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Effectiveness of teaching methods and motor abilities: an experimental study on football passing ability

Eficacia de los métodos de enseñanza y las capacidades motrices: un estudio experimental sobre la capacidad de pase en el fútbol

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Abstract. The low score of football passing ability among students is a problem in this topic. Therefore, efforts to improve the quality of the learning process are an effort to increase students' mastery of football passing abilities through teaching methods of philanesia and parts by first looking at students' motor skills. This research aims to determine the effectiveness of teaching methods and motor skills on passing ability in soccer games. The design used in this research is an experimental method using a 2x2 factorial design. The research subjects were FIK UNP students, using a cluster random sampling technique so that 24 students were sampled. Next, data analysis was assisted using the SPSS 26 application. The research results showed that the overall method and motor skills provided a significance value (0.000 < 0.05). Furthermore, the philanesia method and motor skills provide significance values (0.013 < 0.05). The results of the ANOVA test show a significance of 0.001 < 0.05. This data proves that there is a significant difference in the influence of the overall method and the philanesia method with low and high motor skills on the results of soccer passing ability. Based on these results, it can be concluded that both the overall method and the philanesia method with motor skills provide significant effectiveness in improving students' soccer passing ability. However, the football passing ability of the group of students who were opened using the overall method produced better results than the group of students who were opened using the philanesia method.
Keywords: Teaching methods, motor skills, overall methods, philanesia methods, and football passing abilities

Resumen. La baja puntuación de la capacidad de pase de fútbol entre los estudiantes es un problema en este tema. Por lo tanto, los esfuerzos para mejorar la calidad del proceso de aprendizaje son un esfuerzo para aumentar el dominio de los estudiantes de las habilidades de pase de fútbol a través de métodos de enseñanza de philanesia y partes observando primero las habilidades motoras de los estudiantes. Esta investigación tiene como objetivo determinar la efectividad de los métodos de enseñanza y habilidades motoras sobre la capacidad de pase en los partidos de fútbol. El diseño utilizado en esta investigación es un método experimental utilizando un diseño factorial 2x2. Los sujetos de investigación fueron estudiantes de FIK UNP, utilizándose una técnica de muestreo aleatorio por conglomerados por lo que se muestreó a 24 estudiantes. A continuación, se asistió al análisis de los datos mediante la aplicación SPSS 26. Los resultados de la investigación mostraron que el método general y las habilidades motoras proporcionaron un valor significativo (0,000 <0,05). Además, el método filanesio y la motricidad aportan valores de significancia (0,013 < 0,05). Los resultados de la prueba ANOVA muestran una significación de 0,001 < 0,05. Estos datos demuestran que existe una diferencia significativa en la influencia del método general y el método filanesio con habilidades motoras altas y bajas en los resultados de la capacidad de pase en el fútbol. Con base en estos resultados, se puede concluir que tanto el método general como el método filanesio con habilidades motoras brindan una efectividad significativa en la mejora de la capacidad de pase de fútbol de los estudiantes. Sin embargo, la capacidad de pase de fútbol del grupo de estudiantes que fueron abiertos usando el método general produjo mejores resultados que el grupo de estudiantes que fueron abiertos usando el método filanesio.
Palabras clave: métodos de enseñanza, habilidades motoras, métodos generales, métodos de philanesia y habilidades de pase en el fútbol.

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Introduction

Football is one of the most popular sports (Hardinata, B, et al., 2023; Suryadi, Okilanda, et al., 2023). The game of football is a game that is eagerly awaited by many people, especially during the World Cup (Aminudin et al., 2020; Khodaee & Mathern, 2020). Apart from that, the simple idea of playing football is to kick the ball and put the ball into the goal (Suryadi, Yanti, et al., 2023). In playing football, the most dominant aspect is mastery of basic technical skills (Chafidz et al., 2023; Suryadi, Suganda, et al., 2023) Players need to master the techniques in playing football in order to be able to play football reliably (Aminudin et al., 2020; Candra & Darwis, 2021).

Pelamonia & Puriana, (2023) stated that the basic techniques for playing soccer are used based on attacking principles and defensive principles. One of the basic techniques for playing football is passing the ball. From this statement, passing skills are to connect a player with other players on the field, which functions better than its parts. Kindersley, (2011) says passing is the lifeblood of any team and an important skill for all players to learn, including goalkeepers. This means that passing is an important part for every player to learn, including goalkeepers. Basic passing skills are the essentials that link all eleven players into a unit that functions better than its parts. A study by Anzer & Bauer, (2022); Nugraha & Ilham, (2022) explains that passing often occurs in football games where the function is to pass or distribute the ball to teammates in order to help in preparing attacks. Accuracy, speed and timing in releasing the ball are the most important parts of a successful pass combination (Muslim et al., 2019). Poor passing ability results in the ball being released from the player and wasting opportunities to score goals (Soniawan et al., 2022). According

to Cordón-Carmona et al., (2020) and Merlin et al., (2022) passing the ball can be divided into two, namely making a pass when the ball is on the surface of the field and passing the ball when it is in the air. Passing when the ball is above the surface of the field will be easier than passing the ball when the ball is in the air. The technique of passing the ball on the surface includes three techniques, namely Inside-of-the-Foot (with the inside of the foot) (LoSarah et al., 2021), Outside-of-the-Foot (with the outside of the foot) (Awie et al., 2023), and Instep (with tortoise feet) (García Ramos et al., 2023). Inside-of-the-Foot is the most basic ball passing skill that a football player must understand and master.

This passing technique is used to move the ball 5 to 15 yards. There are two types of ball passing techniques, namely short passes and long passes (Mazzantini & Bombardieri, 2013). Passing ability is very important in the development of young soccer players (Serpiello et al., 2017). As a player to be able to score goals against against as much as possible no easy (Rozi et al., 2023). By having good body movements, a player can receive various basic techniques in football very well (Burhaein et al., 2020; Shahidi et al., 2020). For That is necessary activity complete body movements (Figueiredo et al., 2020; Olchowik & Czwalik, 2020), starting from preparation followed by implementation and follow through. Preparation is the same as when passing, either way technique Inside-of-the-Foot (with foot part in), Outside-of-the-Foot(with foot part outer side), as well as the Instep technique (with turtle foot).

The process of becoming a professional footballer takes quite a long time and requires continuous in-depth training in accordance with appropriate football training methods, systems and curricula (Pramdhan et al., 2022). In practice, the Indonesian Football Philosophy with a learning formation of 1-4-3-3 is not possible immediately learned by young players. The format of 11 people playing together is too complex to learn straight away. In addition, with the format of 11 people playing against 11 people, then skill actions with the ball are very minimal. For this reason, the 11v11 format is simplified into 4v4 and 7v7 where players can automatically create triangles and diamonds without must Lots move. With format exercise play This Can at a time make Technical skills improve with open game intelligence. Pramdhan et al., (2022) explained that training that is carried out in a well-planned and continuous manner can produce professional and reliable football athletes, and implementing football curriculum learning from an early age to seniors can create a good coaching process.

In general, students' football passing abilities are still low, This can be seen from the football passing ability scores of Faculty of Science students Padang State University (FIK UNP) sports are still below ideal scores. Where Still Lots student Which obtain mark C+, even Still Lotsalso who got C and C- grades in football passing ability scores, while the grade is A There isn't any. Meanwhile, football requires cognitive, perceptive and motor skills at a high level in conditions full of rapid change (Shahidul Islam & Kundu, 2020). The word motor comes from the word "motor", sensory motor, or perceptual motor". The meaning of "motor" here is movement, stimulus, and response (Jones et al., 2020; Vidal & Lacquaniti, 2021; Zhang et al., 2021). Motor ability, stated simply, is a person's physical ability to perform movements known as motor skills (Newell, 2020). So Sutapa et al., (2021) stated that there are main elements contained in motor skills, namely: 1) strength; 2) Speed; 3) Power; 4) Resilience; 5) Agility; 6) Balance; 7) Flexibility, and 8) Coordination. Mastering basic movement skills well can certainly develop more optimal physical activity. As stated by Lawson et al., (2021) basic movement skills contribute to physical activity, health and weight status, as well as academic achievement.

In addition, skills that are always learned will become automatic movements thereby providing more efficient actions in associative learning, sensorimotor and cognitive needs (Immink et al., 2020). In order to improve motor skills, it is necessary to learn motor skills with various factors that contribute to learning, including practice time and optimization of the teacher or trainer. Not only that, but feedback can also influence motor skill learning (Zhou et al., 2021). Therefore, the author is interested in making efforts to improve quality process learning as one of them efforts to improve mastery students' football passing abilities through Philanesia and teaching methods parts by first looking at the student's motor skills. The Philanesia method is an exercise that focuses players on familiarizing themselves with real football playing situations or when players play a match (Hendri Munar Komarudin, Sucipto, 2023; Wahdi & Arsil, 2020). Method teach in learning is form approach in carry out a learning process that aims to provide direction and stages clear, provides the possibility for attitude formation and behavior change behavior, increasing absorption capacity, strengthening interest, the possibility of interaction complex between components in the learning process (Eli, 2021; Turg`unova & Rustamova Shahnoza Abdurahimovna, 2023), in addition teaching methods are chosen as best as possible so that students are more interested in study it (Aziz, Okilanda, Permadi, et al., 2023; Aziz, Okilanda, Rozi, et al., 2023; Hardinata, Yosika, et al., 2023; Harianto et al., 2023). For overcome low mark ability passing football students, it is necessary to find teaching methods that are appropriate to growth ability motor.

Motor skills refer to an individual's capacity to acquire new skills, as emphasized by Newell, (2020), who asserts that these skills form the foundation for mastering sports actions and various physical activities across different scenarios. The pace at which someone learns a new skill is closely linked to their motor skills. Planned physical activities represent an effective approach to enhancing motor skills and fostering long-term motor development, as highlighted by (Dapp et al., 2021). This assertion is further supported by Samodra et al., (2023); Suryadi et al., (2024), who suggests that engaging in physical activities through games yields positive outcomes on performance and motor skills in children. In essence, the aim of this study is to assess the impact of different teaching

methods on learning soccer passing, utilizing the Philanesia curriculum and comprehensive methodology, taking into account students' motor skills, namely high and low motor skills, through stages including initial motor ability data collection, pre-test, treatment, and final post-test evaluations of soccer passing abilities.

Materials and Methods

Study Participants

The target population for this research comprised 3rd semester students enrolled in football courses at FIK UNP. Cluster Random Sampling was employed as the sampling technique, with inclusion criteria based on age, height, and gender, specifically focusing on male students. Consequently, a sample of 24 students was selected, with ages ranging from 19 to 22 years and heights spanning from 155 to 173 centimeters.

Organization Studies

The design used in this study is an experimental method using a 2x2 factorial design. Before being given treatment, a pretest of soccer passing ability was conducted. Furthermore, the treatment in this study was given in the form of teaching methods, namely the overall method and the philanesia method which was carried out for 16 meetings.

In practice, the Indonesian Football Philosophy with a 1-4-3-3 learning formation cannot be directly learned by young players. The format of 11 people playing together is too complex to learn immediately. In addition, with the format of 11 people playing against 11 people, the skill action with the ball is minimal. For this reason, the 11v11 format is simplified to 4v4 and 7v7 where players can automatically create triangles and diamonds without having to move much. With this format of play training, technical skills can simultaneously improve with open play intelligence. This formation can be seen in figure 1 below:

Table 1.
2x2 factorial design plan

Teaching Methods(A) Motor Ability(B)	Method Whole(A_1)	Phylanesian Method (A_2)
Ability motor Tall (B_1)	A_1B_1	$A2B_1$
Ability motor Low (B_2)	A_1B_2	A_2B_2
Total	A_1	A_2

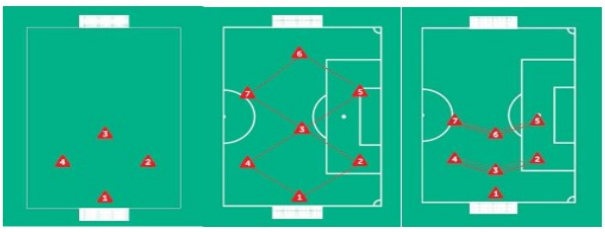

Figure 1. 4v4 formation, 7v7 attacking formation and 7v7 defending formation (PSSI, 2017)

Data collection technique

This motor ability test is used as a tool for classifying people into homogeneous groups. To measure motor skills, standard tests are used, namely through (physical fitness tests) which have been modified. For more details, see table 2.

Table 2.
Grille Instrument Study Test Ability Motor

No	Items Test	Element Which assessed
1	Pull-Ups	Dynamic strength and endurance of shoulder muscles
2	Sit-Ups	Abdominal muscle strength and endurance
3	Shuttle Run	Speed and agility
4	Standing Broad Jump	Leg muscle power
5	50 yard dash	Leg Power, and foot speed
6	Run 2400 meters	Cardiorespiratory Endurance
7	Sit and Reach	Togok flexibility

Instruments

The instrument used to determine the quality of football passing ability is through field observations by judges regarding the correctness of the series of movements carried out. After that, give treatment for 16 meetings, then carry out a post test to find out the results of this research. For more details, see table 3.

Table 3.
Grille Instrument Ability Passing Football

Indicator	Sub Indicator	Mark				
		5	4	3	2	1
Phase Beginning	1. Stand facing target					
	2. Put it down foot fulcrum in side ball					
	3. Navigate foot fulcrum to target passing					
	4. Bend it A little knee foot fulcrum					
	5. Swing foot Which will kick to the back					
	6. Hand stretched For guard balance					
Phase Main	1. Body is at the top ball					
	2. Swing foot Which will kick forward					
	3. Take care of your feet to stay straight					
	4. Kick part middle ball with side foot part in					
	5. Accept ball with part side foot part in					
	6. Pull foot For reduce collision					
Phase End	1. Uphold it head And Look to the target					
	2. Push ball towards movement furthermore					

Analysis Statistics

The data analysis used was two-way (ANOVA) with a confidence level of $\alpha = 0.05$. The requirements needed in variance analysis are data normality tests and homogeneity tests. Meanwhile, for further tests, the Tukey test was used. Analysis assisted by the SPSS 26 application.

Results

Based on the results of calculating the normality test for the research design group using the Shapiro-Wilk formula, it was found that the significance value was ($p > 0.05$). Thus, it can be concluded that all groups of data in this study were taken from a normally distributed population so that they can be used to test research hypotheses. The clear results can be seen in table 4.

The results in table 5 show the test of the influence of the overall method and the philanesia method with consideration of motor ability. The results of the overall method and motor skills give a significance value of $0.000 < 0.05$, which means that there is a significant influence of the overall method and motor skills on passing ability in the game of

soccer. Furthermore, the philanesia method and motor skills give a significance value of 0.013 <0.05, which means that there is a significant influence of the philanesia method and motor skills on passing ability in the game of soccer. Based on these results, it can be concluded that both the overall method and the philanesia method with motor skills provide significant effectiveness in improving students' soccer passing ability.

Table 4.
Shapiro-Wilk Normality Test

Results	Group	Statistics	df	Sig.	Information
Passing Ability	Overall Method Pretest	0.831	12	0.121	Normal
	Overall Method Posttest	0.970	12	0.910	Normal
	Philanesia Method Pretest	0.834	12	0.123	Normal
	Philanesia Method Posttest	0.823	12	0.117	Normal
	Overall method and high motor skills	0.912	6	0.446	Normal
	Overall Method and has low motor skills	0.944	6	0.692	Normal
	Philanesia method and high motor skills	0.792	6	0.150	Normal
	Philanesia method and have low motor skills	0.727	6	0.112	Normal

Table 5.
Paired sample test

Results	Group	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Overall Method	Pretest Passing Ability - Posttest Passing Ability	-8.91500	4.99812	-6,179	11	0,000
Philanesia Method	Pretest Passing Ability – Posttest Passing Ability	-4.75000	7.59169	-4,167	11	0.013

The next data looks at the differences in the influence of the overall method and the philanesia method with low and high motor abilities. The homogeneity test results show a significance value of 0.330 > 0.05, which means all data provides the same or homogeneous information. Results can be seen in table 6. Based on the ANOVA test in table 7, it shows a significance of 0.001 < 0.05. This data proves that there is a significant difference in the influence of the overall method and the philanesia method with low and high motor skills on the results of soccer passing ability. With the research hypothesis proven which states that there is an interaction between teaching methods and motor skills on students' football passing abilities, the analysis needs to be continued with the Tuckey test.

Table 6.
Homogeneity Test of Teaching Model and Motor Ability

Results		Levene Statistics	df1	df2	Sig.
Passing Ability	Based on Mean	1,216	3	20	0.330
	Based on Median	0.334	3	20	0.801
	Based on Median and with adjusted df	0.334	3	11,891	0.801
	Based on trimmed mean	0.978	3	20	0.423

Table 7.
ANOVA test

Passing Ability	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	348,867	3	116,289	8,023	0.001
Within Groups	289,901	20	14,495		
Total	638,768	23			

Table 8.
Advanced Test with Tukey

(I) Groups	(J) Group	Mean Difference (IJ)	Std. Error	Sig.
Overall method and high motor skills	Overall Method and has low motor skills	5.33000	2.19811	0.104
	Philanesia method and high motor skills	10.66000 *	2.19811	0.001
	Philanesia method and have low motor skills	4,00000	2.19811	0.294
Overall Method and has low motor skills	Overall method and high motor skills	-5.33000	2.19811	0.104
	Philanesia method and high motor skills	5.33000	2.19811	0.104
	Philanesia method and have low motor skills	-1.33000	2.19811	0.929
Philanesia method and high motor skills	Overall method and high motor skills	-10.66000 *	2.19811	0.001
	Overall Method and has low motor skills	-5.33000	2.19811	0.104
	Philanesia method and have low motor skills	-6.66000 *	2.19811	0.031
Philanesia method and have low motor skills	Overall method and high motor skills	-4.00000	2.19811	0.294
	Overall Method and has low motor skills	1.33000	2.19811	0.929
	Philanesia method and high motor skills	6.66000 *	2.19811	0.031

Based on table 8, the results provide information that: (1) The overall method and high motor skills show significant differences (p < 0.05) with the philanesia method and high motor skills. Furthermore, there was no significant difference in effect (p > 0.05) with the overall method and low motor skills, nor with the philanesia method and high motor skills. (2) The overall method and having low motor skills do not have a significant difference (p > 0.05) on soccer passing ability with the overall method and high motor skills, the philanesia method and high motor skills, the philanesia method and having low motor skills. low. (3) The philanesia method and high motor skills have a significant difference in influence (p < 0.05) on the results of football passing ability with the overall method and high motor skills, the philanesia method and those with low motor skills.

The results did not show a significant difference (p > 0.05) with the overall method and had low motor skills. (4) There is no significant difference in the philanesia method and low motor skills (p > 0.05) on the results of football passing ability with the overall method and high motor skills, as well as the overall method and low motor skills.

The results showed significant differences (p < 0.05) with the philanesia method and high motor skills.

Table 9.
Score Calculation Data Description of Football Passing Ability Results

Results	N	Mean	Std. Deviation	Minimum	Maximum
Overall method and high motor skills	6	54.8300	1.94252	53.00	58.00
Overall Method and has low motor skills	6	49,5000	2.58844	46.00	53.00
Philanesia method and high motor skills	6	44.1700	5.22967	40.00	54.00
Philanesia method and have low motor skills	6	50.8300	4.48970	42.00	54.00
Total	24	49.8325	5.26996	40.00	58.00

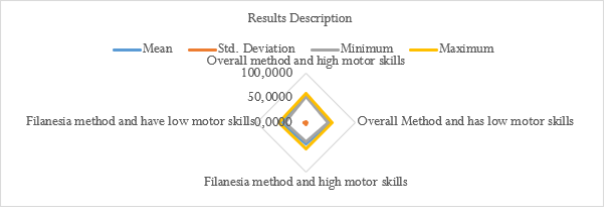

Figure 2. Description of Football Passing Ability Results

Based on the results in table 9, it shows that the overall method and high motor skills with a mean value (54.83) is greater than the overall method and has low motor skills (49.50), the philanesia method and high motor skills (44.17), and the philanesia method and has low motor skills (50.83). Clearer results can be seen in table 9 and figure 2.

Discussion

This study seeks to evaluate the impact of teaching methodologies and motor skills on soccer passing proficiency. The findings indicate that both the overall method and the Philanesia method, when combined with motor skills training, significantly enhance students' soccer passing abilities. The second hypothesis posited that students who underwent training with the overall method would exhibit superior soccer passing proficiency compared to those trained with the Philanesia method. This hypothesis is corroborated by the average scores attained in the students' soccer passing assessments. As in the results of research conducted by Hadinata et al., (2023) , the method of training basic football technical skills using the philanesia training method can contribute to the development of football playing skills.

Furthermore, teaching methods must be adapted to students' motor skills (Nagabandi et al., 2020). Because students' motor skills really help the success of students and lecturers in carrying out the learning process (Samodra et al., 2023; Suryadi et al., 2024). If the above is not adjusted, then learning objectives will be difficult to achieve, and student development will be threatened. Thus, what is revealed from the findings of this research is that in the overall method, the results of the learning process obtained by students will achieve their learning goals, not only achieving motor goals, but learning football passing can contribute to skills such as observing, clarifying, measuring, predicting and Students can interpret the movements themselves.

The right learning process can have an influence on learning outcomes such as in the cognitive, psychomotor and affective domains (Supena et al., 2021). Apart from that, movement experience is needed to create automatic movements and training is needed regarding various learning process methods that can help improve motor skills in students (Oliveira et al., 2021). Students are given the opportunity to be actively involved in making movements and gain experience of movements and finding difficulties and finding solutions in playing football (Pedler et al., 2020; Vytasek et al., 2020). With this method, the entire learning process activity relies on the students. Students will learn the football passing skills that exist in every football game directly. Explanations of how to perform each football technique are not yet the goal.

It is hoped that students can use various potentials to play football directly where students learn directly through the football games given, including through the overall method, by observing what their friends do. For football lecturers to be skilled in applying the overall method, activities such as training or upgrading, especially the overall method, need to be provided. Students' football passing abilities need to be evaluated for their development. Football lecturers and various parties involved in efforts to improve students' football passing abilities should be skilled in making observations to be able to assess the whole, namely by looking at the process, how students make football passes. Where success in the learning process is closely related to the ability of educators (Aziz, Okilanda, Permadi, et al., 2023; Aziz, Okilanda, Rozi, et al., 2023; Mashud et al., 2023, 2024; Tantri et al., 2023).

Conclusions

The impression from the findings of this research is that in the overall method, the results of the learning process obtained by students will achieve their learning goals, not only achieving motor goals, but learning football passing can contribute to skills such as observing, clarifying, measuring, predicting and students can understand the movements yourself. The results of the research prove that the overall method and the philanesia method with motor skills provide significant effectiveness in improving the passing ability of football games in students. The results also show that the football passing ability of the group of students who were opened using the overall method produced better results than the group of students who were opened using the philanesia method. This research was only limited to football passing ability. This approach to presenting the overall learning method and philanesia method is very possible to be developed in other sports. Therefore, it is recommended that other researchers conduct further research by considering student characteristics and looking for one component of student ability. The selection of research subjects was still very limited, namely only a few students were taken. In further research, it is recommended to choose a wider range of subjects. It is necessary to develop an overall method for learning football passing that is adapted based on the subject's place of residence, gender and age.

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Conflict of interests

There is no conflict of interest

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