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The Effect of Fundamental Taekwondo Training on the Fundamental Movement Skills of Elementary School Students

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Abstract

This study aims to determine the effect of fundamental Taekwondo training on fundamental movement skills (FMS) in elementary school students. The research method used a quantitative approach with a one-group pretest-posttest design. The research subjects consisted of 25 students (10 boys and 15 girls) from the Lembang Taekwondo Club. The instrument used was the Test of Gross Motor Development–Second Edition (TGMD-2) to measure children's locomotor movement abilities. Data analysis using the Shapiro-Wilk normality test showed that the data were normally distributed ($p > 0.05$), while the paired sample t-test yielded a significance value of $0.000 < 0.05$. There is a clear improvement from the pretest results, where most students were in the average (60%) and below average (32%) categories. After being given treatment in the form of fundamental taekwondo training, the posttest results show that the excellent category increased to 32%, above average to 28%, and average remained at 32%. while the below average category decreased to 8%. This indicates a significant difference between the pretest and posttest results. This finding suggest that the training program was well received and successfully implemented by the childern. Thus, fundamental Taekwondo training has a positive effect on improving the fundamental movement skills of elementary school students, particularly in terms of balance, coordination, and movement strength.

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INTRODUCTION

Elementary school student are individuals who are in a period of rapid growth and development, both physically, cognitively, socially, and emotionally. One important aspect of physical development is mastery of Fundamental Movement Skills (FMS). FMS is the main foundation for the development of various advanced motor skills and more complex physical activities. Children›s motor development is an important aspect for their future lives. The principle of motor development is that there are physical and psychological changes in accordance with the growth period (Bakhtiar et al., 2019). Fundamental movement skills are not skills that develop on their own, but must be taught, practiced, and structured activities. According to (Hardy et al., 2012) without proper learning, children will show a wide variation in FMS development, which has the potential to cause imbalances in physical participation and fitness development".

FMS consists of three main components, namely: locomotor skills such as running, jumping, sliding, and climbing (Budi et al., 2019). Balance skills such as bending, stretching, turning, rolling, landing, or stopping. Manipulative skills such as throwing, catching, bouncing, rolling a ball, volleying, and pedaling (Holfelder & Schott, 2014).

Optimal mastery of FMS during childhood has a significant relationship with physical fitness, participation in physical activity, and long-term health. Children with good FMS tend to be more physically active and better able to develop advanced sports skills. This is because FMS is the basic foundation that is a prerequisite for mastering specific movement skills in various sports. (Stodden et al., 2008) explain that «there is a two-way relationship between FMS and physical activity: children with high FMS are more confident and more motivated to engage in physical activity, while sufficient physical activity can also improve the quality of children›s FMS. This model is known as the developmental motor competence model.

Mastery of FMS also plays an important role in children›s readiness to participate in formal sports training, including martial arts such as Taekwondo. Children who have good locomotor (running, jumping, hopping), stability (balance), and manipulative skills will find it easier to understand complex movement patterns. (Goodway & Robinson, 2015) argue that "children with low FMS are more likely to avoid sports activities because they feel less motorically competent," which ultimately reduces their chances of achieving optimal physical development.

Fundamental Movement Skills serve not only as basic motor skills, but also as important predictors of athletic performance throughout childhood (Logan et al., 2018). This means that children with good FMS qualities tend to find it easier to learn sports techniques such as kicking, punching, long jumping, swimming, or complex movements. In the context of taekwondo, for example, children with good balance and coordination are ready to learn fundamental techniques such as ap chagi, yeop chagi, and explosive footwork.

Taekwondo is a modern martial art that originated in Korea and has now developed into an international sport recognized by the IOC and competed in the Olympics. As a martial art, taekwondo emphasizes a combination of kicking, punching, defense, and coordinated movements that emphasize speed and accuracy. The main characteristic of taekwondo is the dominance of explosive kicking techniques that require leg muscle strength, flexibility, balance, and good neuromuscular coordination. According to (Fong & Ng, 2011) "taekwondo kicking patterns involve hip rotation, core stabilization, and rapid leg muscle activity, which has the potential to improve the physical capacity of children and adolescents who are in the motor growth phase".

As an educational sport, taekwondo focuses not only on mastering techniques, but also on character development, such as discipline, self-control, respect, and courage in facing physical challenges. According to (National and Husain 2022) shows regular participation in taekwondo contributes to improved self-discipline, concentration, and social behavior in elementary school children.

From a motor development perspective, taekwondo can also serve as an effective intervention for developing fundamental movement skills (FMS) in children. Basic exercises such as stance, balance drills, footwork, and kicking techniques develop gross motor components such as agility, balance, strength, coordination, and flexibility. According to (Top, Akil, and Aydin 2018) 12 weeks of taekwondo training in children aged 7-10 years resulted in significant improvements in muscle strength, agility, and coordination.

From a biomechanical perspective, the structure of taekwondo movements requires a combination of reaction time, accuracy, and

explosive power. According to (Huriah, Sundari, and Mashudi 2024) says that "children who regularly participate in taekwondo extracurricular activities demonstrate excellent motor skills, especially in terms of body balance and movement stabilization." This study reinforces that taekwondo training is a form of physical activity that is very suitable for the developmental stage of elementary school students.

Based on this introduction, this study aims to find out how much basic technique training in taekwondo can improve basic movement skills in elementary school kids. This study provide empirical evidence that taewkondo training not only develops martial arts skill but also contributes to improving the quality of childen's fundamental movement skill. These finding serve as a scientific basis for coaches and parents to consider taekwondo as a phiysical activity option that children's motor develoment and overall growth. is expected to be useful for taekwondo coaches and parents to realize how important it is to train basic movements in kids.

METHOD

This study using an experimental method with a quantitative approach. This study using a one-group pretest-posttest design. According to (Arikunto, 2010) stated that "one-group pretest-posttest design, research is conducted only on one group of subjects. This group is given a pretest, then subjected to treatment, and then given a posttest".

The treatment given was a fundamental taekwondo training. The study was conducted at the Lembang Taekwondo Club in Kabupaten Bandung Barat with a population of 25 elementary school students. The research sample consisted of 15 girls and 10 boys. This study used a non-probability sampling method. According to (Arifin Z 2012) stated that "non-probability sampling is a sampling technique based on certain considerations, such as ease of access or specific criteria." This study involved 25 samples, comprising 10 male and 15 female children. The criteria used were children who participated in training at the Lembang Taekwondo club, children in grades 1-6 of elementary school, and children who were physically and mentally healthy.

This research instrument uses the Test of Gross Motor Development-Second Edition (TGMD-2) to measure basic locomotor skills. TGMD-2 is used to measure skills such as running, galloping, jumping, leaping, sliding, and horizontal jumping.

The research procedure included a pretest stage using TGMD-2, fundamental taekwondo training, and a posttest using the same instrument. This research was conducted with taekwondo coaches as observers.

Data analysis was performed using SPSS (Statistical Program for Social Science) software. Normality was tested using the Shapiro-Wilk test, while hypothesis testing was performed using the t-test because the sample size was less than 50 people. The decision criteria were set based on a significance value of 0.05; if $p < 0.05$, it means that there is a significant difference between the pretest and posttest result.

RESULTS AND DISCUSSION

Figure 1. Diagram of Differences in Pretest and Posttest Results

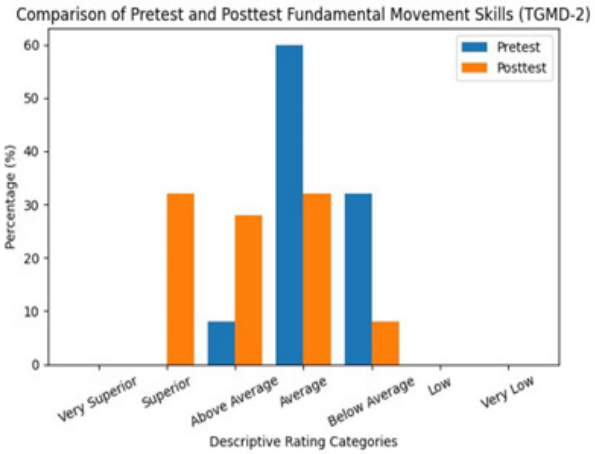

Figure 1 presents comparative data between pretest and posttest results. There is a clear improvement from the pretest results, where most students were in the average (60%) and below average (32%) categories. After being given treatment in the form of fundamental taekwondo training, the posttest results show that the excellent category increased to 32%, above average to 28%, and average remained at 32%. while the below average category decreased to 8%.

Table 2. Fundamental Movement Skill Pretest and Posttest Scores

Descriptive Rating	Pretest		Posttest	
	Persent	number of students	Persent	number of students
Superior	0	0	0%	0
Excellent	0	0	32%	8
Above Average	8%	2	28%	7
Average	60%	15	32%	8

Below Average	32%	8	8%	2
Low	0%	0	0%	0
Very Low	0%	0	0%	0

The sample size of the study involved 25 students. **Table 2** shows that the percentage of basic locomotor skills measured using TGMD-2 in the pretest showed that 2 students were in the above average category, 15 students were in the average category, and 8 students were in the below average category. After the treatment, the posttest results showed an increase, with 8 students in the excellent category, 7 students in the above-average category, 8 students in the average category, and 2 students in the below-average category.

Table 3. Normality Test Results Shapiro-Wilk

	Statistic Velue	Degrees of Freedom	Significance	information
Pretest Results	.964	25	.116	normal
Posttest Results	.959	25	.108	normal

Based on **Table 3**, according to the Normality Test mentioned above, the researcher found that the research data for variable (x), namely fundamental taekwondo training, and variable (y), gross motor skills or Fundamental Movement Skills (FMS), had significant values of 0.116 > 0.05 and 0.108 > 0.05, which means that the data was normally distributed. Based on the decision-making in the normality test, the following applies: If the significance value (sig) is greater than 0.005, then the research data is normally distributed, and if the significance value (sig) is less than 0.005, then the research data is not normally distributed.

Table 4. Hypothesis Testing Paired Samples Test

Results Before And After Pretest and Posttest		
Mean	-17.52000	information
T	-52.729	
Df	24	significance
Sig (2 tailed)	.000	

Based on the results of the hypothesis test in **Table 4**, there was a difference between before and after treatment, and after treatment, the variable (x), namely fundamental taekwondo training, and the variable (y), gross motor skills or Fundamental Movement Skills (FMS), had a significance value of 0.000 < 0.05. Therefore, it can be concluded that taekwondo fundamental training has an effect on gross motor skills or Fundamental Movement Skills (FMS).

Based on the findings and data management to find out the effect of fundamental taekwondo training on basic movement skills in elementary school student, after conducting data and statistical analysis and finding the results. Then, it will discuss the research findings in the form of research results and their relevance to the theory that supports the research results. The study describes the pretest results before the treatment, which was a Taekwondo fundamental training program consisting of several sessions. The pretest results showed that most children had fundamental movement skills (FMS) in the low to moderate category. The children showed difficulties in body coordination, difficulty maintaining balance when changing positions, lack of postural control, and manipulative movements. As stated by (Hardy et al., 2013) "without targeted training, elementary school children tend to show developmental delays in FMS, especially in the aspects of bilateral coordination and balance." After being given a fundamental taekwondo training program for 12 sessions, the post-test results showed a significant increase in children's FMS abilities. Children began to show progress in the locomotor aspect (such as jumping, running, and changing direction) and in the manipulative aspect (such as hand movement control and coordination of limb movements when performing basic kicks). In line with the findings (Pratama and Nugroho 2021) stated that "basic taekwondo techniques improve balance, agility, and movement coordination in elementary school-aged children".

Fundamental taekwondo training requires systematic repetition of movements, such as stances, kicks, punches, and blocks. This repetition causes children to perform the same movement patterns over and over again, strengthening their neuromuscular pathways and speeding up their motor responses. As stated by (Schmidt & Lee, 2025) the more often a movement pattern is repeated, the stronger the neural connections and motor memory become." Therefore, fundamental taekwondo training accelerates children's motor adaptation and significantly improves their basic movement skills.

In addition to physical aspects, fundamental taekwondo training also has an impact on children's psychomotor and effective development. According to (Sukandiyanto & Muluk 2020) stated that "taekwondo training not only

focuses on improving physical abilities, but also plays a major role in shaping children's character." Each training session includes educational values such as respect (respect for coaches and friends), greeting etiquette, following rules, and getting used to following instructions. Also, taekwondo emphasizes consistent training as part of the self-discipline process. This combination of values makes taekwondo not just a martial art, but also a means of character education and the formation of a positive mental attitude in children.

The results and conclusions of the above study show that there was a significant improvement in fundamental movement skills (FMS) in elementary school children after participating in a fundamental taekwondo training program. This improvement was seen in their ability to run, jump, control their bodies, kick, and maintain balance when changing positions during movement activities.

CONCLUSION

Based on the results of the hypothesis testing, there is a substantial effect between taekwondo fundamental training and an increase in fundamental movement skills in elementary school students. This can be seen from the difference in pretest and posttest scores, which show a very clear increase after the children were given treatment. These findings indicate that taekwondo fundamental training is able to provide effective movement stimulus in improving gross motor skills, especially in terms of coordination, balance, and agility control, which directly contributes to the development of Fundamental Movement Skills.

This study shows that systematic and enjoyable taekwondo fundamental training can have a positive effect on improving the FMS of elementary school students. Physical education teachers and coaches are expected to implement this training model regularly so that children's motor skills can develop optimally.

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