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Enhancing Long Jump Abilities through Engklek and Jump Rope: A Study on Traditional Games in Physical Education

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Abstract

The development of motor skills during childhood is critical for overall physical fitness and athletic performance. Traditional games, which are often culturally significant, play a vital role in enhancing these skills. This study aims to assess the impact of traditional games (e.g., Engklek and Lompat Tali) on the long jump performance of students at Elementary School 5 Kikim Timur. A comparative design was employed with a sample of 24 male students from Elementary School 5 Kikim Timur. The participants were randomly divided into two groups: Engklek and Lompat Tali, with 12 students in each group. Motor skills were assessed through standardized tests focusing on agility, coordination, explosive power, and speed. Long jump performance was evaluated based on four components: take-off, push, flight, and landing. Data analysis involved homogeneity and normality tests using SPSS version 23, followed by a one-way ANOVA test with a significance threshold of $p < 0.05$. Significant differences were found in long jump performance between the two groups. The incorporation of traditional games contributes to improved motor skills, enabling students to enhance their long-jump abilities effectively. Integrating traditional games into physical education programs offers a culturally relevant and engaging approach to improving motor skills and athletic performance. This study highlights the need for further research to explore the long-term benefits and potential applications of traditional games in various sports disciplines.

Keywords: Traditional games; motor skills; long jump; physical education.

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Introduction

Physical education is an essential element of the educational curriculum (Burhaein et al., 2020), significantly contributing to the comprehensive development of pupils. It promotes physical health as well as cognitive and social abilities, therefore enhancing the overall well-being of youngsters (Harvey et al., 2018). Traditional games, deeply embedded in cultural heritage, provide a distinctive amalgamation of physical engagement and cultural education (Ashar et al., 2024; Shimray, 2024). These games have been acknowledged for their beneficial effects on diverse motor skills, including agility, coordination, explosive strength, and velocity-skills crucial for athletic success (Zubaida et al., 2021).

The cultivation of motor skills from childhood is essential, as these abilities establish the groundwork for more intricate motions necessary in sports and physical endeavors (Adolph & Hoch, 2020; Dapp et al., 2021). Proficient early development of motor skills can yield enduring advantages, including superior physical health, augmented academic achievement, and enhanced social connections (Bremer & Cairney, 2016). Traditional games, emphasizing physical exercise, coordination, and muscle development, provide an efficient method for cultivating these vital skills. Furthermore, they have demonstrated efficacy in alleviating stress, enhancing focus, and fostering overall pleasure and well-being (Hussain & Cheong, 2022; Ismoyo et al., 2024).

This research examines the impact of two traditional games engklek and jump rope on the long jump proficiency of children at Elementary School 5 Kikim Timur. Engklek, similar to hopscotch, entails hopping on one foot across a sequence of squares marked on the ground, fostering balance, coordination, and agility. Jump rope, or rope jumping, involves pupils leaping over a moving rope, thereby improving explosive strength, velocity, and coordination (Mahardika, 2014). Prior studies have established the advantages of traditional games in improving motor abilities, including agility, coordination, explosive strength, and velocity. (Zubaida et al., 2021) discovered that traditional games markedly enhanced aerobic capacity and agility in children.

Likewise, (Mahardika, 2014) indicated that these games enhanced physical fitness and promoted social behaviors in early childhood. Such studies underscore the capacity of traditional games to cultivate fundamental motor abilities, which are critical for athletic performance. Motor skills such as agility, coordination, explosive strength, and velocity are essential determinants of performance in various sports, including the long jump. Agility, characterized as the capacity to alter direction swiftly and precisely (Fiorilli et al., 2017), is essential in numerous conventional activities. In engklek, participants must synchronize and balance their motions while hopping on one foot through the squares, hence enhancing their agility and coordination (Rizki et al., 2022).

Jump rope necessitates players to synchronize their jumps with a swinging rope, hence improving explosive strength and speed (Nurfitriyana, 2022). Explosive power, is defined as the ability to produce maximum force in a brief duration (Huang et al., 2023) is crucial for the take-off phase of the long jump. Conventional games such as Jump rope improve this ability by requiring swift, elevated hops that replicate the explosive movement essential for an effective long jump (Gescheit et al., 2015). Likewise, speed, crucial for generating

momentum during the approach in the long jump, is enhanced by traditional sports that necessitate rapid and dynamic movements (Arianda et al., 2021; Rhodes et al., 2020).

While the advantages of traditional games in enhancing motor skills are well recognized, there exists a paucity of research directly investigating their influence on long jump performance. Most studies emphasize the overall advantages of these games in enhancing health and social skills, rather than their impact on particular physical competencies like the long jump. This study seeks to address this gap by investigating the impact of engklek and jump rope on long jump performance. This research will yield significant insights on the efficacy of traditional games as a means to improve athletic performance, especially in the long jump.

Traditional games significantly contribute to the preservation of cultural heritage, establish a connection to history, and cultivate a sense of community among participants (Abdel-Maksoud et al., 2021). Integrating these games into physical education curricula enables schools to foster physical fitness while simultaneously cultivating an appreciation for cultural diversity and heritage among students. This study investigates the efficacy of traditional games, specifically engklek and jump rope, in augmenting motor skills and enhancing long jump ability in primary school students. The findings seek to guide the design of physical education programs, emphasizing the necessity of integrating enjoyable, culturally pertinent activities to enhance motor development and athletic performance.

Methods

This study employed a comparative research design (Creswell, 2014) to examine the influence of traditional games specifically engklek and jump rope on the long jump performance and motor skills of elementary school students. The comparative design was chosen to enable the identification of differences between two treatment groups exposed to different types of traditional games. The population in this study consisted of male students from Elementary School 5 Kikim Timur, while the sample included 24 students selected using a simple random sampling technique. Participants were randomly assigned into two groups: the engklek group (n = 12) and the jump rope group (n = 12). Random assignment ensured group equivalence in terms of age and baseline physical ability, thereby supporting the internal validity of the comparative approach (Creswell & Creswell, 2018).

The intervention was conducted over four weeks, with sessions held four times per week as part of the physical education curriculum. Each session lasted approximately 45–60 minutes. The engklek group engaged in the traditional game of engklek, which involves hopping on one foot across a series of squares, enhancing balance, coordination, and agility. In contrast, the jump rope group practiced rope jumping, a dynamic activity aimed at improving explosive power, speed, and coordination. To evaluate the effectiveness of the interventions, the study utilized standardized instruments to measure motor skills and long jump performance. Motor skills were assessed using the following instruments.

1. Agility – Shuttle run 4 × 10 meters.
2. Coordination – Ball throw and catch from a distance of 1 meter against a wall.
3. Explosive power – Vertical jump test.

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4. Speed – 30-meter sprint.

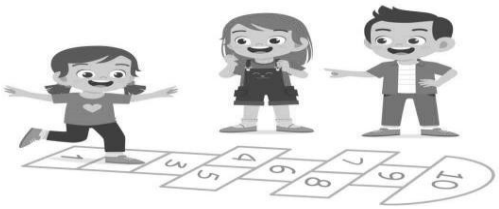

Figure 1. Ilustration of engklek

Figure 2. Ilustration of jump rope

Long jump performance was evaluated based on four main phases:

1. Approach run (prefix): including foot placement, body posture, and step coordination.
2. Take-off (push): covering push angle, body lean, and arm swing.
3. Flight phase (float): including body balance in the air and leg/arm extension.
4. Landing (land): focusing on body posture and foot/hand coordination during contact with the sand.

Each sub-component was scored using a structured observation sheet, developed to maintain objectivity and consistency across assessments. Direct observation was employed during performance tests, ensuring reliable data collection aligned with established assessment protocols.

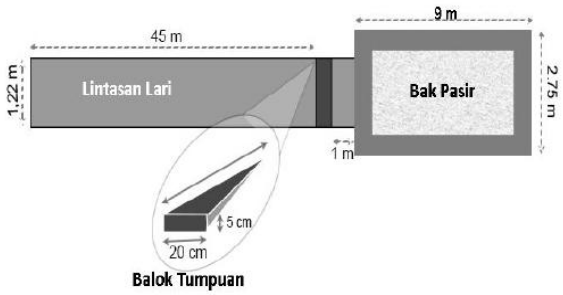

Figure 3. Long jump test arena

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Table 1. Long jump skill test instrument

Indicators	Sub Indicators	Assessments
Prefix (approach run technique)	Foot Position: One foot should be placed in front, with hands relaxed beside the body, and eyes looking straight ahead. Center of Gravity: Maintain the center of gravity while running. Coordination: Ensure the coordination of arm swings and footsteps in rhythm. Final Step: During the last step, coordinate vision by aligning eye movement with foot movement. Push Accuracy: Ensure the accuracy of the pushing foot on the springboard.	
Push (take-off technique)	Supporting Foot: One end of the foot becomes the supporting foot to execute a quick and strong push. Body Position: The body leans slightly forward. Push Angle: The push angle when supporting is 45 degrees. Movement: Form a horizontal movement when pushing. Arm Swing: When pushing, it is assisted by swinging the arms upwards.	
Float (flight phase technique)	Body Balance: Maintain body balance in the air to achieve a parabolic movement. Leg and Arm Swing: Swing the legs and arms when taking off in the air. Floating Position: Extend the torso and both legs as far as possible to achieve a floating position. Legs and Hands: Keep the legs straight forward with hands. Landing Approach: Relax and bend the legs when approaching the landing.	
Land (landing technique)	Feet Position: Keep feet relaxed when touching the sand. Leg Position: Maintain a bent leg position when landing, with the soles of the feet touching the sand. Body Position: Adopt a squatting body position. Hand Position: Position hands forward to prevent the body from falling backward. Body Balance: Ensure body balance is maintained in front.	

The following table lists the motor skill test instruments that were employed to evaluate the physical abilities of the participants, such as agility, coordination, explosive power, and speed. The purpose of these tests was to assess the participant's proficiency in critical motor skills that are essential for athletic performance.

Table 2. Motor skill test instrument

No	Indicators	Assessments
1	Agility	Shuttle-run 4 x 10 m
2	Coordination	Throw and catch the ball 1 m away against the wall
3	Explosive power	Vertical jump
4	Speed	30 m run

The data collection process was carried out in the school's sports field under the supervision of trained observers. Prior to data analysis, the data were tested for normality and homogeneity using the Kolmogorov-Smirnov test to confirm suitability for parametric testing. After meeting these assumptions, a one-way analysis of variance (ANOVA) was applied to determine whether significant differences existed between the two groups in both motor skill performance and long jump outcomes. Statistical analysis was performed using SPSS version 23, with a significance threshold set at $p < 0.05$ (Gescheit et al., 2015). This methodical approach provided a clear, replicable framework to assess how different types of traditional games influence physical performance in young learners, and offered valuable insights for integrating cultural play into physical education programs.

Results

Table 3 presents the initials of the students who were assigned to two experimental groups: the *Engklek* group and the *Lompat Tali* group. Each group consisted of 12 male students from Elementary School 5 Kikim Timur. The participants were randomly assigned to ensure equality in baseline characteristics such as age and initial motor skill levels.

Table 3. Initial Group Assignments of Participants

No	Engklek (Initial)	Lompat tali (Initial)
1	AA	AL
2	AB	AM
3	MFL	AI
4	MAS	FM
5	LP	F SF
6	JIP	MS
7	MAIR	MZL
8	MS	QRD
9	M. F R	RSD
10	FAL	RS
11	DBP	SB
12	RWR	ZJ

Table 4 displays the agility test results for students in the Engklek group. Each student is identified by their initials, and their performance is assessed across three trials. The average time (in seconds) for each student is calculated, along with the t-score, which indicates the statistical significance of their performance. The mean times for each student range from 11.78 seconds to 14.06 seconds, indicating varying levels of agility among them. The t-scores offer additional insight into the consistency and reliability of their performance.

Table 4 presents the agility test results for students in the Engklek group. Each participant, identified by their initials, completed three timed shuttle-run trials. The average time (in seconds) was calculated to represent each student's agility level, and a t-score was used to evaluate the relative performance and statistical spread of their results. The mean agility times ranged from 11.78 to 14.06 seconds, indicating variations in individual physical responsiveness. Higher t-scores suggest greater consistency and proficiency in agility tasks.

Table 4. Data on agility of engklek group students

No	Initial	*Tester*			Mean (sec)	t-score
		1 (sec)	2 (sec)	3 (sec)		
1	AA	12,34	12,09	12,97	12,47	53,68
2	AB	14,15	13,91	14,11	14,06	30,46
3	MFL	12,93	12,98	12,74	12,88	47,60
4	MAS	12,64	11,82	12,36	12,27	56,51
5	LP	11,89	12,13	12,55	12,19	57,72
6	JIP	13,06	13,27	13,12	13,15	43,70
7	MAIR	11,48	12,32	11,55	11,78	63,66
8	MS	13,52	13,19	13,78	13,50	38,64
9	MFR	12,76	13,05	13,45	13,09	44,63
10	FAL	14,31	13,98	13,71	14,00	31,28
11	DBP	13,5	13,74	14,03	13,76	34,84
12	RWR	12,84	13,17	12,95	12,99	46,09
	Mean	12,95	12,97	13,11	13,01	-

Table 5. Agility test results engklek group

No	Initial	Trial 1 (sec)	Trial 2 (sec)	Trial 3 (sec)	Mean (sec)	t-score
1	AA	12.34	12.09	12.97	12.47	53.68
2	AB	14.15	13.91	14.11	14.06	30.46
3	MFL	12.93	12.98	12.74	12.88	47.60
4	MAS	12.64	11.82	12.36	12.27	56.51
5	LP	11.89	12.13	12.55	12.19	57.72
6	JIP	13.06	13.27	13.12	13.15	43.70
7	MAIR	11.48	12.32	11.55	11.78	63.66
8	MS	13.52	13.19	13.78	13.50	38.64
9	MFR	12.76	13.05	13.45	13.09	44.63
10	FAL	14.31	13.98	13.71	14.00	31.28
11	DBP	13.50	13.74	14.03	13.76	34.84
12	RWR	12.84	13.17	12.95	12.99	46.09
	Mean	12.95	12.97	13.11	13.01	-

Table 5 presents the agility test results for students in the Lompat tali group. Each student is identified by their initials, and their performance is measured across three trials.

Table 6. Data on agility of jump rope group students

No	Initial	*Tester*			Mean (sec)	t-score
		1 (sec)	2 (sec)	3 (sec)		
1	AL	12.16	12.77	12.34	12.42	54,32
2	AM	11.97	12.10	12.34	12.14	58,50
3	AI	13.04	12.93	13.01	12.99	45,99
4	FM	12.81	12.64	12.79	12.75	49,59
5	F SF	11.16	11.47	12.04	11.56	66,98
6	MS	11.70	11.85	11.63	11.73	64,49
7	MZL	12.51	12.35	12.08	12.31	55,92
8	QRD	11.97	12.07	12.19	12.08	59,38
9	RSD	13.15	12.84	12.94	12.98	46,23
10	RS	12.80	11.75	12.19	12.25	56,90
11	SB	13.23	13.01	12.81	13.02	45,65
12	ZJ	12.87	12.73	13.12	12.91	47,25

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Mean	12,45	12,38	12,46	12,43	-

The average time (in seconds) for each student was calculated to evaluate individual performance, accompanied by the corresponding t-score to indicate the relative significance and consistency of their agility and coordination abilities. The agility test results showed that mean times ranged from 11.56 to 13.02 seconds, illustrating varied levels of agility among students in the Engklek group. Similarly, Table 6 presents the results of the coordination test, where each student's performance was assessed over three trials. The mean coordination times ranged from 7.67 to 11.33 seconds, indicating notable differences in coordination skills. The associated t-scores offer additional insight into the consistency and reliability of each student's

Table 7. Data on coordination of engklek group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AA	10	9	9	9,33	44,50
2	AB	7	8	8	7,67	36,84
3	MFL	10	8	9	9,00	42,97
4	MAS	10	10	9	9,67	46,04
5	LP	11	10	10	10,33	49,11
6	JIP	10	8	9	9,00	42,97
7	MAIR	12	11	11	11,33	53,71
8	MS	9	10	9	9,33	44,50
9	MFR	10	9	10	9,67	46,04
10	FAL	8	7	8	7,67	36,84
11	DBP	10	8	9	9,00	42,97
12	RWR	9	11	10	10,00	47,57
Mean		9,7	9,1	9,3	9,3	-

Table 8 presents the coordination test results for students in the jump rope group. Each student is identified by their initials, and their performance was measured across three trials. The mean time (in seconds) for each student was calculated, along with the t-score, which reflects the statistical significance and consistency of their performance. The mean coordination times for the students ranged from 7.33 to 15.33 seconds, indicating a wide range of coordination abilities. The t-scores further illustrate the variability and reliability of each student's performance across the trials.

Table 8. Data on coordination of jump rope group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AL	11	12	12	11,67	55,24
2	AM	13	13	12	12,67	59,84
3	AI	9	8	7	8,00	38,37
4	FM	14	12	11	12,33	58,31
5	F SF	15	16	15	15,33	72,11
6	MS	13	15	15	14,33	67,51
7	MZL	12	12	10	11,33	53,71
8	QRD	11	13	12	12,00	56,77
9	RSD	8	7	7	7,33	35,30
10	RS	13	12	12	12,33	58,31

11	SB	14	14	13	13,67	64,44
12	ZJ	11	10	8	9,67	46,04
Mean		12	12	11,17	11,72	-

Table 9 presents the explosive power test results for students in the engklek group. Each student is identified by their initials, and their performance is measured by the difference between their reach and jump heights. The mean reach height for the students was 129.08 cm, while the mean jump height was 144.25 cm, resulting in an average difference of 15.17 cm. The t-scores, calculated for each student, indicate the statistical significance of their performance and provide further insight into the consistency and reliability of their results.

Table 9. Data on the explosive power of engklek group students

No	Initial	Reach (cm)	Jump (cm)	Difference (cm)	t-score
1	AA	125	140	15	43,83
2	AB	132	143	11	31,97
3	MFL	127	142	15	43,83
4	MAS	130	145	15	43,83
5	LP	133	150	17	49,75
6	JIP	128	144	16	46,79
7	MAIR	128	147	19	55,68
8	MS	127	142	15	43,83
9	M. F R	131	147	16	46,79
10	FAL	127	139	12	34,93
11	DBP	130	145	15	43,83
12	RWR	131	147	16	46,79
Mean		129,08	144,25	15,17	-

Table 10 displays the explosive power test results for students in the jump rope group. Each student is identified by their initials, and their performance is measured by the difference between their reach and jump heights. The mean reach height for the students was 127.67 cm, while the mean jump height was 146.67 cm, resulting in an average difference of 19.00 cm. The t-scores offer additional insight into the statistical significance, consistency, and reliability of their performance across the trials.

Table 10. Data on the explosive power of jump rope group students

No	Initial	Reach (cm)	Jump (cm)	Difference (cm)	t-score
1	AL	129	148	19	55,68
2	AM	126	147	21	61,61
3	AI	130	144	14	40,86
4	FM	127	146	19	55,68
5	F SF	131	155	24	70,50
6	MS	128	151	23	67,54
7	MZL	125	143	18	52,72
8	QRD	127	146	19	55,68
9	RSD	124	137	13	37,90
10	RS	127	147	20	58,64
11	SB	130	152	22	64,57
12	ZJ	128	144	16	46,79

Mean	127,67	146,67	19,00	-

Table 11 presents the speed test results for students in the engklek group. Each student is identified by their initials, and their performance was measured across three trials. The mean time (in seconds) for each student was calculated, along with the t-score, which indicates the statistical significance of their performance, providing insights into the reliability and consistency of their results.

Table 11. Data on speed of engklek group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AA	8,05	7,65	8,13	7,94	39,59
2	AB	7,72	8,64	7,95	8,10	36,47
3	MFL	8,19	7,92	7,68	7,93	39,85
4	MAS	7,63	8,06	7,75	7,81	42,12
5	LP	8,16	7,24	6,09	7,16	54,76
6	JIP	7,21	7,38	7,63	7,41	50,03
7	MAIR	6,65	7,07	6,85	6,86	60,73
8	MS	7,58	7,73	7,81	7,71	44,19
9	M. F R	7,31	7,55	7,61	7,49	48,41
10	FAL	8,35	8,02	7,73	8,03	37,84
11	DBP	7,83	7,55	8,04	7,81	42,25
12	RWR	7,59	7,31	7,55	7,48	48,54
Mean		7,69	7,68	7,57	7,64	-

The mean times for the students in the engklek group range from 6.86 seconds to 8.10 seconds, reflecting varying levels of speed among them. The t-scores provide further insight into the consistency and reliability of their performance. Table 12 summarizes the speed test results for students in the jump rope group. Each student is identified by their initials, and their performance is assessed across three trials. The mean times (in seconds) for each student are calculated, providing an overview of their speed performance. The mean times for students in this group range from 6.32 seconds to 8.00 seconds, reflecting varying levels of speed. The corresponding t-scores provide additional insight into the consistency and reliability of their performance, with higher t-scores indicating statistically significant differences in performance. This data underscores the impact of the jump rope activity on the students' speed capabilities and highlights the importance of such exercises in physical education programs.

Table 12. Data on speed of jump rope group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AL	6,94	7,35	7,72	7,34	51,39
2	AM	7,12	7,62	7,49	7,41	49,96
3	AI	7,18	7,25	7,61	7,35	51,20
4	FM	7,05	7,78	7,65	7,49	48,34
5	F SF	6,67	6,01	6,38	6,35	70,52
6	MS	5,94	6,18	7,02	6,38	70,01
7	MZL	6,38	7,05	6,37	6,60	65,73

8	QRD	6,15	6,84	7,09	6,69	63,91
9	RSD	7,14	7,91	8,13	7,73	43,80
10	RS	6,92	7,25	7,60	7,26	52,95
11	SB	7,26	6,95	8,11	7,44	49,38
12	ZJ	8,03	7,81	8,23	8,02	38,03
Mean		6,90	7,17	7,45	7,17	-

Table 13 displays the results of the long jump skills test for students in the engklek group. Each student is identified by their initials, and their performance was measured across three trials. The mean distance (in centimeters) for each student was calculated, along with the t-score, which indicates the statistical significance of their performance. The mean distances range from 69.67 cm to 87.00 cm, reflecting varying levels of long jump skills among the students. The t-scores provide additional insight into the consistency and reliability of their performances, offering a deeper understanding of the statistical significance of the results.

Table 13. Long jump skills data of engklek group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AA	74	77	77	76,00	44,57
2	AB	69	70	70	69,67	33,89
3	MFL	73	74	74	73,67	40,64
4	MAS	76	78	78	77,33	46,82
5	LP	77	79	79	78,33	48,50
6	JIP	83	82	82	82,33	55,24
7	MAIR	87	88	86	87,00	63,11
8	MS	75	79	76	76,67	45,69
9	M. F R	79	78	78	78,33	48,50
10	FAL	72	70	69	70,33	35,02
11	DBP	75	75	76	75,33	43,44
12	RWR	76	78	77	77,00	46,25
Mean		76,33	77,33	76,83	76,83	-

Table 14 presents the results of the long jump skills test for students in the jump rope group. Each student is identified by their initials, and their performance was measured across three trials. The mean distance (in centimeters) for each student was calculated, along with the t-score, which indicates the statistical significance of their performance. The mean distances for each student range from 73.00 cm to 90.33 cm, reflecting varying levels of long jump skills among the students. The t-scores further provide insight into the consistency and reliability of their performance, allowing for a more comprehensive understanding of the statistical significance of the results.

Table 14. Long jump skills data of jump rope group students

No	Initial	Tester			Mean	t-score
		1	2	3		
1	AL	83	83	80	82,00	54,68
2	AM	85	85	83	84,33	58,62
3	AI	73	74	72	73,00	39,51

4	FM	77	77	76	76,67	45,69
5	F SF	92	89	90	90,33	68,73
6	MS	89	88	88	88,33	65,36
7	MZL	84	85	83	84,00	58,05
8	QRD	87	88	89	88,00	64,80
9	RSD	74	76	73	74,33	41,76
10	RS	86	86	89	87,00	63,11
11	SB	74	76	75	75,00	42,88
12	ZJ	76	75	78	76,33	45,13
Mean		81,67	81,83	81,33	81,61	-

Discussion

The data obtained from the engklek and jump rope groups provides valuable insights into the influence of these traditional games on students' physical capabilities, particularly in agility, coordination, explosive strength, speed, and long jump performance. The results highlight significant differences between the two groups in developing these essential motor skills, thereby enhancing our understanding of how each activity fosters the development of physical abilities. The agility results reveal that the engklek and jump rope groups exhibited varying levels of agility. The engklek group had average timings between 11.78 to 14.06 seconds, while the jump rope group demonstrated a slightly shorter range of 11.56 to 13.02 seconds.

These findings suggest that jump rope, which incorporates plyometric exercises, may be more effective in improving agility compared to engklek. This is consistent with prior studies, which indicate that plyometric exercises, including jump rope activities, significantly enhance agility by improving neuromuscular responsiveness and speed (Woodard & Chen, 2024). The evidence emphasizes the importance of incorporating dynamic, plyometric exercises into physical education curricula to enhance agility and overall athleticism. In terms of coordination, the engklek group exhibited more consistent performance, with mean times ranging from 7.67 to 11.33 seconds, while the jump rope group showed a broader range of 7.33 to 15.33 seconds.

Despite this variability, both groups demonstrated improved coordination levels. The engklek group’s more consistent performance suggests that this game may be particularly effective in improving coordination. This aligns with previous research emphasizing the importance of proprioceptive training, such as that provided by engklek, in enhancing coordination (Iorga et al., 2023; Pramanick et al., 2022). Proprioception plays a crucial role in motor control, enabling better muscle regulation and motor function, which likely contributed to the engklek group's improvement in coordination. The examination of explosive power indicated that the jump rope group experienced greater improvements in jump height, with mean differences ranging from 13 cm to 24 cm, compared to the engklek group’s range of 11 cm to 19 cm.

These results suggest that jump rope, with its emphasis on vertical and horizontal jumps, is more effective in enhancing explosive strength. Several studies have consistently shown that plyometric exercises, such as jump rope activities, result in substantial gains in explosive power (Anggoro & Masrun, 2023). These exercises activate the stretch-shortening cycle of the muscles, which is essential for developing the explosive strength required in

athletic endeavors such as the long jump (Makaruk et al., 2020; Ramirez-Campillo et al., 2020). Regarding speed, the jump rope group demonstrated slightly superior results, with average times ranging from 6.35 to 8.02 seconds, compared to the engklek group's range of 6.86 to 8.10 seconds.

This indicates that jump rope activities may be more effective in enhancing speed, which is crucial for the approach phase of the long jump. Previous research has affirmed the beneficial effects of plyometric training on speed, particularly in enhancing sprinting velocity and overall speed endurance (Kryeziu et al., 2023). The integration of plyometric exercises and speed training has proven to be effective in developing speed by improving muscle flexibility and force application (Naidu, 2016). Finally, the long jump proficiency results revealed that the jump rope group achieved better outcomes, with mean distances ranging from 73.00 cm to 90.33 cm, compared to the engklek group's range of 69.67 cm to 87.00 cm.

This difference may be attributed to the superior explosive power and speed developed through jump rope activities, both of which are key components of successful long jump performance. Existing research indicates that motor abilities, including coordination, precision, and balance, play a crucial role in enhancing long jump performance (Kastrena et al., 2019). Therefore, it is likely that jump rope exercises, by improving these attributes, also have a more significant impact on long jump performance. The improvements in explosive strength and speed from jump rope likely contribute to a more powerful take-off and higher take-off velocity during the long jump, leading to better overall performance.

This study's findings underscore the potential of traditional games, specifically jump rope, in enhancing essential motor skills that influence athletic performance. The results emphasize the need to incorporate culturally relevant physical activities into educational curricula to support the development of motor skills in children. However, there are several limitations to this study. The sample size was relatively small, which may limit the generalizability of the findings to a larger population. Additionally, the study's duration of four weeks may not be sufficient to assess the long-term effects of these activities on motor skill development. Future research should investigate the lasting impact of traditional games on motor skill enhancement and athletic performance, as well as explore the benefits of integrating these activities with other training methods. Further studies with larger sample sizes and longer intervention periods could provide more conclusive evidence regarding the sustained impact of traditional games on motor skills and physical development.

Conclusion

This study investigated the effectiveness of traditional games engklek and jump rope in enhancing students' physical abilities, specifically agility, coordination, explosive power, speed, and long jump performance. The findings reveal that jump rope tends to be more effective in improving agility, explosive strength, speed, and long jump ability, while engklek proves especially beneficial for developing coordination. These results offer a clear answer to the research problem by demonstrating the distinct contributions of each activity to different motor skills. The evidence supports existing theories and prior research, particularly on the

benefits of plyometric training inherent in jump rope, which stimulates neuromuscular responses and power output.

At the same time, the improvements seen in the engklek group align with theories of proprioceptive training, highlighting the role of balance, spatial awareness, and sensory feedback in enhancing motor coordination. This underscores the educational and developmental potential of integrating culturally rooted physical activities into school curricula to target specific aspects of motor skill development. Despite the valuable insights gained, the study is not without limitations. The small sample size and short intervention duration limit the generalizability and long-term applicability of the findings. Furthermore, external factors such as students' dietary habits, sleep quality, and other physical activities were not controlled, which may have influenced the outcomes.

Future research should address these limitations by involving larger, more diverse populations and extending the duration of the interventions to assess lasting effects. Additionally, exploring how external lifestyle factors interact with traditional physical activities would provide a more holistic understanding of physical development. Investigating the combined implementation of engklek and jump rope could also inform the design of comprehensive physical education programs that aim to cultivate a broader range of motor competencies in children.

Author's Statement

This statement confirms that my and my team's article has never been published in any journal or similar media, and is the original work of the author. If in the future it is determined that the article has not been changed and has been published, I as the author am willing to face sanctions imposed by the management of the Porkes Journal. We would like to express our sincere gratitude to the school for granting us the opportunity to conduct our research. Our heartfelt thanks also go to the dedicated teachers and enthusiastic students for their invaluable participation and support throughout this process.

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