Optimizing long passing: a study on the relationship between waist flexibility in soccer players

Optimización del pase largo: un estudio sobre la relación entre la flexibilidad de cintura en futbolistas

Authors

Mardepi Saputra [1]
Aldo Naza Putra [1]
Sepriadi [1]

[1] Universitas Negeri Padang (Indonesia)

Corresponding author:
Mardepi Saputra
mardepi@fik.unp.ac.id

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Abstract

Introduction. Starting from the shortcomings found from previous studies regarding the relationship between physical factors and technical abilities in football, so the background for us to make this research.
Purpose. This study aims to determine the relationship between waist flexibility and long passing ability in Tunas Putra Payakumbuh Football School (SSB) players.
Research Methodology. By choosing a research subject from SSB Tunas Putra Payakumbuh, we hope to contribute to the understanding of the aspects of physical fitness that affect players' technical abilities. This study is a correlational research. The population in this study consisted of all SSB Tunas Putra Payakumbuh players totaling 64 people. The sampling technique used was purposive sampling, resulting in a sample of 20 players. The instruments in this study include: 1) sit and reach test, and 2) long passing ability test. Data analysis was carried out using simple correlation statistical analysis or product moment, followed by multiple correlation analysis.
Research Result. It shows that waist flexibility correlates with the long passing ability of Tunas Putra Payakumbuh Youth Soccer Club players by 72.60%. An in-depth understanding of this relationship is expected to improve the approach to coaching football players, with a focus on aspects of physical flexibility that can have a positive impact on technical ability, especially on long passing ability.

Keywords

Waist flexibility, long passing ability.

Resumen

Introducción. Partiendo de las deficiencias encontradas en estudios anteriores en cuanto a la relación entre los factores físicos y las habilidades técnicas en el fútbol, este es el antecedente para que realicemos una investigación.
Objetivos Este estudio pretende determinar la relación entre la flexibilidad de cintura y las habilidades de pase largo en jugadores de la Escuela de Fútbol (SSB) Tunas Putra Payakumbuh.
Metodología de la investigación. Al elegir como sujetos de investigación a los jugadores de la SSB Tunas Putra Payakumbuh, esperamos contribuir a la comprensión de los aspectos de la aptitud física que afectan a las habilidades técnicas de los jugadores. Esta investigación es una investigación correlacional. La población de este estudio fueron los 64 jugadores de SSB Tunas Putra Payakumbuh con técnica de muestreo intencional, lo que resultó en una muestra de 20 jugadores. Los instrumentos de este estudio incluyen: 1) prueba de sentarse y alcanzar, y 2) prueba de habilidad de paso largo. En el procesamiento de los datos se utiliza el análisis estadístico de correlación simple o momento producto, seguido del análisis de correlación múltiple.
Resultados. Los resultados mostraron que la flexibilidad de cintura se correlacionaba con la capacidad de pase largo de los jugadores en un 72,60%. Se espera que un conocimiento profundo de esta relación mejore el enfoque del entrenamiento de los jugadores de fútbol centrándose en los aspectos de la flexibilidad física que pueden tener un impacto positivo en las habilidades técnicas, especialmente en la capacidad de pase largo.

Palabras clave

Flexibilidad de la cintura, capacidad de pase largo.

Introduction

Flexibility plays a very important role in the context of soccer, as this ability directly affects a player's performance on the pitch. In a dynamic game like soccer, players are required to perform a variety of complex movements, including kicking, jumping, twisting the body and making quick changes of direction. Good flexibility allows the body to move with a wider range and more efficiently, supporting technical performance and reducing the risk of injury.

Football, as a dynamic sport, necessitates an extraordinary combination of physical and technical skills to achieve optimal athlete performance. In the pursuit of competitive excellence, football academies (SSB) play a crucial role as institutions that develop athletes. There is a need for clear coaching, structured programs, supportive facilities, and government support in conducting effective player development.

The performance of football players can be influenced by several interacting factors. Starting from natural talent, parental support, supportive facilities and infrastructure, internal motivation, competent coaches, structured training programs, and physical fitness all play significant roles (Sullivan et al., 2014) (Gassmann et al., 2019).

This research is motivated by the athletes' need to enhance their performance, with a deeper focus on the role of waist flexibility in influencing long passing abilities. Flexibility plays a crucial role in various sports activities (Draga et al., 2020) (Rahman & Islam, 2020). Good flexibility can help prevent injuries to muscles and joints during physical activities (Mikkelsson et al., 2006) (Ivan, 2012). In addition, good flexibility can improve performance by allowing wider and more efficient movements. (Pascoe et al., 2020).

Flexibility can help reduce muscle tension and enhance a sense of relaxation (Deepti Dhyani, 2015). Stretching exercises, yoga, and physical activities involving bending and stretching movements are common ways to enhance flexibility (Gothe & McAuley, 2016) (Sereda et al., 2020). It is important to consistently incorporate flexibility exercises to support overall health and body performance.

Waist flexibility refers to the ability or elasticity of the area around the waist to perform movements with an optimal range of motion (Anwarudin et al., 2020). Waist flexibility plays a crucial role in football performance. (Bayrakdar et al., 2020). There are several aspects of waist flexibility that can influence the performance of football players, one of which is the long passing ability of the players. Good waist flexibility can enhance the range of motion for players when executing a long pass (Alimoradi et al., 2023). With a greater range of motion, players can generate more power and accuracy in long passes.

The flexibility of the waist allows players to efficiently rotate their bodies, enabling them to produce more accurate long passes (Sepriadi et al., 2023). Furthermore, good waist flexibility helps maintain balance and body stability when executing long passes. (Khan, 2010). Supportive flexibility can help prevent injuries, especially in the waist and back areas, which may impact players' ability to consistently execute long passes (Ratiyono et al., 2022).

Waist flexibility can assist players in more easily handling pressure from opposing players while standing and executing long passes (Notarnicola et al., 2019; Weppler et al., 2014). The ability to swiftly and effortlessly change body positions significantly contributes to the quality of a player's passes (Zouhal et al., 2019) (Pojskic et al., 2018). Good hip rotation, which is closely linked to the flexibility of the waist muscles, plays a crucial role in generating the right power and direction in long passes (Hoffman et al., 2011) (Hamada et al., 2023).

In previous literature, research on the relationship between waist flexibility and long passes remains relatively limited, particularly in the context of coaching young players. The flexibility of waist muscles as a potential indicator takes center stage in this study due to its involvement in various movements in soccer, including the ability to execute long passes.

By opening a window into the relationship between waist flexibility and long pass ability, this research is expected to enhance youth coaching strategies and provide a foundation for further studies in this field. Through a deeper understanding of these dynamics, it is hoped that the coaching of young athletes can play a more effective role in cultivating soccer players with an optimal balance between physical skills and techniques.

Method

The research conducted is correlational research. Correlational research is a method used to find relationships between different variables. The aim is to reveal the relationship between waist muscle flexibility and long pass ability. The variables in this study are the independent variable, which is waist flexibility, and the dependent variable, which is the Long Pass ability. The population in this study consists of all players from SSB Tunas Putra Kota Payakumbuh, totaling 64 players with different age categories. This research was only conducted in one age category, namely the U-15 category. In this study, 20 children were involved, selected through total sampling. With a limited number of participants, there is a risk that the results of this study reflect the specific characteristics of the group studied rather than the general soccer population. The research was conducted only in the U-15 category, involving 20 players selected through total sampling. The research was carried out in only one age category and has obtained official approval from the coach.

Procedures

Data collection in this research involved direct testing of the research sample at SSB Tunas Putra Kota Payakumbuh. The first stage of data collection was to prepare everything related to the implementation of the tests. The data collection stage for the sample involved using the sit and reach test to determine waist flexibility, and the long pass test to assess long passing ability. The collected data will be subjected to two prerequisite analysis tests: the Normality Test and the Linearity Test. Subsequently, statistical hypotheses will be tested using correlation analysis and the T-test.

Results

This research aims to examine the contribution of waist flexibility to Long Pass ability. The data on waist flexibility yielded a highest value of 28 cm, categorized as excellent, and the lowest score of 5 cm, falling into the very poor category. The mean waist flexibility is 18.25 cm.

Table 1. Frequency Distribution of Waist Flexibility Results of SSB Tunas Putra Kota Payakumbuh Players

No	RangeMark (cm)	Frequency Absolute(Fa)	Frequency Relatively (%)	Category
1.	>27.85	1	5	Good very
2.	21.45-27.84	6	30	Good
3.	15.05-21.44	7	35	Currently
4.	8.65-15.04	4	20	Not enough
5.	< 8.65	2	10	Not enough Very
	Amount	20	100	

Meanwhile, for the long pass data, the highest score is 33, categorized as excellent, and the lowest score is 9, falling into the very poor category. The mean long pass score is 18.95.

Table 2.Distribution Frequency Results Data Ability *long passing* player SSB Bud Son City Payakumbuh

No	Range Mark	FrequencyAbsolute (Fa)	Frequency Relatively (%)	Category
1.	>28.46	2	10	Good very
2.	22.12-28.45	3	15	Good
3.	15.78-22.11	9	45	Currently
4.	9.44-15.77	5	25	Not enough
5.	< 9.43	1	5	Not enough Very
	Amount	20	100	

Analysis of normality for the data collection was conducted using the normality test with the Lilliefors test.

Table 3. Normality test with Lilliefor

Variable	Sample	Test Lilliefors		Conclusion
		L_o	L_{table}	
Flexibility Waist	20	0.157	0.190	Normal
Ability long passing	20	0.131	0.190	Normal

Based on the table above, the independent variable is Waist Flexibility (X), and the dependent variable is Long Pass Ability (Y). It can be said that each data is normally distributed, or the population from which the sample data is taken follows a normal distribution. Data is considered to be normally distributed if $L_o < L_{Table}$.

Next, the results of the data analysis were obtained. The correlation analysis between waist flexibility (X2) and long passing (Y) of SSB Tunas Putra Kota Payakumbuh players was conducted, and the findings revealed r_{count} 0,852> r_{tabel} 0,444. It means: "There is a relationship between waist flexibility and the long passing ability of SSB Tunas Putra Kota Payakumbuh players. To test the significance of the correlation coefficient between waist flexibility and long passing ability of SSB Tunas Putra Kota Payakumbuh players, a t-test is conducted. The t-test can be observed in Table 7 below.

Table 4. Summary of Correlation Test and Coefficient Significance Test Correlation between flexibility waist With The long passing ability of SSB TunasPutra Kota players Payakumbuh

Variable	r count	r table	t count	t table	Conclusion
X_2 –Y	0.852	0.444	6,898	1.73	Significant

Based on the above Table 8, it turns out t_{count} = 8,898 > t_{table} 1,73. Therefore, it can be concluded that there is a significant relationship between waist flexibility and the long passing ability of SSB Tunas Putra Kota Payakumbuh players, empirically supported.

Next, to determine the strength of the relationship between waist flexibility and the long passing ability of SSB Tunas Putra Kota Payakumbuh players, it is indicated by the coefficient of determination analysis result, which is represented by an r value of 0.852, Therefore, R^2x100%, 0,726 x 100%= 72,6%. This means that the waist flexibility variable contributes to 43.89% of the long passing ability of SSB Tunas Putra Kota Payakumbuh players.

Discussion

The research results indicate a positive and significant relationship between waist flexibility and the accuracy of long passing in SSB Tunas Putra Kota Payakumbuh players. The magnitude of the relationship between waist flexibility and long passing ability is represented by r_{count} 0,852 greater than r_{table} 0,444. And based on the determination test, it is known that waist flexibility has a relationship of 72.60%, meaning that the better the waist flexibility a soccer player has, the more accurate their long passing ability will be.

Waist flexibility is essential for agility and skillful movements to direct the ball accurately. The better one's waist flexibility, the better the results obtained in controlling the ball and achieving precision. Optimal waist flexibility aids the body and legs in directing the ball more effectively to teammates, resulting in favorable outcomes. It is evident that flexibility plays a significant role in mastering movement skills to optimize other physical abilities. In other words, flexibility can enhance technical skills, including long passing ability in soccer.Furthermore, flexibility is one of the factors that can influence long passing ability, and it is evident that waist flexibility is correlated with long passing ability by 72.60%.

Flexibility plays a crucial role in the sport of soccer and can impact various technical aspects, including the ability to execute long passes. Several factors influence and assist players in performing long passes, such as hip movement, lower back flexibility, agility of the back, flexibility of the knees and calves, and overall body balance.

In the context of coaching strategies, this relationship between waist muscle strength and technical performance can be translated into more specific and targeted training programs. Exercises such as

plank variations, Russian twists, and torso rotations with weights can help strengthen core muscles, including the lumbar muscles. In addition, the integration of pliometric exercises that involve rotational movements of the body can improve athletes' ability to transfer strength into action on the field.

Flexibility in the hip area allows players to open their hips optimally when executing a long pass. This is crucial for players to generate adequate body rotation and provide maximum power to the ball. Flexibility exercises focused on the hip area can provide significant benefits for soccer players aiming to enhance the quality and accuracy of their long passes. (Afonso et al., 2021) (Konrad et al., 2021). The combination of flexibility with appropriate training techniques can help players optimize their physical potential to achieve their best performance in long pass situations (Barrio et al., 2023) (Ltifi et al., 2023).

Stretching the lower back can enhance a player's ability to bend and rotate their body more freely (Heneweer et al., 2011). This flexibility allows players to adjust their body position effectively for delivering long passes. Regular and targeted stretching of the lower back can be an integral part of a soccer player's training program to enhance physical health and game performance (Silva et al., 2015).

Flexibility in the back also plays a role in a player's ability to rotate their body quickly and with control when executing long passes (Donti et al., 2022). This allows players to choose the right angle and strength to deliver the ball to their teammates accurately. Through appropriate flexibility exercises, including stretching and movements that support back flexibility, players can enhance their ability to rotate their bodies quickly and with control when executing long passes in soccer games (Hernandez-Martinez et al., 2023).

The ability to flex the knees and calves well can help players generate extra power when releasing long passes (Kellis & Katis, 2007). Flexible leg movements can provide more power and drive to the ball (Curtis et al., 2021). Through physical training focused on the muscles around the knees and calves, soccer players can enhance flexibility and potential strength when delivering long passes (Wang & Zhang, 2016). It is important to incorporate diverse exercises into the training program to achieve optimal results in various game situations.

Flexibility is also closely related to body balance. Players with good body balance are more likely to control themselves effectively when executing long passes, allowing them to focus more on the correct striking technique (Hernandez-Martinez et al., 2023). A good combination of flexibility and balance can enhance performance, prevent injuries, and strengthen the physical foundation of soccer players (Izquierdo et al., 2021).

In addition, warm-up also influences the long passing ability of soccer players. Before executing a long pass (Yanci et al., 2019). A good warm-up to enhance blood circulation and overall body flexibility can help prepare the muscles needed for such actions (Park et al., 2018). Thus, a structured warm-up is required to maintain the performance of bodily organs.

It's important to remember that flexibility alone may not directly improve long passing ability, but good flexibility can create a physical foundation that enables players to execute technical movements more effectively. Therefore, soccer players should incorporate flexibility exercises into their physical routines to maximize their technical potential, including in executing long passes.

Conclusions

Flexibility in the waist muscles plays a significant role in a soccer player's ability to perform a long pass. Good flexibility in the waist area has a positive impact on several technical and physical aspects involved in executing long passes.

Firstly, the optimal range of motion achieved through flexibility in the waist muscles allows players to achieve greater body movement when executing a long pass. This not only enhances passing power but also contributes to better accuracy.

Secondly, good flexibility supports efficient body rotation, which is a crucial element in completing a long pass. Smooth and flexible body rotation enables players to generate optimal power and direct the ball in the desired direction.

Furthermore, flexibility in the waist muscles also plays a role in maintaining balance and body stability when executing a long pass. A stable body position is crucial to ensure good ball control and minimize the risk of injury.

In this context, stretching exercises and improving flexibility in the waist muscles become crucial steps in developing long-passing skills. Soccer players who care for and enhance their waist flexibility have the potential to be more consistent and effective in delivering long passes with high quality. This conclusion underscores the importance of incorporating flexibility training aspects into a soccer player's training program to enhance their technical skills, minimize the risk of injuries, and improve their contribution to team play.

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Authors' and translators' details:

Mardepi Saputra	mardepi@fik.unp.ac.id	Author
Aldo Naza Putra	Aldoaquino87@fik.unp.ac.id	Author
Sepriadi	sepriadi@fik.unp.ac.id	Author