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Profile of Physical Activity Levels of Students in Phase B at Public Elementary Schools in The Ujungberung District

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ABSTRACT

This study aimed to examine the effect of the application of Dominant Movement Patterns (DMP) on improving handstand skills in floor gymnastics among elementary school students. The study used an experimental method with a one-group pretest–posttest design, involving 29 fourth-grade students of Public Pilot Elementary School (SDPN) 252 Setiabudi, Bandung, selected using a purposive sampling technique. The handstand skill assessment instrument covered five aspects: the start, the upward kick, the upper body position, balance, and landing, which had high validity and reliability. The intervention was conducted over 13 sessions with gradual learning from basic movement patterns to full handstand techniques, accompanied by a game-based approach to increase student engagement and reduce psychological barriers. Data analysis used a paired sample t-test with a significance level of 0.05. The results showed a significant improvement in handstand skills, with the average score increasing from 6.57 to 12.21 ($p < 0.05$). This improvement included aspects of strength, balance, coordination, and motor control, as well as students' self-confidence and learning motivation. These findings recommend DMP as an effective, fun, and easily adaptable floor gymnastics learning method for physical education learning in elementary schools.

Keywords: dominant movement patterns; handstand; elementary school

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INTRODUCTION

Physical education plays a crucial role in developing students' motor skills, physical fitness, and cognitive, affective, and psychomotor aspects. A good physical education learning process focuses not only on cognitive achievement but also on the effective and enjoyable achievement of motor skills (Sulistiadinata et al., 2022). To achieve these goals, teachers are required to innovate in learning that encourages optimal physical activity and stimulates student learning motivation. One effective form of physical activity to support these goals is gymnastics, particularly floor gymnastics, which integrates aspects of strength, flexibility, balance, and body coordination (Kafrawi et al., 2024).

Floor gymnastics plays a strategic role in physical education instruction in elementary schools because its movements develop both physical fitness and basic motor skills. One important skill in floor gymnastics is the handstand, a standing position supported by both hands with the body upside down. Handstands require not only arm and shoulder muscle strength but also good body coordination, balance, and postural control (Pasaribu

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2021).This movement forms the basis for mastering advanced gymnastics techniques such as the walkover, handspring, or somersault, so mastering it at the elementary school level is crucial for establishing a solid foundation of gymnastics skills (A. G. Mahendra, 2001) .

Despite its significant benefits, implementing floor gymnastics in schools often faces challenges. Many students feel afraid or lack confidence when attempting handstands, and some even consider them difficult and risky. A lack of varied teaching methods and limited supporting resources often contribute to low student interest in gymnastics (Setiawati et al., 2020). This calls for innovative learning strategies to create a safe, enjoyable, and effective learning experience.

One approach considered relevant is Dominant Movement Patterns (DMP), a learning method that focuses on developing basic movement patterns that form the foundation of complex skills. DMP in floor gymnastics includes support, balance, landing, and coordination patterns, which can be taught gradually through game-like activities (Oksyalia et al., 2018). This approach aligns with the motor development characteristics of elementary school-aged children, where coordination, strength, and balance are still in the optimization stage (Hizkia, 2024).

DMP provides students with the opportunity to learn gymnastics skills without the pressure of immediately mastering complex techniques. Instead, they are introduced to a series of movement patterns that progressively build on these skills. This strategy has been shown to increase student confidence, reduce fear, and motivate them to actively participate in floor gymnastics lessons (Nugraha et al., 2018).

In the context of teaching handstands, DMP can be applied by breaking down the movement into simple steps, such as low-level balance exercises, arm strength exercises, and the use of aids such as walls or peer support. This method allows students to gradually adapt to the physical and psychological demands of the handstand, thereby minimizing the risk of injury (Agus Margono et al., 2013)

Previous research has demonstrated the effectiveness of this approach. For example, (Ropi, 2020), found a significant improvement in students' handstand skills after implementing a step-by-step training method with assistive media. By (Putri et al., 2024) also reported that an interactive media-based training model for handstand rolls effectively improved basic gymnastics movement skills. However, most research focuses on adolescents or athletes, while research on elementary school students within the context of formal curriculum learning is limited.

The novelty of this research lies in the systematic application of DMP to improve handstand skills in elementary school students within a regular learning environment, rather than in a club or extracurricular context. This research also integrates play elements into the learning, thus combining a developmentally appropriate pedagogical approach with measurable motor skill improvement strategies. This approach is expected to provide a more adaptive, enjoyable, and effective floor gymnastics learning model for students.

Furthermore, this study contributes to the physical education literature by offering empirical evidence that DMP can be used as an effective intervention to address psychological barriers such as fear and low motivation in handstand learning. The results are expected to serve as a reference for physical education teachers in designing a more student-centered curriculum based on the development of their motor skills (Akbar, 2025).

Against this backdrop, this study aims to examine the effect of implementing dominant movement patterns on improving handstand skills in elementary school students. This approach is expected to enrich physical education teaching practices and

contribute to more inclusive and effective gymnastics teaching strategies at the elementary school level.

METHOD

This study used an experimental method with a one-group pretest-posttest design to determine the effect of the application of Dominant Movement Patterns (DMP) on improving handstand skills in floor gymnastics in elementary school students. The experimental method is used to determine the effect of certain treatments on subjects under controlled conditions (Hizkia, 2024), while this design allows for comparison of results before and after treatment (Handari, 2018).

The study population was all 84 fourth-grade students at Public Pilot Elementary School (SDPN) 252 Setiabudi, Bandung City. The sample was selected using a purposive sampling technique with inclusion criteria including being 10 years old, physically healthy, actively participating in physical education (PJOK) lessons, possessing basic floor gymnastics skills, and obtaining written permission from their parents. Based on these criteria, 29 students were selected as the study sample (Sugiyono, 2020).

The research instrument used a handstand skill assessment developed by (Handayani et al., 2023), with five assessment aspects: the run-up, the upward leg kick, the upper body position, balance, and landing. This instrument has high validity (Aiken's V = 0.87) and very high reliability (ICC = 0.88). Assessment was conducted directly with a 0–15-point scoring system, where higher scores indicate better skills.

The research procedures included: (1) conducting a pretest to measure students' initial handstand skills; (2) providing treatment in the form of DMP learning for 13 meetings; and (3) conducting a posttest to measure skills after the treatment. DMP was implemented in stages with a focus on mastering basic floor gymnastics movement patterns that support handstands.

Data were analyzed using parametric statistics. Descriptive analysis was used to describe the initial and final data, while prerequisite tests included normality and homogeneity tests. To test the hypotheses, a paired sample t-test was used with a significance level of 0.05 (Fadluloh et al., 2024). The null hypothesis (H_0) states that there is no effect of DMP on handstand skills, while the alternative hypothesis ($H_0)_a$) stated that there was an influence of DMP on handstand skills.

RESULTS AND DISCUSSION

Findings

Table 1. Descriptive Statistics of Variables

Variables	N	Mean	Standard Deviation	Min	Max
Pretest	28	6.57	1,874	3	10
Posttest	28	12.21	1,572	9	15

Based onThe descriptive statistics table shows that the average Handstand Skills of Floor Gymnastics before the intervention of dominant movement patterns is 6.57 with a standard deviation of 1.874. The minimum value is 3 and the maximum value is 10. Meanwhile, the average Handstand Skills of Floor Gymnastics after the intervention of

dominant movement patterns is 12.21 with a standard deviation of 1.572. The minimum value is 9 and the maximum value is 15. So it can be concluded that there is an increase in the average value of handstand skills of floor gymnastics in elementary school students.

Table 2. Normality Test Results

Group	Kolmogorov Smirnov			Information
	Statistics	df	Sig	
Pretest	0.930	28	0.063	Normal
Posttest	0.953	28	0.230	Normal

Based on the table of normality test results using the Shapiro-Wilk test, the pretest and posttest results showed a significance of 0.063 and 0.230, respectively, which are greater than 0.05. Therefore, it can be concluded that all student handstand skill data from the pretest and posttest were normally distributed.

Table 3. Results of Homogeneity Test

		Levene Statistics	df1	df2	Sig.
PRE_POST	Based on Mean	2,247	1	54	.140
	Based on Median	1,566	1	54	.216
	Based on Median and with adjusted df	1,566	1	53,072	.216
	Based on trimmed mean	2,228	1	54	.141

Based on the homogeneity test results table, the mean-based value for the pretest and posttest showed a significance level of 0.140, which is greater than 0.05. Therefore, it can be concluded that all pretest and posttest learning outcome data are homogeneous.

Table 4. Hypothesis Testing

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standard Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST - POSTTEST	-5,643	2,392	.452	-6,570	-4,716	-12,485	27	.000

Based on the hypothesis test analysis table using the paired t-test, a significance value of 0.000 <0.05 was obtained, which means that Ha is accepted and H0 is rejected, which means that there is an influence of dominant movement patterns in improving floor gymnastics handstand skills in elementary school students.

Discussion

Based on the analysis of the research data, a significant increase was obtained in the studied group. The provision of dominant movement pattern treatment in improving Handstand for 12 meetings had an effect on improving handstand skills at Public Pilot Elementary School (SDPN) 252 Setiabudi. To determine the difference or effect of the application of dominant movement pattern treatment in improving Handstand at Public Pilot Elementary School (SDPN) 252 Setiabudi, it was proven by a t-test. The t-test will display the value of the calculated t-value and its significance. Whether or not there was an

increase in Handstand skills in students at Public Pilot Elementary School (SDPN) 252 Setiabudi after being given the treatment of the application of dominant movement pattern in improving Handstand can be known from the average value of the pretest and posttest in the t-test.

From the initial test results, the overall score achieved by 28 students was 148 with an average of 6.57. From the initial test results, it was stated that there were 11 students with the criteria of Less with a percentage of39.29%, the criteria are sufficient, there are 17 students with a percentage60.71%, and the criteria are very good, there are 0 students with a percentage of 0%. Furthermore, the results of the final test (posttest) obtained the overall results achieved by 342 students with an average of 12.21. From the results of this final test, it was stated that students with the criteria are less, there are 0 students with a percentage of 0%, the criteria are sufficient, there are 5 students with a percentage of17.86%and the criteria for Very Good amounted to 23 students with a percentage of82.14%.

The dominant movement pattern approach is a teaching approach that emphasizes the development of DMP rather than the skills themselves. The application of Dominant Movement Patterns (DMP) in handstand floor gymnastics learning has a significant impact on the development of children's physical and mental skills. In terms of physical skills, DMP trains the strength of the arm, shoulder, and core muscles through gradual support exercises, so that children are able to support their body weight stably. Progressively trained balancing movement patterns help children maintain a vertical position for longer, while coordination between leg swings, body position, and hand support improves. In addition, children show increased body control when lowering their legs from a handstand position, thus minimizing the risk of injury. From a psychological perspective, the approach, which is packaged in the form of a game, also increases motivation and enthusiasm for learning, making children more active and involved in learning.

Dominant Movement Patterns is a movement skills learning approach that focuses on core or fundamental movements before teaching the full form. This theory emphasizes that mastery of basic movements such as handstands, inverted body balance, core strength, and footwork coordination are essential prerequisites for learning a full handstand. This principle of progression ensures that students learn the movements in a gradual, safe, and structured manner, ensuring they are physically and mentally prepared (A. Mahendra, 2015). The specificity of learning theory states that motor skills will develop optimally if practice mimics the movement patterns and conditions that will be used. In DMP, handstand exercises and inverted body positions serve as the foundation for preparing the body for the load and orientation during a handstand (Schmidt & Lee, 2011).

Implementing DMP in elementary school students with a focus on balance and hand support, the results showed that the skill of maintaining an inverted body position increased significantly. Students who were initially unable to maintain a 2-second posture were able to achieve a longer duration with a straighter posture (Nurhikmah, 2019). Research from (Oksyalia et al., 2018)showed that the application of the Dominant Movement Pattern (DMP) approach successfully improved floor gymnastics skills, especially cartwheels. The average score of students' abilities increased significantly from 50.29 (initial observation) to 75.57 (cycle 2, action 2), which proves the effectiveness of this approach in improving specific motor skills in floor gymnastics.

Dominant Movement Patterns (DMP) are the building blocks for the development of more complex skills. Teachers need to understand DMP so they can select a small number of key skills that underlie gymnastics skills, then teach them to students, continuing with

mastery of the next skill. Learning is packaged in the form of games, prioritizing the process of student motor development over time (Purwanto, 2009). So it can be concluded that the application of the dominant movement pattern approach in handstand learning has been proven effective in improving students' basic motor skills, especially in floor gymnastics. Through stages of movement patterns such as supporting, balancing, and pushing, students more easily understand and master handstand techniques in a gradual and enjoyable way. This approach also provides real benefits for students in terms of increasing strength, balance, courage, and confidence in performing inversion movements. For teachers, the application of dominant movement patterns opens up wider space to develop creativity in designing varied, adaptive learning, and in accordance with the characteristics of elementary school students. Teachers can create various games and modify aids to support the handstand learning process in a gradual, safe, and enjoyable way, such as with the help of a wall, the help of a chair or bench and the help of a friend.

The results of the t-test showed that the application of the dominant movement pattern provided a significant increase in Handstand skills in students of Public Pilot Elementary School (SDPN) 252 Setiabudi, with a t-value of-12,485 (df .27) and a significance value (Sig) of 0.000. Therefore, the significance value of 0.000 < 0.05, then this result indicates that there is a significant difference. Thus, the alternative hypothesis (Ha) which states "there is an effect of the application of dominant movement patterns to improve Handstand skills at Public Pilot Elementary School (SDPN) 252 Setiabudi", is accepted. This means that the application of dominant movement patterns (DMP) has an effect on improving Handstand skills.

CONCLUSION

This study proves that the application of Dominant Movement Patterns (DMP) has a significant effect on improving handstand skills in fourth-grade students of Public Pilot Elementary School (SDPN) 252 Setiabudi. Through gradual learning from basic movement patterns to full techniques, students experience development in strength, balance, coordination, and movement control, accompanied by increased self-confidence and learning motivation. The DMP approach has proven effective, enjoyable, and easily adapted in elementary school environments, so it is recommended for use by PJOK teachers in floor gymnastics learning. Its implementation requires school support in providing basic infrastructure and teacher training, as well as active student participation in gradual and safe exercises. This study can be a reference for the development of DMP in other gymnastics materials or different educational levels.

CONFLICT OF INTEREST

There were no conflicts that occurred in this study.

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