13 (1) (2026) 270 - 280

Journal of Physical Education, Health and Sport

https://journal.unnes.ac.id/journals/jpehs

The Effect of Parkour Exercise in Athletics Training on Locomotor Skills in Elementary School Students

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History Article

Received March 2026
Approved April 2026
Published vol 13 no 1 2026

Keywords

Parkour; Athletic Training; Locomotor Movement; Elementary School; Physical Education Innovation

Abstract

The advancement of digital technology has induced a sedentary lifestyle in youngsters, adversely affecting the deterioration of fundamental motor abilities, particularly locomotor motions. On the other hand, conventional athletic training in schools is often considered uninteresting for students. The purpose of this study is to evaluate the impact of using parkour in athletic training on enhancing elementary school children' locomotor skills and to compare its efficacy with traditional training methods. This research employed an experimental methodology with a pretest-posttest control group design. The research sample comprised kids from Mandalaherang Elementary School, categorized into an experimental group (parkour-based learning) and a control group (traditional learning). The TGMD-2 (Test of Gross Motor Development - Second Edition) was employed to assess locomotor skills. Data analysis was conducted using normality tests, homogeneity tests, and N-Gain assessments. The findings indicated a notable enhancement in the locomotor abilities of the experimental group. The experimental group attained an average N-Gain score of 0.5031 (moderate category), but the control group achieved just 0.2065 (poor category). Alongside physical attributes, observations indicated an enhancement in students' self-confidence and problem-solving abilities when confronted with challenges. The integration of parkour into the elementary school athletics curriculum has proven to be more effective in enhancing students' locomotor skills compared to conventional teaching methods. Parkour can serve as an innovative learning medium that is interesting, challenging, and suited to the developmental characteristics of elementary school students.

How to Cite

Syihabuddin, R., Safari, I., & Susilawati, D. (2026). The Effect of Parkour Exercise in Athletics Training on Locomotor Skills in Elementary School Students. Journal of Physical Education, Health and Sport, 13 (1), 270-280.

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p-ISSN 2354-7901
e-ISSN 2354-8231

INTRODUCTION

Amidst the rapid growth of digital technology, the situation of decreased interest in sports among primary school pupils, as noticed at State Elementary School Mandalaherang, has become a severe challenge. This inactive lifestyle has a direct impact on the low mastery of locomotor abilities (running, jumping, overcoming obstacles), even though these skills are critical foundations for fitness, physical health, and active engagement of children in the long term (Veljkovic et al., 2021). This issue is intensified by traditional athletic education, which frequently does not foster excitement for physical activity among kids.

On this study focuses on three main issues, namely: (1) what is the profile of students' locomotor skills before and after being given parkour intervention; (2) is there a significant effect of applying parkour in athletics learning on improving students' locomotor skills amid the challenges of a sedentary lifestyle due to technology; and (3) to what extent can this innovation increase students' interest and physical activity. In accordance with these challenges, this study attempts to empirically analyze the efficiency of integrating parkour as an innovative and flexible learning medium for primary school pupils. Theoretically, this work is expected to contribute to the creation of a physical education learning paradigm anchored in fundamental movement skills. Practically, this study presents alternative strategies for teachers to create difficult learning experiences, boost students' general physical motivation, and motivate schools to establish a physical education curriculum that is relevant to the times.

Parkour can be incorporated into athletic training to enhance agility and boost student engagement. Parkour, a physical discipline, centers on the efficient traversal of various obstacles (Witfeld et al., 2013). This practice aligns with the Developmentally Appropriate Practice (DAP) approach, which advocates for the adaptation of learning resources to children's developmental stages, thereby fostering enjoyable movement experiences (Sari & Silitonga, 2024).

Fundamental locomotor skills, encompassing the capacity to shift the body across space through actions like running, jumping, and climbing, constitute the foundation of children's physical and motor development during elementary school. Furthermore, the acquisition of these fundamental movement skills not only contributes to physical well-being but also establishes a crucial groundwork for the development of more complex movements and sustained engagement in physical activities over the long term (Veljkovic et al., 2021). At this stage of development, children's physical growth significantly relies on suitable stimuli to enhance coordination and bodily control. Insufficient proficiency in locomotor skills can undermine children's self-assurance in movement; this is further exacerbated by a sedentary lifestyle prevalent in the contemporary digital age (Zakiyah et al., 2024). Therefore, developing fundamental movement skills through different activities is highly important to guarantee healthy and optimal growth and development in children (YOLCU, 2023).

Parkour is a contemporary physical discipline that focuses on the effectiveness and efficiency of human movement in engaging with obstacle settings without the use of equipment. Operationally, Parkour is a training technique for getting from point A to point B with maximal speed and functionality (Derakhshan & Machejefski, 2015; Miller & Demoiny, 2008). Dewangga et al., (2023)characterize Parkour as an intensive sport that needs its practitioners (traceurs) to move freely in difficult environments. n contrast to Freerunning, which prioritizes creative self-expression, and Tricking, which emphasizes acrobatic aesthetics like somersaults and flips, Parkour is fundamentally grounded in utilitarian and pragmatic principles (Atkinson, 2009). Each Parkour action is assessed according to its efficacy in overcoming obstacles or mitigating danger, rather than its visual appeal (Lyulina et al., 2013). Consequently, functionality and safety are the primary objectives, particularly considering the significant risk of lower extremity injuries during landings (Eratama, 2020).

Biomechanically, Parkour necessitates demanding gross motor skills, including jumping, landing, climbing, and high-intensity running. Functional Movement Skills in Parkour are directly linked to sprint performance, where the quality of fundamental motions significantly influences movement effectiveness (Strafford et al., 2020). The fluidity of these movements is largely contingent upon the explosive strength of the leg muscles, with strength and jump training shown to substantially enhance vertical and horizontal skills (Mukin, 2025; Seyhan, 2019). Kinematicly, Parkour applies the principles of rapid linear motion and parabolic motion, especially in the precision jump method (Ardiansyah et al., 2022). This complexity reveals that Parkour is not only an ordinary physical exercise, but a medium rich

in scientific value for approaches to sports and education.

In a pedagogical environment, the implementation of Parkour as a comprehensive technique in the Physical Education curriculum has been proven to boost student involvement (Coolkens et al., 2018). Parkour delivers difficult and meaningful movement experiences for elementary school pupils with adjustments according to their developmental stage (Developmentally according Practice). The integration of Parkour aspects into athletics education should emphasize on fundamental functional qualities such as safe landing procedures, balance, and coordination, rather than high-risk acrobatic maneuvers (Miller & Demoiny, 2008; Vanluyten et al., 2023). With this approach, Parkour not only acts as a tool for increasing physical literacy, but also as an innovative solution to address the difficulties of sedentary lives and diminishing locomotor movement quality in children in the digital age.

As a fundamental activity, athletics serves a critical role in refining basic human motor abilities, which include walking, running, jumping, and throwing. The International Association of Athletics Federations (IAAF) underlines that the principles of athletic movement are the foundation of all sports because they stem from ordinary human activities. In the context of physical education, athletics is not only a competitive activity, but a systematic means of developing students' physical, motor, and character qualities, such as discipline and responsibility. Mastery of basic athletics motions is particularly significant because it is a requirement for acquiring more sophisticated sports skills in the future (Ulrich, 2007). In line with this notion, parkour arose as a creative method that increased the functionality of these basic movements. Rooted in George Hébert's Méthode Naturelle, parkour emphasizes the progress of athletes through the integration of effective perception-action in addressing environmental barriers (Straffor et al., 2022). There is a direct association between parkour performance and the quality of Fundamental Movement Skills (FMS), where sprinting ability and explosive power are concrete markers in dynamic conditions (Suharjana, 2011).

The introduction of parkour into the elementary school athletics curriculum is a purposeful and inventive reaction to the sedentary lifestyles and declining locomotor skills prevalent in the digital era. This study highlights that parkour is not only an extreme sport, but a utilitarian physical discipline founded in the Méthode Naturelle, valuing movement efficiency, safety, and functional agility. By aligning with Developmentally Appropriate Practice (DAP), parkour turns traditional, often repetitive sports education into a dynamic and meaningful experience that improves basic movement skills (FMS) such as running, leaping, and climbing. Biomechanical and pedagogical research suggests that the systematic mastering of parkour's basic elements specifically safe landing, balance, and coordination serves as a key foundation for more complicated athletic performance and long-term physical literacy. Furthermore, this strategy serves both the physical and psychological needs of kids by enhancing motivation and enjoyment for physical activity. Ultimately, embracing parkour as a holistic pedagogical technique offers schools a relevant, flexible, and successful framework to create a generation of kids that are not only physically proficient but also resilient and active in tackling modern difficulties.

This study aims to statistically assess the impact of parkour training on enhancing locomotor skills in elementary school kids and to compare its efficacy with traditional teaching techniques. This study aims to identify alterations in students' motor skills pre- and post-intervention, and to evaluate the effectiveness of the parkour approach as a learning innovation grounded in Developmentally Appropriate Practice (DAP) in enhancing students' motivation, engagement, and quality of physical activity in the context of a sedentary lifestyle in the digital age.

METHOD

In this study, the quantitative method will be used with a quasi-experimental nonequivalent control group design, which compares two unequal groups, where one group receives treatment and the other does not (Abraham & Supriyati, 2022). Quasi-experiments were chosen because the population in this study was taken based on study groups from third and fourth grades. This design is in line with the objectives of this study, which focuses on athletic learning in elementary schools.

Table 1. Experimental Group (Hardani et al., 2020).

Group	Pretest	Treatment	Posttest
A	O1	X1	O2
B	O3	X2	O4

Explanation:
A = Experiment group O3 = Pretest (Control)
B = Control group O4 = Posttest (Control)

O1 = Pretest (Experiment)
X1 = Parkour athletic learning model
O2 = Posttest (Experiment)
X2 = General athletic learning model

This study used an experimental design that classified participants into two functional groups to test the impact of various therapies (Hardani et al., 2020). In accordance with experimental research principles that emphasize demonstrating causation through comparison analysis, State Elementary School Mandalaherang 2 was designated as the experimental group that received special interventions in its schooling process. Conversely, State Elementary School Mandalaherang 1 acted as the control group, which did not receive further intervention and continued to use normal teaching methods as usual. The control group at State Elementary School Mandalaherang 1 served as a comparative benchmark to confirm that the changes noticed in pupils at State Elementary School Mandalaherang 2 were genuinely caused by the treatment delivered, not extraneous influences or coincidence.

The study population comprised all kids from state elementary schools. The subjects of the study generalization were Mandalaherang 1 and 2 throughout the 2025–2026 academic year (Hardani et al., 2020). A sample was selected from this group using a purposive non-probability sampling strategy, specifically targeting kids in grades III and IV who were deemed suitable for the research aims and were in the basic motor development stage. The sample selection sought to guarantee that the research individuals possessed attributes pertinent to the assessment of locomotor skills. Furthermore, the purposive method enabled researchers to acquire more detailed, contextual, and relevant data aligned with the research requirements (Hardani et al., 2020).

Table 2. Population of third and fourth grade elementary school students

Class	Number of Students
III	72
IV	64
Total	136

A The participation requirements for this study were established based on their compatibility with the TGMD-2 instrument, specifically students aged up to 10 years and 11 months. This criterion was established to guarantee the validity of the assessment outcomes, given that the TGMD-2 was explicitly designed to evaluate children's motor development within a defined age range (Ulrich & Sanford, 2000). Additionally, the appropriateness of the subject's traits for the instrument was evaluated.

This experimental study was conducted in 12 sessions, consisting of one pre-test session, ten parkour treatment sessions, and one post-test session. Ten treatment sessions were chosen to maintain time efficiency and ensure an intensive intervention dose to achieve maximum internal validity. Referring to Gay et al., (2012), this duration was considered adequate because each session was designed with high activity density to trigger physiological adaptation and acquisition of students' locomotor skills. Additionally, this efficient duration aims to minimize the threat of history and maturation (Creswell, 2009), so that measurable changes in locomotor skills can be strongly attributed to the effectiveness of the parkour method provided.

Tabel 3. Research Procedure

Meeting	Focus of Activities
1	Pre-test of Locomotor Movement skills (introduction to parkour)
2 - 11	Parkour training sessions packaged in basic athletics lessons
12	Post-test of Locomotor Movement skills

The intervention in the experimental group was undertaken over ten sessions, integrating parkour aspects into the athletics teaching and learning process. The core material was developed based on the classification of parkour actions that had been changed and suited to the elementary school athletics curriculum. The learning design included:

Table 4. Similarities between parkour and basic movement skills (Strafford et al., 2018; Witfeld et al., 2013)

Core Parkour Material	Fundamental Movement Skill
Balancing	Walking on a line, standing on one foot, airplane pose
Running	Sprinting, zigzag running, simple relay running
Jumps	Long jump, simple high jump, rope jump
Landings	Guling depan, teknik mendarat lompat jauh/tinggi
Vaults	Jumping over boxes/benches/low obstacles
Climbing	Climbing metal ladders, poles, or ropes
Clearing/ Underbar	Obstacle course: crawling under nets, jumping over tires

Data collection was conducted through pre-tests and post-tests using the Test of Gross Motor Development-2 (TGMD-2) instrument (D. Ulrich & Sanford, 2000). TGMD-2 was chosen because it focuses on qualitative aspects and patterns of children's body movements when performing motor tasks. In accordance with the research objectives, this instrument was narrowed down to only the Locomotor Subtest, which covers six basic skills: running, galloping, hopping, leaping, horizontal jumping, and sliding.

The scoring system was dichotomous through two trials (Trial 1 and Trial 2). Students were given a score of 1 if they were able to perform the movement criteria correctly, and a score of 0 if the movement criteria were not met. The accumulated scores from both trials formed the basis for evaluating students' locomotor skill levels before and after the intervention.

Descriptive statistics are used to organize and interpret quantitative data in order to provide a systematic overview of the characteristics of the research subject. This analysis simplifies complex raw data through frequency distribution tables, making it easier to identify initial patterns and trends in the research variables (Lumapow, 2025).

Measures of central tendency, particularly the mean, are used to present a clear representation of the data as a basis for assessing the effect of the intervention. In addition, measures of dispersion and skewness are applied to evaluate the variance and distribution of the data. Overall, descriptive statistics provide a comprehensive overview of the nature and distribution of data, which is a crucial basis before conducting inferential analysis of the relationship between variables.

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Add up the scores obtained from the 6 TGMD-2 items in 2 trials that are assessed (run, gallop, hop, horizontal jump, and slide).

Converting the obtained score, or raw score, into a standard score and percentile, as shown in the following **Tabel 5.**

Tabel 5. Converting Subtest Raw Score to Percentiles and Standard Score Locomotor Subtest Female & Male (Ulrich & Sanford, 2000)

%iles	Age												Std. Score
	3 - 0 through 3 - 5	3 - 6 through 3 - 11	4 - 0 through 4 - 5	4 - 6 through 4 - 11	5 - 0 through 5 - 5	5 - 6 through 5 - 11	6 - 0 through 6 - 5	6 - 6 through 6 - 11	7 - 0 through 7 - 5	7 - 6 through 7 - 11	8 - 0 through 8 - 11	9 - 0 through 10 - 11	
<1	-	-	-	-	1-6	1-9	1-12	1-14	1-16	1-19	1-20	1-23	1
<1	-	-	-	1-6	7-9	10-12	13-15	15-17	17-19	20-22	21-23	24-26	2
1	-	1-6	7-9	10-12	13-15	16-18	18-20	20-22	23-25	24-27	24-27	27-29	3
2	-	1-6	7-9	10-12	13-15	16-18	19-21	21-23	23-25	26-28	28-30	30-32	4
5	1-6	7-9	10-12	13-15	16-18	19-21	22-24	24-26	26-28	29-31	31-33	33-35	5
9	7-9	10-12	13-15	16-18	19-21	22-24	25-28	27-29	29-31	32-34	34-36	36-37	6
16	10-12	13-15	16-18	19-21	22-24	25-28	29-31	30-32	32-34	35-37	37-38	38-39	7
25	13-15	16-18	19-21	22-24	25-28	29-31	32-34	33-35	35-37	38-39	39-40	40-41	8
37	16-18	19-21	22-24	25-28	29-31	32-34	35-37	36-39	38-40	40	41-42	42-43	9
50	19-21	22-24	25-28	29-31	32-34	35-37	38-39	40-41	41-42	41-42	43	44	10
63	22-24	25-28	29-31	32-34	35-37	38-39	40-41	42	43	43	44	45	11
75	25-28	29-31	32-34	35-37	38-39	40-41	42	43	44	44	45	46	12
84	29-31	32-34	35-37	38-39	40-41	42	43	44	45	45-47	46-48	47-48	13
91	32-34	35-37	38-39	40-41	42	43	44	45	46-47	48	-	-	14
95	35-37	38-39	40-41	42	43	44	45	46-47	48	-	-	-	15
98	38-39	40-41	42	43	44	45	46-47	48	-	-	-	-	16
99	40-41	42	43	44	45	46-47	48	-	-	-	-	-	17
>99	42	43	44	45	46-47	48	-	-	-	-	-	-	18
>99	43	44	45	46-47	48	-	-	-	-	-	-	-	19
>99	44-48	45-48	46-48	48	-	-	-	-	-	-	-	-	20

To determine students' mastery of locomotor skills, use the following table to find the category for each score received by students :

Tabel 6. Descriptive Ratings for Subtest Standard Scores and Gross Motor Quotient (Ulrich, 2000)

Subtest Standard Scores	Gross Motor Quotient	Descriptive Ratings	Percentage Included
17 – 20	>130	Very Superior	2,34
15 – 16	121 – 130	Superior	6,87
13 – 14	111 – 120	Above Average	16,12
8 – 12	90 – 110	Average	49,51
6 – 7	80 - 89	Below Average	16,12
4 – 5	70 - 79	Poor	6,87
1 – 3	<70	Very Poor	2,34

Find the average value using the formula:

$$\bar{x}=\Sigma x/N$$

Description
$\bar{x}$ = Average value
$\sum$ = Total
N = Amount of data
X = Score obtained

Finding the percentage, using the formula:

(score Ideal)/(score Max) x 100= …%

Data analysis was performed using assumption testing and hypothesis testing procedures to measure the significance of differences between groups. The initial stage began with normality testing using the Kolmogorov-Smirnov and Shapiro-Wilk methods. If the data were normally distributed (p>0.05), the analysis continued with an Independent Sample T-Test to compare the average scores between the control and experimental groups.

Conversely, if the data is not normally distributed (p<0.05), the non-parametric Mann-Whitney U Test is used as an alternative that remains valid even if the sample sizes are different. All statistical calculations are processed using statistical software with a significance threshold of α=0.05.

In this study, the normality gain (N-Gain) test analysis was used to measure the effectiveness of the treatment, namely the provision of consolidation activities and modules. To demonstrate a significant improvement in students' locomotor abilities, this calculation was based on the difference between the pretest and post-test scores using the SPSS application. According to Oktavia & Prasasty, (2019), the following formula was used to calculate the N Gain value:

N Gain=(Spost-Spre)/(Smaks-Spre)

Description
N Gain : Normal gain test score.
Spost : Posttest score.
Spre : Pretest score.
Smaks : Maximum possible score.

The results of these calculations are then classified into three value interpretation criteria, namely:

Tabel 7. N-gain criteria (Oktavia & Prasasty, 2019)

Gain normality value	criteria
$0,70 \leq n \leq 1,00$	High
$0,30 \leq n < 0,70$	Medium
$0,00 \leq n < 0,30$	Low

By applying these criteria, there will be a more specific improvement in the final results of the pre-test and post-test treatments.

RESULTS AND DISCUSSION

Before hypothesis testing, a normality test was used to see whether the experimental and control groups had different motor abilities. The purpose of the normality test was to determine whether the TGMD-2 instrument measurement data for both groups was normally distributed. Data distribution tests were performed using the Kolmogorov-Smirnov and Shapiro-Wilk methods because the sample size in this study consisted of an experimental group (n=56) and a control group (n=80). The significance value (p) was the basis for decision making. A significance value above 0.05 (α=0.05) indicates that the data has a normal distribution, but a significance value below 0.05 indicates that the data does not have a normal distribution, and further analysis will focus on nonparametric statistics. The following **Tabel 8** shows the results of the normality test for the data in this study:

Tabel 8. Normality test results

	Group	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pre Test/ Post Test	Group Control PreTest	.167	80	.000	.941	80	.001
	Group Control PostTest	.156	80	.000	.918	80	.000
	Group Experiment Pre Test	.090	56	.200*	.982	56	.566
	Group Experiment Post Test	.114	56	.067	.975	56	.286

According to the normality test results shown in the table above, the experimental group shows a normal distribution with a significan-

ce value above 0.05 (p>0.05), while the control group shows a normal distribution with a significance value below 0.05 (p<0.05). One of the data groups (Control Group) did not meet the normality assumption, so the prerequisite for using the Independent Samples T-Test for parametric statistics was not met. As a result, non-parametric statistics were used to test the hypothesis about the difference in motor skills between the two groups. The Mann-Whitney U test was considered the most appropriate choice because it was able to provide valid analysis results (n=80 for the control group and n=56 for the experimental group) in comparing two independent groups with different distribution characteristics and unequal sample sizes.

Based on statistical analysis showing a significant difference (p<0.05), this proves that the integration of parkour into athletics training has a positive impact on students' locomotor skills. Parkour requires students to perform a variety of locomotor movements such as jumping and running over obstacles with a high level of coordination. This is in line with the TGMD-2 component that assesses foot movement precision. Unlike the control group, which underwent conventional athletics training, the experimental group received more diverse motor stimulation through techniques such as vaulting and balancing, which directly honed their locomotor abilities to a higher level.

Control Group TGMD-2

The pre-test results show the average scores of students before receiving any treatment. It can be seen that the control group has relatively high scores, with an average score of 36, meaning that 75% of students have fairly good locomotor skills. The results obtained were entered into the criteria referred to in **Table 6.** Subtest Standard Scores and Gross Motor Quotient.

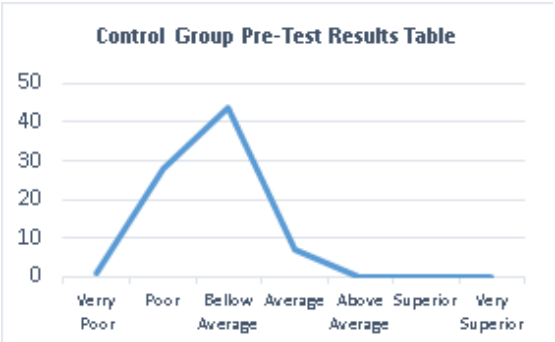

Figure 1. graph of the pre-test results control group

After obtaining this data, it was found that the average student score for locomotor skills was below average. The following is a graph of the pre-test results for the control group.

Based on this data, the average student at State Elementary School Mandalaherang 1 has a below-average locomotor skill score, which is considered a standard score. According to Wati & Rezki, (2025), students' locomotor skills have an average score in the Very Poor category based on the Gross Motor Quotient assessment.

The post-test data results from the control group showed average locomotor abilities below the average results of the TGMD-2 test. It can be seen that in the experimental group, with an average score of 38.8 or 80.9%, students had locomotor abilities in the Below Average category.

On average, students obtained below-average scores for locomotor skills. The following is a graph of the pre-test results for the experimental group.

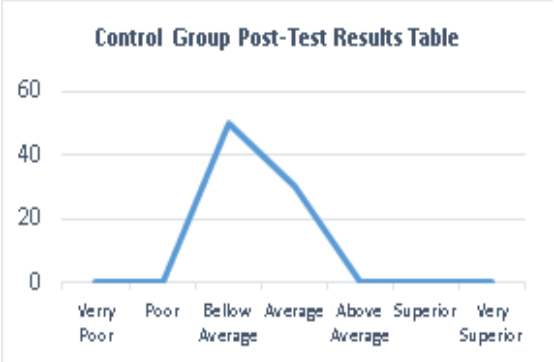

Figure 2. graph of the post-test results control group

From this data, the average student at State Elementary School Mandalaherang 1 had a locomotor skill score below average, with a total of 50 students. These results illustrate the locomotor skill condition of the control group, which shows a not very significant improvement because the interpretation of the pre-test and post-test results shows that the majority of students remained at a descriptive average below average.

Experiment Group TGMD-2 D

The results of the pre-test data from the experimental group with an average result of poor locomotor ability from the TGMD-2 test results. It can be seen that in the experimental group with an average score of 32.16 or 67.001% of students have locomotor ability in the Poor category.

After the data was obtained, it was found that the average student obtained a locomotor skill score with a descriptive Poor. The following is a graph of the pre-test results in the Experimental group.

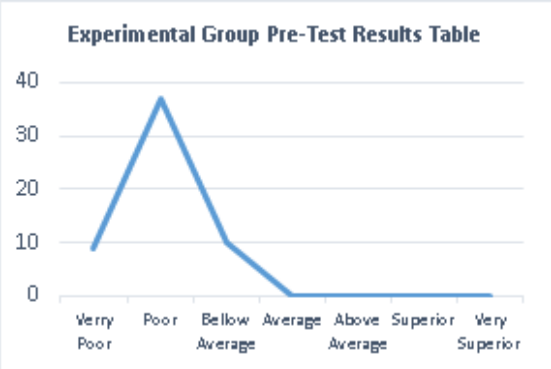

Figure 3. graph of the pre-test results experimental group

Therefore, based on this data, the average student at State Elementary School Mandalaherang 2 had a locomotor skill score below Poor. These results illustrate the locomotor skill condition of the experimental group, which confirms the initial observations of the school's condition.

Post-test data results from the experimental group showed average locomotor ability in the Average category of the TGMD-2 test results. It can be seen that in the experimental group, with an average score of 40.35 or 84.07%, students had locomotor abilities in the Average category.

It was found that on average, students obtained locomotor skill scores with a descriptive average. The following is a graph of the post-test results for the experimental group.

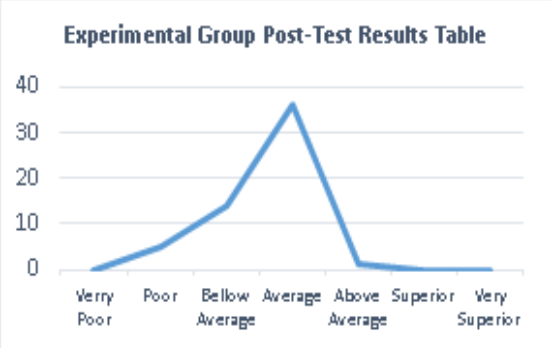

Figure 4. graph of the post-test results experimental group

From this data, the average locomotor skill score for students at State Elementary School Mandalaherang 2 was average, with a total of 36 students. These results illustrate the locomotor skills of the experimental group, which show a significant improvement based on the interpretation of the pre-test and post-test results, with the majority of students having poor locomotor skills in the pre-test or before receiving treatment. This resulted in an improvement in the post-test results, with the average student score in the experimental group reaching average.

Control Group N-Gain Score Results

The locomotor skills of students without parkur exercise treatment showed less significant improvement, according to the results of descriptive statistics observed in the control group. The average N-Gain score value (mean) was 0.2065 from data of N = 80 students. According to the effectiveness division criteria, this score is below the threshold of $0.00 \leq n < 0.30$. The data distribution shows a fairly extreme minimum value of -0.57, with the average value achieved in percentage form of only 9.91%.

It can be concluded that in the control group, conventional athletic training without the integration of parkour did not have a significant effect on improving the locomotor skills of elementary school students. Students' understanding or mastery of movement may be stagnant at a low level, as indicated by the average N-Gain score (0.2065). This makes the use of more systematic alternative learning media or methods, such as parkour sports or modules, more important to achieve more optimal and significant learning outcomes.

Experiment Group N-Gain Score Results

Compared to the control group, the experimental group of 56 students (N=56) showed a more significant improvement in locomotor skills. The mean N-Gain value obtained was 0.5031, which, when converted to a percentage, reached 24.1467%. This value falls within the range of 0.30<0.70, according to Meltzer's effectiveness classification criteria in Oktavia & Prasasty, (2019). This indicates that parkour is effective in teaching athletics at the Moderate level. Additionally, the data shows that this treatment can achieve a high level of effectiveness for some students, with a maximum value of 0.89.

It can be concluded that the application of parkour in athletics education has an effective influence on improving the locomotor skills of elementary school students. This method has been proven to be more effective than conventional methods in the control group, which only had low N-Gain scores. It also has the ability to improve students' psychomotor aspects. These results reinforce the argument that the development of new learning methods and media is very important for optimizing students' academic achievement and physical skills.

Interpretation of N-Gain Score statistics

Based on the results of data analysis, it can be concluded that, compared to conventional athletic learning approaches, parkour significant-

ly improves the locomotor skills of elementary school students. As evidence, the experimental group obtained an average N-Gain score of 0.5031, which placed it in the Moderate category, while the control group only obtained a score of 0.2065, which placed it in the Low category. Although both groups experienced progress, the results show that parkour is far more effective at improving students' physical understanding and abilities than other forms of stimulation. This is demonstrated by the difference in mean values and effectiveness in the dominant group. Therefore, providing systematic and varied learning methods such as parkour has proven to be an important key to achieving optimal learning outcomes for students

The results of this study demonstrate that the integration of parkour into athletics curriculum is more successful in developing students' locomotor skills compared to conventional techniques. This is indicated by the large disparities between the experimental and control groups, where the experimental group showed both quantitative improvement and a qualitative shift in performance levels, whereas the control group stayed essentially unaltered.

From a theoretical standpoint, this discovery is compatible with the concept of Fundamental Movement Skills (FMS), which highlights that locomotor abilities constitute the foundation of children's motor development. Veljkovic et al., (2021) state that mastery of these abilities is necessary for long-term physical activity involvement. parkour delivers various and practical movement experiences, helping pupils to improve coordination more effectively than repetitious conventional training.

In addition, the success of parkour coincides with the ideas of Developmentally Appropriate Practice (DAP), where learning activities are suited to children's developmental phases. Sari & Silitonga, (2024) underline that such approaches promote participation and meaningful learning experiences. This is apparent in the improved motivation, confidence, and participation found in the experimental group.

Biomechanically, parkour comprises complicated actions such as jumping, landing, and balancing, which lead to enhanced motor coordination and strength. Strafford et al., (2020) underline that the quality of fundamental movement strongly determines performance efficacy. Furthermore, parkour-based learning has been demonstrated to boost student engagement in physical education settings (Coolkens et al., 2018).

Overall, these data demonstrate that parkour is not only an excellent physical training method but also an innovative pedagogical strategy that improves motor development and addresses the issues of sedentary lifestyles in children.

CONCLUSION

This study concludes that integrating parkour into athletics education is an effective innovative strategy for improving the locomotor skills and physical activity of elementary school students. Prior to the intervention, the students' locomotor skills were in a poor condition due to sedentary lifestyles and dependence on technology. However, after the intervention, there was a vital transformation in the students' motor skills, with the majority of subjects moving from the "Poor" category to the "Average" category.

Overall, the adoption of parkour-based learning revealed more success than standard athletic methods. This was obvious in the improved performance of students in the experimental group, who were in the better category, whereas the control group had rather moderate improvement. The rapid, varied, and complex movement-demanding aspects of parkour exercises have been proven to optimize big muscle activity and body coordination more intensively. Therefore, it may be inferred that the experimental group achieved more substantial improvements compared to the control group.

In addition to the physical aspect, parkour serves as an effective "donor sport" that increases student interest and active participation. The elements of challenge, freedom to experiment, and excitement offered by parkour are able to meet children's psychological needs, thereby reducing boredom with monotonous sports activities. Thus, parkour not only serves as a means of physical exercise, but also as an innovative educational tool that can rekindle students' interest in physical activities amid the onslaught of digital technology.

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