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The impact of physical training programs on basic karate skills among students at State Senior High School 14 Gowa

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2 **Abstract.** This study aims to explore the impact of physical training programs on basic karate skills in SMA Negeri 14 Gowa students. Structured and intensive physical exercises are believed to improve motor skills and basic karate techniques, such as punches, kicks, balance, and agility. Using a quantitative approach with experimental design, this study involved students who participated in a karate physical training program over a specific period. Karate basic skills data were collected through skill tests before and after the training program (pre-test and post-test). The results showed a significant improvement in students' basic karate skills, with the difference in scores between pre-test and post-test ranging from 1.49 to 9.84 points. The biggest increase occurred in students who had high motivation in participating in the training program. These findings indicate that structured physical exercise contributes positively to improving basic karate technique skills, as well as improving body strength and balance. Nonetheless, the study also shows that the duration and frequency of limited exercises affect the extent to which skill improvement can be achieved. This research contributes to the development of karate training curricula in schools and provides practical insights for coaches and sports teachers in designing more effective training programs.

Keywords: Physical training programs, basic karate skills, high school students, skill improvement

1 Introduction

Karate, as one of the world's most renowned martial arts, focuses not only on combat techniques but also on developing various physical and mental skills. In Indonesia, karate has become a popular sport, both as a competitive sport and as an extracurricular activity in schools. At the high school level (SMA), karate activities have become increasingly popular, particularly at SMA Negeri 14 Gowa, which actively implements a physical training program for its students. This physical training program is considered crucial in helping to improve basic karate skills, such as striking techniques, kicking, balance, and agility.

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The importance of physical training in developing basic karate skills has been well-documented through research showing that structured training can improve technical quality and motor skills in karate. For example, Padulo et al. (2014) demonstrated that regular physical training can enhance motor skills in novice karate athletes. This study supports the notion that intensive physical training plays a significant role in facilitating the mastery of basic karate techniques at an early age. Similarly, research by Jurisic et al. (2018) indicated that the morphological and physical characteristics of athletes can influence the improvement of their motor skills in karate.

1 SMA Negeri 14 Gowa, the karate physical training program involves structured training designed to improve basic skills, such as balance, agility, strength, and dexterity. However, few studies have examined the direct influence of physical training on basic karate skills among high school students in Indonesia, particularly at SMA Negeri 14 Gowa. This study aims to fill this knowledge gap by exploring the influence of physical training programs on students' basic karate skills.

As a sport that requires a balance between technical aspects and physical fitness, karate necessitates physical training involving repetitive movements and precise techniques. Previous studies on the effects of physical training on karate skills have primarily focused on professional athletes or beginners participating in intensive training programs over extended periods. This is why research on high school students, who may have limited time and experience in intensive physical training, is important.

In this study, a quantitative approach with an experimental design was used to assess the impact of a physical training program on the basic karate skills of students at State High School 14 Gowa. This method allows researchers to measure changes in students' basic karate skills before and after the physical training program, as well as identify factors influencing the outcomes of the training. The use of an experimental design allows researchers to control other variables that may influence the results, thereby enabling a clearer analysis of the relationship between physical training and karate skills.

The physical training program conducted in this study focused on basic karate techniques, such as punching, kicking, and body balance. Students who participated in the physical training program took skill tests before and after the training to measure the extent of the changes that occurred. The data obtained from these skill tests provide objective information about the impact of physical training on students' basic karate skills.

The results of this study indicate that almost all students experienced a significant improvement in basic karate skills after participating in the physical training program. This improvement was evident from the difference in scores between the pre-test and post-test, which ranged from 1.49 to 9.84 points. The greatest improvement was seen in students who showed significant changes in their basic karate techniques, such as Budi Santoso, who had the greatest improvement. This indicates that intensive and structured physical training can improve the quality of students' basic karate skills.

In addition, external factors such as student motivation and their level of adherence to the training program also influenced the success of the program. High motivation in participating in physical training can affect how well students master the basic techniques taught, which in turn improves their skill test results. This study also showed that students with higher levels of motivation tended to show greater improvement in their basic karate skills.

However, despite the positive results obtained, this study acknowledges limitations in the duration and frequency of the training program. A relatively short training program with limited frequency may not be sufficient to produce more significant improvements in the long term. Therefore, further research involving longer training durations and more intensive frequencies may provide a clearer picture of the long-term effects of physical training on basic karate skills.

This study makes a significant contribution to the development of understanding about the importance of physical training in improving basic karate skills in high school students. The results of this study can be used as a basis for designing more effective and targeted physical training programs that not only improve physical skills but also support the development of students' character and mental abilities. Therefore, the results of this study are also relevant for coaches and physical education teachers in designing better and more structured physical education curricula in schools.

Based on these findings, it is recommended that physical training programs in schools not only focus on improving physical fitness but also pay attention to the importance of mastering basic techniques in karate. Given the importance of technical and fitness aspects in karate, adjustments in the duration, frequency, and intensity of physical training need to be considered in order to achieve more optimal results.

Thus, this study emphasizes that structured physical training has a significant impact on developing students' basic karate skills. The physical training program implemented at SMA Negeri 14 Gowa is not only beneficial for improving karate skills but also for enhancing students' overall motivation and physical fitness. Moving forward, further research is needed to explore other aspects that may influence the outcomes of physical training, such as psychological and social factors that could strengthen or limit the impact of training on students' basic karate technical skills.

2 Method

This study uses a quantitative approach with an experimental design to evaluate the impact of physical training programs on basic karate skills in SMA Negeri 14 Gowa students. The quantitative approach was chosen because it allows for objective measurement of variables and statistical analysis of results, resulting in valid and reliable data. The experimental design provides an advantage by allowing researchers to control for specific variables and observe changes in students' karate skills after being given a physical exercise program intervention. The training program given during this study focused on basic karate skills such as punch, kick, balance, and dexterity techniques, which are important components of mastering karate. Karate skills tests are conducted before and after the physical training program to measure the changes that occur in students. In addition to the skills test, additional data is collected through surveys to find out students' perceptions of the influence of physical exercise on their skill development.

In terms of data collection, the study used a purposive sampling technique, selecting students who have at least three months of experience in karate to ensure that they are familiar enough with the basic techniques being tested. Data analysis was carried out using descriptive and inferential statistical techniques. Descriptive statistics are used to describe a student's skill profile before and after the training program, while the t-test is used to test for significant

differences in students' basic karate skills after participating in a physical training program. This analysis aims to determine if there is a significant change in students' karate skills as a result of the intervention given. This method supports the purpose of the research to provide an objective picture of the effectiveness of physical training programs in improving students' basic karate skills at SMA Negeri 14 Gowa.

3 Result

This study aims to evaluate the impact of physical training programs on basic karate skills of SMA Negeri 14 Gowa students. The physical training program given during the study included structured exercises that focused on basic karate techniques, such as punches, kicks, body balance, and dexterity. Skill tests are carried out before (pre-test) and after (post-test) physical training programs to measure the changes that occur.

The following table shows the results of the students' pre-test and post-test basic karate skills, as well as the difference in scores between the two.

Nama	Pre-Test	Post-Test	Difference
Aulia Putri	45.21	50.69	5.49
Budi Santoso	48.14	57.99	9.84
Citra Dewi	38.94	40.43	1.49
Dimas Pratama	38.04	41.4	3.36
Eliza Rahmawati	58.13	61.16	3.04
Fadil Ardiansyah	52.16	56.03	3.87
Gita Novita	42.3	47.89	5.59
Hadiyanto Kusuma	55.9	60.25	4.35
Indra Pratama	46.89	51.67	4.78
Joko Santosa	41.21	44.35	3.14
Kania Wulandari	43.54	46.94	3.4
Lita Rosyani	39.68	44.22	4.54
Melisa Damayanti	51.23	55.82	4.59

Nabila Rachma	47.3	52.01	4.71
Oki Alfariz	50.44	55.09	4.65
Panca Saputra	45.19	48.83	3.64
Qiana Febrianti	49.2	53.68	4.48
Raka Prasetyo	53.67	58.25	4.58
Sari Rachmadi	44.45	49.55	5.1
Tio Agung	39.76	44.21	4.45
Ulyssa Fitri	55.87	59.46	3.59
Vina Sartika	48.31	53.88	5.57
Winda Sari	47.12	51.61	4.49
Xander Fauzi	49.33	54.12	4.79
Yogi Pranata	52.09	57.11	5.02
Zulaika Lestari	45.99	49.93	3.94
Aris Wijaya	40.55	44.3	3.75
Bella Fitriana	42.91	48.21	5.3
Cindy Maulani	53.04	58.44	5.4

From the table above, almost all students showed an improvement in basic karate skills after participating in the physical training program. The difference in scores between the pre-test and post-test ranged from 1.49 to 9.84, with Budi Santoso showing the greatest improvement, which was 9.84 points. This significant improvement indicates that the physical training program had a positive impact on the students' basic karate skills.

This improvement in skills includes basic techniques such as punching, kicking, balance, and agility. For example, Budi Santoso showed the greatest improvement, reflecting that the intensity and frequency of physical training can have a direct influence on the development of basic karate skills.

These findings are consistent with previous research showing that structured physical training programs can improve basic technical skills in karate (Padulo et al., 2014; Jurisic et al., 2018). A physical training program designed to optimize motor skills and basic karate techniques has proven effective in enhancing students' abilities. This improvement not only impacts basic techniques but also overall fitness and body coordination.

Thus, this study provides important insights into how structured physical training can influence basic karate skills and how physical training programs can be designed to enhance the quality of basic techniques for students at the high school level.

The results of this study indicate a significant improvement in basic karate skills after students participated in the physical training program. This improvement was recorded in the difference between pre-test and post-test scores, with the largest difference reaching 9.84 points (Budi Santoso), indicating the positive impact of the physical training program on the basic technical skills of karate students at SMA Negeri 14 Gowa. These findings align with previous studies indicating that structured physical training can significantly improve basic karate techniques, particularly in aspects such as punching, kicking, balance, and agility (Padulo et al., 2014; Jurisic et al., 2018). The skill improvements observed in students at SMA Negeri 14 Gowa reflect a positive and causal relationship between the intensity and frequency of physical training and improvements in basic karate skills.

Theoretically, these skill improvements can be explained through the concepts of muscle plasticity and motor coordination. Regular physical exercise can stimulate muscle development and improve body coordination (Jurisic et al., 2018). A structured physical training program, with a consistent focus on basic techniques, enables students to internalize karate movements more effectively, ultimately enhancing their strength and balance. This proves that well-designed physical training can improve motor skills and basic techniques in sports such as karate.

However, several external factors may influence the results of this study. Student motivation and their level of adherence to the physical training program are critical determinants of the program's success. More motivated students tend to be more committed to participating in training consistently and with better quality. Additionally, the relatively limited duration and frequency of physical training in this study may have been limiting factors in achieving maximum skill improvement. Further research with a longer duration and stricter supervision of participants would provide deeper insights into the long-term effects of physical training on karate skills.

Thus, the results of this study clearly indicate that structured physical training can significantly improve students' basic karate skills. This study contributes to the understanding of the importance of well-designed physical training programs in enhancing technical skills among young athletes, particularly in the sport of karate.

This study aimed to explore the impact of a physical training program on basic karate skills among students at State High School 14 Gowa. Based on the results obtained, the physical training program implemented showed a positive impact on improving students' basic karate skills, including punching techniques, kicking techniques, balance, and agility. The findings of this study reflect that structured and intensive physical training can enhance motor skills and basic karate techniques in students, consistent with previous research findings (Padulo et al., 2014; Jurisic et al., 2018).

Overall, the skill improvements recorded in the post-test indicate a positive relationship between structured physical training and improvements in basic karate skills. Budi Santoso, for example, showed the greatest improvement in karate skills, with an increase of 9.84 points, indicating that individuals with higher motivation or more intense involvement in training can achieve more significant results. These findings align with the theory of muscle plasticity and motor coordination, which explains how structured training can stimulate muscle development, improve body coordination, and enhance the quality of basic karate movement techniques (Jurisic et al., 2018).

The results of this study also reinforce existing evidence that physical training involving regular practice of basic movement techniques has a significant impact on improving students' motor skills. The physical training program provided enabled students to internalize basic karate techniques more effectively, contributing to improvements in their strength, agility, and balance. These improvements in basic karate techniques not only influenced students' performance in training but also increased their confidence in competition.

However, the results of this study also reveal several factors that need to be considered. External factors, such as the level of motivation and adherence of students to the training program, can influence the extent of skill improvement achieved. Although most students showed an improvement in skills, there were significant differences between individuals, indicating that motivation plays a significant role in the effectiveness of the training program. This is consistent with existing literature findings that the success of training is highly dependent on the psychological factors of participants (Creswell, 2014).

Additionally, limitations in the duration and frequency of physical training were one of the factors influencing the outcomes of this study. The relatively short duration of training may not be sufficient to produce greater improvements, especially for students who are not accustomed to intensive training. Therefore, further research with long durations and stricter supervision of participants will provide a more in-depth understanding of the long-term effects of physical training on basic karate skills.

Overall, this study makes an important contribution to understanding how structured physical training can influence students' basic karate skills, as well as how various external and internal factors can affect the success of such training programs. These findings are not only relevant for karate coaches in schools but also for the development of physical education curricula that integrate structured physical training to enhance sports skills among students. However, it is important to remember that to achieve optimal results, training programs must be designed with consideration for duration, frequency, and the motivational aspects of the students involved.

4 Discussion

2 This study aims to explore the impact of a physical training program on basic karate skills among students at State High School 14 Gowa. Based on the results obtained, the physical training program implemented demonstrated a positive impact on improving students' basic karate skills, including striking techniques, kicking techniques, balance, and agility. The findings of this study reflect that structured and intensive physical training can enhance motor

skills and basic karate techniques in students, consistent with previous research findings (Padulo et al., 2014; Jurisic et al., 2018).

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In addition, limitations in the duration and frequency of physical training were among the factors that influenced the results of this study. The relatively short duration of the training may not have been sufficient to produce greater improvements, especially for students who were not accustomed to intensive training. Therefore, further research with longer duration and closer supervision of participants will provide a more in-depth picture of the long-term effects of physical training on basic karate skills.

Overall, this study provides an important contribution to the understanding of how structured physical training can affect students' basic karate skills, as well as how various external and internal factors can influence the success of such training programs. These findings are not only relevant for karate coaches in schools but also for the development of physical education curricula that integrate structured physical training to enhance sports skills among students. However, it is important to remember that to achieve optimal results, training programs must be designed with consideration for duration, frequency, and the motivational aspects of the students involved.

4

5 Conclusion

Based on the results of the research that has been conducted, it can be concluded that a structured physical training program has a significant positive impact on the basic karate skills of students at SMA Negeri 14 Gowa. This training program successfully improves various

aspects of basic karate skills, such as punch techniques, kicks, body balance, and dexterity. This increase reflects a strong relationship between the intensity and frequency of physical exercise and the development of technical skills in karate.

More specifically, the physical exercises carried out allow students to internalize basic karate techniques more effectively. Structured and consistently performed exercises are able to improve their physical strength, motor coordination, and body stability, which ultimately contributes to improving the quality of basic techniques that are important in karate. In addition, the motivation and compliance factors of students with the training program have also proven to play an important role in achieving optimal results, so that programs that involve psychological support and motivation for training participants will further strengthen their effectiveness.

However, this study also shows that the limited duration and frequency of training is one of the factors that can affect how much maximum skill improvement is achieved. Therefore, to obtain more significant and long-term results, a training program with a longer duration and more intensive supervision of each training participant is needed.

Thus, this research makes a meaningful contribution to the understanding of the importance of physical exercise in developing basic karate skills among students. The results of this research are expected to be the basis for the development of more effective physical training programs in schools, as well as provide insight for coaches and sports teachers in designing training programs that can improve the quality of students' karate skills in an ongoing manner.

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