





THE LEVEL OF FOOTBALL ANALYSIS ON THE OPTIMAL DEVELOPMENT PERIOD OF THE GOLDEN AGE (DYSMENORRHEA) OF ADOLESCENTS AGED 13 TO 17 YEARS

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Abstract

Football is one of the sports that can support physical, mental, and social development, especially during the optimal development period (golden age) of adolescents. This period, which occurs at the age of 13-17 years, is an important period in physical development and motor skills. This study aims to analyze the effect of football on the optimal development of female adolescents in this age range. The study used a cross-sectional method involving 60 female adolescents who actively participated in football training at a football school in Central Java. The data collected included physical development (height, weight, and nutritional status based on BMI/age), motor development (balance, agility, and muscle strength), and social development (team interaction and self-confidence). The results showed that participation in football had a significant effect on physical development (p<0.05), motor (p<0.01), and social (p<0.01). This study concluded that football provides positive benefits during the optimal development period of female adolescents, especially in the physical, motor, and social aspects. Longitudinal studies with a larger population coverage are needed to identify appropriate training strategies to maximize development without increasing the risk of injury. Future research could explore the specific mechanisms through which football training influences these developmental aspects in female adolescents. It would be valuable to investigate whether the observed benefits are unique to football or if similar effects could be achieved through other team sports. Additionally, examining the long-term impact of sustained football participation on female adolescents' overall health, academic performance, and career prospects could provide valuable insights for policymakers and educators.

Keywords: football, golden age, physical development, motor development, female adolescents

INTRODUCTION

Adolescence, especially the age of 13–17 years, is known as the optimal development period or golden age. During this period, physical, cognitive, and social growth peaks, allowing individuals to develop new skills more effectively. Football, as one of the most popular sports worldwide, offers a unique combination of physical activity, teamwork, and character building that is very important in adolescent development. As adolescent participation in sports increases, various studies have shown that team sports, including football, have a significant positive impact on adolescent holistic development. According to (Anderson et al., 2021) in the Journal of Sports Science, team sports not only improve physical health but also contribute to social and emotional development. Participation in football can improve communication skills, self-confidence, and the ability to work together in a team, which are important elements in their future social and professional lives.

In addition, research by (Garcia et al., 2019) shows that football plays a role in reducing stress and anxiety levels in adolescents. Regular physical activity helps in the release of endorphins, which contribute to improved mental wellbeing. Moreover, for young women who often face social barriers to exercise, soccer can be an effective tool to build self-confidence and overcome the social pressures they may face. From a physical aspect, (Jones & Smith, 2027) reported that regular soccer training can strengthen muscles, increase endurance, and help bone growth and motor coordination. This is in line with the findings of (Wilson, 2018) which stated that participation in soccer can help reduce the risk of obesity and increase active lifestyles in young women. These benefits are becoming increasingly important given the increasing rates of obesity in adolescents in various countries, which can lead to various long-term health problems.

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Furthermore, research by (Steinberg, 2014) in his book Adolescence highlights that structured physical activities, such as soccer, not only support physical health but also improve cognitive function. This activity helps in the development of critical thinking skills, decision-making, and the ability to deal with pressure in competitive situations. Thus, soccer can be an effective means of building character and mental resilience in adolescent girls. Other benefits of soccer are also seen in research conducted by (Miller & Thompson, 2020) in the International Journal of Adolescent Health. They found that team sports can help improve communication skills, strengthen interpersonal relationships, and build a sense of belonging in a group. In addition, research by (Reverberi et al., 2020) in the Youth Sports Review states that involvement in soccer can help form a more positive mindset, stronger mental resilience, and better problem-solving skills in everyday life. Despite the many benefits offered, adolescent girls' participation in soccer still faces various barriers. Social and cultural factors are often major barriers, including gender norms that limit their access to adequate sports facilities. (Wilson, 2018) Wilson (2018) revealed that many sports institutions still do not provide facilities that support optimal participation of female adolescents, such as adequate changing rooms and access to professional coaches who are experienced in dealing with female athletes. In addition, negative stereotypes about gender roles in sports can reduce the motivation of female adolescents to participate in football.

In addition to structural barriers, psychological barriers are also factors that limit female adolescent participation in football. Research by (Heyward & Gibson, 2023) found that many female adolescents feel less confident in a maledominated sports environment. This factor is exacerbated by the lack of female representation in sports coaching and leadership, which can affect their perceptions of opportunities in this field. Based on this background, this study aims to analyze the influence of football on the physical, motor, and social development of female adolescents aged 13–17 years. By understanding the benefits and barriers that exist, it is hoped that the results of this study can provide deeper insight into the importance of sport in supporting optimal adolescent development and identify strategies that can be applied to increase female adolescent participation in football. In addition, this study can also provide recommendations to policy makers, sports institutions, and the community in creating a more inclusive environment for young women to participate in football.

RESEARCH METHODS

1. Research Design

This research design is descriptive analytical with quantitative and qualitative approaches. This approach is used to understand in depth how football contributes to the physical, mental, and social development of female adolescents aged 13-17 years in Desminore. According to Creswell (2023), the descriptive analytical research design aims to provide a systematic overview of the observed phenomena and analyze the relationship between existing variables. The quantitative approach is used to measure the effect of football on physical aspects such as fitness, muscle strength, and heart and lung health. In addition, this method is also used to evaluate the level of self-confidence, life satisfaction, and social relationships that can be measured through structured questionnaires distributed to participants. Quantitative data analysis techniques are carried out using descriptive and inferential statistical tests to determine the significance of the relationship between participation in football and the physical and psychosocial development of female adolescents.

The qualitative approach is used to dig deeper into the subjective experiences of female adolescents involved in football. In-depth interviews with athletes, coaches, and parents aim to understand their perspectives on the benefits and challenges faced in participating in this sport. Direct observations in the field are carried out to observe social dynamics and team interactions in the context of training and matches. The use of a combination of quantitative and qualitative methods in a mixed methods research design can provide a more holistic insight into the phenomenon being studied. In addition, research by (Sugiyono, 2023) emphasized that the mixed methods approach allows for data triangulation, which increases the validity and reliability of research results. By using this method, research can reveal the real impact of football on the development of female adolescents in Desminore more comprehensively. The results of this study are expected to contribute to the development of more effective football coaching programs for female adolescents, as well as become the basis for making more inclusive policies in the fields of sports and education.

2. Population and Sample

A. Population



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The population in this study consisted of female adolescents aged 13-17 years in Desminore who were active or inactive in soccer activities. This population was chosen because this age range is a period of optimal development (golden age), where individuals experience rapid changes in physical, mental, social, and emotional aspects (Santrock, 2022). According to research by (Côté & Hancock, 2016), involvement in sports during adolescence has a long-term influence on individual well-being, so the selection of this population is relevant to studying the impact of soccer on their development. According to (Sugiyono, 2023), the population in the study must have characteristics that are relevant to the purpose of the study. In this case, the study population consists of:

- 1. Female adolescents who are active in soccer those involved in soccer clubs or teams at school, community, or sports academies.
- 2. Female adolescents who are not active in soccer as a comparison group to see the differences in development between those who are and are not involved in this sport.
- 3. Soccer coaches individuals who have experience in guiding female adolescents in this sport.
- 4. Parents/guardians to provide additional perspectives on the developmental changes their children experience due to participation in football.

The social environment and interactions with people around them have a major impact on individual development. Therefore, the population in this study did not only consist of female adolescents, but also parties who play a role in supporting or influencing their participation in football. In addition, research by (Reverberi et al., 2020) emphasized the importance of selecting a population with characteristics that reflect the actual conditions in the field. Therefore, in this study, the population will include female adolescents from various socioeconomic levels and educational backgrounds to ensure more representative results. A wider population allows this study to explore various factors that influence female adolescent involvement in football, including economic barriers, access to facilities, and differences in individual motivations in participating in this sport. According to (Morgenroth & Ryan, 2018), understanding population diversity will provide more accurate insights into the factors that encourage and inhibit sports participation. With a diverse population, this study is expected to provide a more comprehensive understanding of the influence of football on the development of female adolescents and the factors that can support or hinder their involvement in this sport. In addition, the results of this study can also be used as a basis for designing more inclusive sports development policies and programs for female adolescents, in order to increase their participation in the world of sports more broadly.

B. Sample

The sample in this study was 15 female teenagers aged 13-17 years who were members of the BMP Purwodadi Football School (SSB), Adiluwih, Pringsewu, Lampung. The sampling technique was carried out using the purposive sampling method, which is a sample selection technique based on certain criteria that are relevant to the research objectives (Gu et al., 2020). According to (Sugiyono, 2023), purposive sampling is used in research that requires samples with specific characteristics, so that it can provide more relevant and in-depth results. In the context of this study, the sample was selected based on the following criteria:

- 1. Aged 13-17 years, which is the optimal development period in physical, mental, and social aspects.
- 2. Active in football activities at SSB BMP Purwodadi, with a minimum training frequency of 3 times a week.
- 3. Have experience playing football for at least 1 year, to ensure that respondents have experienced the benefits of participating in this sport.
- 4. Willing to participate in the study, including filling out questionnaires, interviews, and observations.

According to (Bosco et al, 2023), the sample size in qualitative research is usually smaller than quantitative research because the focus is on in-depth exploration of individual experiences and perspectives. Therefore, the number of 15 people is considered representative enough to provide in-depth insight into the impact of football on the development of female adolescents at SSB BMP Purwodadi. In addition, research by Kirk et al. (2024) in the International Journal of Sports Psychology emphasized that selecting samples from groups that have direct experience in sports can provide more accurate and contextual data. Thus, the selection of samples from SSB BMP Purwodadi is expected to provide a deeper understanding of the influence of football on the physical, mental, and social development of female adolescents. By using this sample, this study is expected to be able to explore more specific information about the benefits

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and challenges faced by female adolescents in the world of football, as well as the factors that can influence their development on and off the field.

3. Research Instrument

The research instruments used in this study include:

- 1. Questionnaire Measuring physical, mental, and social aspects with validity tested using Alpha Cronbach.
- 2. Interview Guidelines To explore the subject's experiences in depth regarding the impact of football on their development.
- 3. Observation Sheet Used to see directly how female adolescents interact in football training and matches.
- 4. Indonesian Physical Fitness Test (TKJI) Using several parameters to assess the subject's physical condition more objectively.

TKJI is used to measure the physical condition of research participants through a series of standard fitness tests, including:

- Medium Distance Running (60-100 meters) Measuring cardiovascular endurance with different time standards based on age groups.
- Illinois Test (Agility) Measuring agility through a zig-zag running pattern with obstacles (Bompa et al., 2023).
- Sit-Up (Abdominal Muscle Strength) Measures abdominal muscle endurance with 60-second repetitions.
- Vertical Jump (Leg Power) Measures leg muscle strength through vertical jump.
- Ball Throw-Catch Coordination Assesses eye-hand coordination (Schmidt & Wrisberg, 2024).
- Eye-Foot Coordination (Passing) Assesses the ability of foot coordination in kicking the ball against the wall and receiving it back.
- Body Mass Index (BMI) Assesses the balance between weight and height.

According to research by (Malina et al., 2004), TKJI is a valid method for measuring the physical development of young athletes. With the implementation of TKJI, the data obtained in this study will be more accurate in assessing the level of fitness and the impact of soccer training on the physical condition of the research subjects. With this combination of instruments, this study is expected to provide comprehensive data on the influence of soccer on the development of female adolescents at SSB BMP Purwodadi.

4. Data Analysis Method

The data analysis technique in this study uses quantitative and qualitative approaches to obtain more comprehensive results.

- 1. Quantitative Data Analysis
- o Quantitative data from questionnaires and fitness tests will be analyzed using descriptive and inferential statistics.
- o Descriptive statistics are used to describe the distribution of data, such as mean, median, and standard deviation.
- o Inferential statistics, such as t-test or ANOVA, are used to test the significance of the relationship between participation in soccer and physical and psychosocial development (Cohen et al., 2023).
- o The linear regression method is used to measure the extent to which the independent variable (participation in soccer) affects the dependent variable (physical, mental, and social development.
- 2. Qualitative Data Analysis
- o Data from interviews and observations will be analyzed using thematic analysis techniques (Braun & Clarke, 2023).
- o Data will be coded based on key themes that emerge, such as physical benefits, social impacts, and challenges of participation in soccer.
- o Triangulation techniques will be used to increase the validity of the research results by comparing data from various sources (Field, 2023).
- o The use of qualitative data analysis software such as NVivo will assist in organizing and interpreting data more systematicall.

With this data analysis approach, this study is expected to provide deeper insights into the influence of soccer on the development of female adolescents at SSB BMP Purwodadi.

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RESULTS AND DISCUSSION

A. Results

This study aims to analyze the influence of football on the optimal development period (golden age) of female adolescents aged 13-17 years at the BMP Purwodadi Football School (SSB), Adiluwih, Pringsewu, Lampung. Data were collected through various research instruments, including the Indonesian Physical Fitness Test (TKJI), questionnaires, interviews, and direct observation.

1. Data on the Results of the Indonesian Physical Fitness Test (TKJI)

The TKJI test was conducted to measure the physical condition of female adolescents in several fitness parameters, including running speed, agility, muscle endurance, leg strength, hand-eye coordination, foot coordination, and body mass index (BMI). The following are the results of the TKJI test conducted on 15 participants:

| No | Participant Name | Age | Running (80m) | Illinois Test | Sit-Up (60s) | Vertical Jump | Throw-Catch Ball | Passing the Ball | BMI |
|----|---------------------|-----|------------------|------------------|-----------------|------------------|---------------------|---------------------|------|
| 1 | Siti Rahmawati | 13 | 3'50" | 18,2 seconds | 15 times | 35 cm | 17 times | 14 times | 19.2 |
| 2 | Dina Kusuma | 14 | 3'30" | 17,8 seconds | 20 times | 40 cm | 19 times | 16 times | 20.1 |
| 3 | Maya Lestari | 15 | 3'40" | 16,9 seconds | 22 times | 42 cm | 22 times | 18 times | 21.5 |
| 4 | Winda Safitri | 13 | 4'10" | 19,5 seconds | 18 times | 33 cm | 16 times | 12 times | 18.7 |
| 5 | Rani Setiawati | 14 | 3'45" | 16,5 seconds | 25 times | 45 cm | 23 times | 19 times | 20.9 |
| 6 | Tiara Dewi | 16 | 4'20" | 18,7 seconds | 27 times | 38 cm | 21 times | 17 times | 22.3 |
| 7 | Ayu Pratiwi | 17 | 3'55" | 16,2 seconds | 30 times | 50 cm | 25 times | 20 times | 23.4 |
| 8 | Nabila Putri | 15 | 3'50" | 17,3 seconds | 24 times | 41 cm | 20 times | 15 times | 20.5 |
| 9 | Citra Melati | 14 | 3'58" | 19,1 seconds | 19 times | 36 cm | 15 times | 13 times | 19.8 |
| 10 | Anisa Fauziah | 16 | 4'00" | 16,8 seconds | 28 times | 44 cm | 24 times | 18 times | 21.7 |
| 11 | Rika Susanti | 17 | 3'45" | 16,0 seconds | 31 times | 52 cm | 27 times | 21 times | 22.9 |
| 12 | Fitri Handayani | 13 | 4'05" | 20,3 seconds | 14 times | 30 cm | 14 times | 11 times | 18.5 |
| 13 | Nur Aisyah | 15 | 3'42" | 16,4 seconds | 26 times | 46 cm | 23 times | 18 times | 21.0 |
| 14 | Sari Indah | 14 | 3'35" | 18,0 seconds | 21 times | 39 cm | 18 times | 14 times | 20.2 |

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| No | Participant Name | Age | | | | | | Passing the Ball | BMI |
|------|----------------------|-----|--------|-----------------|----------|-------|----------|---------------------|------|
| 1115 | Lestari Anggraini | 17 | 13'50" | 16,7 seconds | 29 times | 48 cm | 26 times | 19 times | 22.1 |

2. Statistical Analysis

To further understand how the physical performance of female adolescents in this study, the data were analyzed using descriptive statistics. The mean value of each fitness test was calculated to identify the optimal development pattern of female adolescents in the context of soccer training.

- Running Speed (80m): The average time taken was 3.55 seconds. Running speed in female adolescents is greatly influenced by muscle development and movement techniques.
- Agility (Illinois Test): The average time achieved was 17.2 seconds. This showed that agility in soccer is closely related to coordination and quick reaction abilities.
- Muscular Endurance (60-second Sit-Ups): The average number of sit-ups was 24 times. A study by Wilmore & Costill (2023) confirmed that abdominal muscle endurance is very important for body stability when doing intensive activities such as soccer.
- Leg Explosive Power (Vertical Jump): The average vertical jump height is 42 cm. Bosco et al. (2023) stated that leg explosive power is directly related to the strength of the thigh and calf muscles in football.
- Eye and Hand Coordination (Throwing and Catching the Ball): The average number of throwing and catching the ball is 20 times. Schmidt & Wrisberg (2024) stated that this skill is needed in team games that require fast reactions.
- Eye and Foot Coordination (Passing the Ball): The average number of successful passes is 17 times. Magill & Anderson (2024) explained that passing is a key skill in football that reflects an understanding of tactics and ball control.
- Body Mass Index (BMI): The average BMI of participants was 20.5, which is in the normal category according to WHO standards (2023).

DISCUSSION

1. The Effect of Football on Physical Development

The results of the TKJI test show that participation in football contributes to improving the physical fitness of female adolescents. Research by (Malina et al., 2004) supports this finding by stating that consistent physical exercise can improve speed, agility, and muscle endurance in adolescents.

2. The Effect of Football on Mental and Social Health

In addition to physical benefits, football also has a positive impact on the mental and social health of female adolescents. A study by (Weiss & Stuntz, 2023) showed that team sports can increase self-confidence and reduce anxiety levels. Interviews with participants revealed that they felt more confident after participating in regular football training. This is supported by research by (Larson & Verma, 1999), which found that participation in group sports helps build communication and cooperation skills.

3. The Relationship Between Football and Academic Performance

Some participants admitted that football training helped them be more disciplined in managing their time and improved their academic focus/ This showed that participation in sports can improve cognitive function and academic performance through increased blood flow to the brain and the development of time management skills.

4. Research Implications

- 1. Development of Training Programs Based on the results of this study, it is recommended that soccer coaches at SSB BMP Purwodadi design training programs that balance physical, technical, and mental aspects.
- 2. School and Community Policies Schools and communities are expected to support sports programs for female adolescents by providing better facilities and promoting active participation.
- 3. Further Research This study can be further developed by involving a larger sample size and a longer training period to understand the long-term impact of soccer on the development of female adolescents.



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With the results and discussions that have been presented, it can be concluded that soccer provides significant benefits for the physical, mental, and social development of female adolescents, so participation in this sport needs to be supported more widely.

CONCLUSION

Based on the results of the research and discussion that has been carried out, it can be concluded that participation in soccer has a significant influence on the physical, mental, and social development of female adolescents aged 13-17 years. The results of the study obtained from the Indonesian Physical Fitness Test (TKJI), interviews, and observations show that soccer activities play a role in improving physical fitness, building self-confidence, and strengthening social and academic skills.

1. The Effect of Soccer on Physical Development

The results of the study show that female adolescents who are active in soccer have better levels of physical fitness compared to those who do not participate in this sport. The TKJI test showed an increase in aspects of speed, muscle endurance, agility, and motor coordination. A study by Malina et al. (2023) also confirmed that consistent exercise can increase aerobic capacity, muscle strength, and body flexibility. Thus, it can be concluded that soccer training contributes to optimal physical development in female adolescents during the golden age.

2. The Influence of Football on Mental and Psychological Development

In addition to physical impacts, this study also found that participation in football is closely related to the mental well-being of female adolescents. Interview results showed that soccer players experienced increased self-confidence, motivation, and resilience to pressure. A study by Weiss & Stuntz (2023) supports this finding by stating that team sports can increase self-confidence and help individuals manage stress and anxiety. Football also provides a supportive environment for developing leadership skills and fighting spirit.

3. The Influence of Football on Social Skills

Football as a team sport allows players to interact and cooperate with teammates, which ultimately strengthens their social skills. A study by Larson et al. (1999) confirmed that adolescents who are active in sports have better communication skills, as well as find it easier to build social relationships with others. In this study, participants who actively played football showed better adaptability in social environments and had a high sense of solidarity with fellow team members.

4. Relationship between Football and Academic Performance

The interview results also showed that teenagers who are active in football have better time management skills and are more disciplined in completing their academic tasks. This is in line with research by Williams & Carter (2024) which found that participation in sports contributes to increased concentration, cognitive skills, and academic performance. Therefore, it can be concluded that football is not only beneficial for physical and mental health, but also helps in improving the academic achievement of female teenagers.

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