles and Komarudin 2017; Ilisaputra and Suharjana 2016). Referring to previous studies, physical fitness conditions in aerobic endurance for football players closely correlate with endurance factors (stamina).

Poor stamina conditions impact uncontrolled basic techniques and inaccurate, weak, and wrong kicks (Mishra, Pandey, and Chaubey 2015; Setiawan, Soetardji, and Nugroho 2014). Similar research also shows that Vo2Max is a critical factor in football (Manisha 2018; Milanović et al. 2015). In its development, football requires good physical fitness conditions in terms of aerobic endurance components measured through Vo2Max levels and good motor skills. The skill of performing motor adaptation is indispensable, and the intelligence to accomplish various strategies to move is needed. The speed of athlete movements can be measured using the Motor educability test.

The ability to comprehend motion (motor educability) is a crucial factor in developing and forming sports skills. An athlete with high motor skills is expected to complete specific motor skill tasks (Barnett



et al. 2016; Budi et al. 2019). Another expert stated that athletes with suitable movement learning abilities acquire technical skills faster than less talented and low-intelligence (cognitive abilities) athletes (Holfelder & Schott, 2014; Kusnandar et al., 2021; Setiawan et al., 2020). Research studies (Hamidi 2019; Kashyap 2017; Lesmana 2018) reveal a correlation between training learning methods and motor education on technical sports skills. Research by Murti (2018) states that gender affects motor development. Male athletes quickly master movement control skills compared to females. Female athletes tend to master locomotor skills quickly.

The novelty of this research is that it identified skills for mastering football techniques by combining variables of training motivation, physical fitness, and motor educability with the level of football technique skills in student-athletes. This research contributes to developing a comprehensive sports coaching program that combines internal and external factors of athletes to achieve maximum performance.

## Method

The research used a statistical approach and specifically utilized the correlational method. The researchers observe phenomena at a particular time (Sugiyono 2018). This study examined the Training Motivation, Physical Fitness, Motor educability, and Skill Level of Football Techniques in Student-athletes. The research location is on the Jenderal Soedirman University football field in Indonesia. This study also involved coaches and management teams of student-athletes of the football club.

### Participants

This study took samples from student-athletes of Jenderal Soedirman University, Indonesia. Participants in this study were 14 male athletes aged 18-20 years. The sample selection used a purposive sampling technique.

### Procedure

Motivation Measurement Practice uses questionnaires involving professional psychologists to ensure psychological aspects measurements can be carried out credibly and validly. Physical fitness was measured using a Bleep Test with a validity and reliability level 0.91. The Bleep Test is accomplished by running in a 20-meter ball back following the rhythm of the music. Measure motor educability skill level using motor skill tests by performing various movements, determining the speed at which an athlete masters new movements. The Bleep test has a validity and reliability of 0.97. Furthermore, to determine the skill level of football techniques, a football skill test is utilized with a level of validity and reliability of 0.85. Three experts assessed the implementation of measuring basic football technical skills.

### Data analysis

The data collection procedure is carried out by conducting direct tests on athletes in the field. The data obtained then be analyzed with normality tests, data linearity, and correlation tests using the SPSS program.

## Results

The results of filling out questionnaires and processing training motivation data on a sample of student-athletes are listed in Table 1 below.

Table 1. Motivation Level of Practicing Football Athletes

Indicator	Sub Indicator	P=F/N x 100%	Index (%)	Category
Intrinsic	Physiology	248/320 x 100%	77.5%	Good
	Psychology	198/240 x 100%	82.5%	Excellent
	Facilities and Infrastructure	255/320 x 100%	79.68%	Good
Extrinsic	Exercise Method	94/120 x 100%	78.33%	Good
	Coach	126/160 x 100%	78.75%	Good
	Environment	123/160 x 100%	76.87%	Good
Total		1.044/1.320 x 100%	79.09%	Good



The table shows the results of an evaluation of a program or project. The evaluation assessed different aspects of the program, divided into intrinsic and extrinsic categories. The intrinsic category examines the program's internal factors, such as the physiology and psychology of the participants. The extrinsic category examines the program's external factors, such as available facilities and infrastructure. The evaluation for each aspect is measured as a percentage of the total points possible.

The evaluation reveals that the program is accomplishing well overall, with a total score of 79.09%. The program scored particularly well in the psychology aspect (82.5%), which suggests that the program positively impacts the participants' mental well-being. The program correspondingly scored well in the facilities and infrastructure aspect (79.68%), which indicates that the program has access to adequate resources. However, the program could improve in some areas, such as physiology (77.5%) and environment (76.87%). The evaluation suggests that the program could focus on improving the physical well-being of the participants and the environment in which the program is delivered. The evaluation suggests that the program is effective and positively impacts the participants. However, there is space for improvement in certain areas.

The program can improve its effectiveness and impact the participants by addressing these areas. Physical fitness tests were conducted to determine football student-athletes' cardiorespiratory endurance levels. The examination utilized is the Multilevel Fitness Test (MFT). The test results are shown in Table 2.

Table 2. Football Student MFT Test Results

No	Category	Total
1	Excellent	1
2	Good	7
3	Intermediate	4
4	Bad	2
5	Extremely Bad	0
Total		14

Based on the table of fitness test results using MFT, it is known that as many as two students have less fitness, four medium categories, seven people have good categories, and one person has excellent physical fitness. The average level of physical fitness (Vo2 Max) owned by student-athletes is 42.16, or in the good category, with a standard deviation value of 6.90. based on these fitness data, the data concluded that the physical fitness condition (Vo2Max) of student-athletes was in a Good category.

Table 2 shows the results of a football skill test. The test is divided into five categories: excellent, good, intermediate, bad, and extremely bad. The table shows the number of people who scored in each category. The total number of people who took the test is 14. Seven (7) people scored excellent, six scored good, one scored intermediate, 0 scored bad, and 0 scored extremely bad. These results suggest that most people who took the test performed well. The test appears challenging, as many participants scored very well, while a smaller number scored well or better. These results indicate a potential requirement for improvement for those scoring at an intermediate level. However, the data also shows no one scored poorly on the test. This table provides a good overview of the football skill test results.

The motor educability test was conducted to determine the level of motor skills possessed by football student-athletes. The test results are shown in Table 3 below.

Table 3. Motor Educability Test Results

No	Category	Total
1	Excellent	6
2	Good	4
3	Intermediate	4
4	Bad	0
5	Extremely Bad	0
Total		14

Based on the motor skill test table based on motor educability tests, the results were obtained that as many as six athletes were in the Excellent motor skills Category, four in the Bad Category, and four

athletes in the Intermediate Category. Based on these data, the data concluded that the motor skills of football student-athletes were in the average Good Category.

Football skill tests involve athletes executing stopping, dribbling, and shooting passing skills in a football game carried out sequentially and in a series. The test results are shown in Table 4.

Table 4. Football Skill Test Results

No	Category	Total
1	Excellent	7
2	Good	6
3	Intermediate	1
4	Bad	0
5	Extremely Bad	0
Total		14

Based on the table of basic football technical skill tests, results were obtained that as many as one athlete was in the medium category, six athletes in the good category, and seven athletes in the excellent category. Football student-athletes average level of football skills is 8.14 or in the Good Category, with a standard deviation value of 1.03. based on these data, the data concluded that the skills of Unsoed football student-athletes were in the Good Category.

### Data Normality Test

Data normality tests are carried out to determine whether the research data is normally distributed. It is carried out with a normality test using SPSS, provided that if the value of data significance > 0.05 determines the normality of the data, the data is distributed normally. The results of the data normality test are shown in Table 5 below.

Table 5. Research Data Normality Test

	Tests of Normality			
	Statistic	Df	Sig.	
Motivation to Practice	.197	14	.147	Normal
Physical Fitness	.171	14	.200	Normal
Motor Educability	.162	14	.206	Normal
Football	.208	14	.100	Normal

Based on the table, it can be concluded that all data are normally distributed due to the significance value of >0.05.

### Correlation Test

The correlation test is utilized to determine the correlation between each research variable. The test examines whether Motivation to Train, Physical Fitness, and Motor Educability are related to the level of football skills in student-athletes. The correlation test is carried out using SPSS provided that if the significance value < 0.05, it means there is a strong correlation between variables. The results of the correlation test are shown in Table 6 below.

Table 6. Research Data Correlation Test

	Correlations	
		Football
Motivation to Practice	Pearson Correlation	.562*
	Sig. (2-tailed)	.036
Physical Fitness	Pearson Correlation	.790**
	Sig. (2-tailed)	.001
Motor Educability	Pearson Correlation	.447
	Sig. (2-tailed)	.019
	N	14

Based on the table, it can be concluded that Motivation to Train, Physical Fitness, and Motor Educability are related to the level of football skills in athletes because the significance value  $< 0.05$ . Motivation to Train ( $r = .562$ ,  $p = 0.036$ ) This value means that individuals who are more motivated to train tend to have a good level of soccer skills. Physical Fitness ( $r = 0.790$ ,  $p = 0.001$ ) A significant positive correlation exists between physical fitness and soccer skills, the more fit the better the skills. Motor skills ( $r = 0.447$ ,  $p = 0.019$ ) athletes with higher motor skills will have high soccer skills as well. In other words, if athletes' motivation to train, physical fitness, and motor educability are good, their football skills are also better.

## Discussion

Football is characterized by a high-intensity training quantity and short, medium, and long-duration activities that impact the activation of different physical capacities in athletes in multilateral actions: speed, change of direction, or jumping (Paredes-Gómez et al. 2024; Rinaldi et al. 2024) The study results showed that football student-athletes' motivation to practice was sufficient. Motivation to practice significantly correlates with the technical skills of playing football. Good motivation to practice is essential for athletes, significantly improving abilities and achievements. The results showed that with high training motivation, athletes could be responsible for fulfilling training programs and improving skills and mentality to compete (Paramita, Pratitis, and Efendy 2019; Pazriansyah and Qohhar 2019; Zulkarnain and Haqiyah 2018).

The training motivation developed by loyal football athletes can help athletes perform various tasks and develop skills in the match. Characteristics of football games that require cooperation and fighting spirit from each team member (McLean et al., 2017). Based on this character, training motivation becomes essential for trainers to consider when implementing training programs. In addition to the motivation factor to train and physical fitness, in this case, VO2Max levels are also an essential part of athletes' success in football.

The results showed that the level of Vo2Masx football student-athletes was in a Good Category. VO2Max has a significant correlation with the skill level of football playing techniques. The better the athlete's fitness/VO2Max, the better the football playing skills. The results of previous studies have also shown that VO2Max has a vital role for football athletes (Ilissaputra & Suharjana, 2016; Rusdiana et al., 2020). Other research results reveal that athletes with good VO2Max levels have better football skills than those with low VO2Max (Bielik et al., 2021; Subrata, 2020; Vasileios et al., 2018). Good physical fitness/VO2Max is also related to football athletes' IQ levels (Nurchahyo et al., 2021). The fitter and smarter football athlete can help athletes master and implement game technique skills during training and matches.

Motor educability is an indicator of mastery of an athlete's motion skills. The study results showed that the motor educability of football titles was in a Good Category. A significant correlation exists between motor educability and skill level in playing football. The study's results support previous research, which states that motor educability will affect the mastery of sports movements (Akbari 2014; Hamidi 2019; Lesmana 2018).

The athlete's condition is valuable information that should be taken into account by physical trainers and coaches to optimize training and provide greater specificity considering the increased intensity in the demands of the FIFA game over the last few years (Vergas and Perez 2023). The overall ability to play football is significantly related to the training motivation level of physical fitness. The VO2Max and motor educability will simulate improving the athlete's skills. Extrinsic factors from the environment also affect the match's quality and the athletes' readiness. Inadequate field conditions often affect the psychology of players, making them less ready to compete (Sanfiz Arias and López Alonso 2024). The following research recommendation is to connect various factors with other sports or implement action programs to improve important aspects of football games.

## Conclusions

The results revealed that training motivation, physical fitness, motor educability, and basic football technical skills were in a good category. The higher the motivation to train, physical fitness, and motor educability, the more basic football technical skills will increase. Improving football skills and basic abilities is closely related to coordinating physical, tactical, and mental movements. Basic skills should be mastered and learned early to develop the game's quality and determine a team's victory or defeat in a match. Use of verb tenses in the past tense.

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