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The Impact of Foam Tube-Based and Traditional Games on the Social, Cognitive, and Motor Development of Elementary School Children

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A B S T R A C T

Development is a process encompassing all dimensions of human existence, with the primary goal of education being the facilitation of the full development of children's talents. Play and physical activity play a significant role in enhancing children's growth. Indigenous and local games of Iran, deeply rooted in creativity and culture, use minimal resources to maximize sensory-neural stimulation and motor activity, thereby enhancing children's perceptual-motor, cognitive-emotional, and motor skills. This study aimed to compare the effectiveness of indigenous and local games with selected foam tube-based games on the social, cognitive, and motor development of elementary school children. The statistical population of the research included all elementary school students in Raz and Jargalan County. The results of covariance analysis showed that both traditional games and foam tube-based games significantly improved children's motor, social, and cognitive development compared to the control group ($P < .05$). Additionally, no statistically significant difference was observed between the foam tube-based games and indigenous-local games groups ($P > .05$). The findings indicate that utilizing either indigenous-local games or foam tube-based games can enhance children's cognitive, motor, and social development, as well as improve their morale, happiness, self-esteem, and overall well-being. This study highlights the importance of these games in educational settings and recommends that educators and teachers incorporate them into their programs. It is also suggested that this approach be used to strengthen children's social, motor, and cognitive growth, thereby fostering a healthier and more optimistic generation and reinforcing the future human capital of the country.

Keywords: *Elementary school children, motor development, social development, cognitive development, foam tube games, indigenous-local games*

1. Introduction

Development is a continuous process that encompasses all aspects of human existence. In other words, child development involves a series of physical, psychological, social, emotional, cognitive, and behavioral changes that begin in the prenatal period and continue through adolescence, distinguishing individuals from one another (Abubakar & Uke, 2021). Therefore, in child development studies, this period should be considered a complementary rather than a separate stage of human growth. Children are social beings born with a set of behaviors essential for initiating and facilitating social interactions (Adi et al., 2022).

Researchers and educators believe that the most important goal of education is to assist in the full development of children's talents. According to Isaacs, the development of physical, psychological, and intellectual aspects of children and adolescents is achievable through physical activities. Understanding motor development helps individuals improve their motor performance, which offers numerous benefits. Motor development throughout life profoundly influences growth, cognitive behaviors, and social development. Individuals' choice of motor activities affects their personal identity, social mobility, and cognitive and psychological development (Ahadi et al., 2021).

One of the significant motor experiences in childhood is motor play. Play and physical activity play a vital and refining role in enhancing children's development. When a child engages in motor activity, the pleasure and joy derived from it lead to repeated activity and further practice (Alpen et al., 2022). Indigenous and local games of Iran, rooted in the creativity and goodwill of its people, optimize limited resources to create maximum sensory-neural stimulation and motor activity. These games are tailored to individuals' abilities and enhance their perceptual-motor, cognitive-emotional, and motor skills. These games are categorized into various types and levels, each activating the nervous system differently. This activation not only creates joy and neurological readiness but also stimulates and integrates sensory-perceptual and decision-making processes, thereby contributing to sensory-motor integration. Through play, children strengthen their muscles and learn numerous psychomotor skills, which can facilitate their social acceptance (Battaglia et al., 2019).

Play not only awakens a child's emotions and feelings but also significantly strengthens their body and spirit, guiding them toward social life and responsibility (Bers, 2018). Certain games allow children to practice future roles and responsibilities, expand their relationships with the outside world, and shape their social interactions (Blumberg et al., 2019). Through this process, children develop participation and social cooperation. By engaging in various games, they learn principles and regulations, identify with adults, become familiar with and adhere to hierarchy, learn competition, gain real-life experiences from failures, develop self-expression skills, and overcome unnecessary fear and shyness (Brown et al., 2020). The social benefits of play for children include its positive impact on determining their social status, fostering relationships, promoting desirable behaviors, extinguishing undesirable behaviors, reducing aggression (Condello et al., 2021), enhancing social skills (Cosso et al., 2022), and actively engaging children in the classroom (Amaluddin et al., 2018). Madondo and Tsikira (2022) demonstrated that participation in sports and physical education plays a crucial role in enriching children's social lives and developing social communication skills (Madondo & Tsikira, 2022).

Children's motor abilities continuously change throughout life, and these motor changes coincide with psychological, cognitive, and social transformations (Edwards et al., 2017). Therefore, focusing on a child's motor development is, in essence, focusing on their comprehensive growth. Various perspectives on child development exist (Engel-Yeger et al., 2017). For example, according to the maturation perspective, growth results from the maturation of the central nervous system, enabling new behaviors (Feleihi et al., 2023). This perspective views environmental factors as temporary influences. Conversely, the ecological perspective proposed by Bernstein et al. (the dynamic systems theory branch) posits that development arises from the interaction of genetic and environmental factors (individual, task, and environment) throughout life. Additionally, the ecological view suggests that development is shaped by the interplay between genetic and environmental factors, influenced by historical and socio-cultural environments (Fitzpatrick et al., 2017a, 2017b). The primary goal of education is to support the growth and flourishing of children's talents. Physical activities, particularly in the domains of physical, psychological, and intellectual development, have positive effects. Motor learning and utilizing the body in various activities prompt movement, initiating the learning process (Fitzpatrick et al., 2017a, 2017b).

Play and exploratory activities constitute a significant part of a child's life, helping them gain more information

about themselves, their bodies, and their motor potential (Gao & Science, 2017). These games not only have cultural and social aspects but also hold cognitive significance (Hoekman et al., 2019). In this regard, Iran's indigenous and local games, shaped within their specific socio-cultural context, effectively utilize limited resources and have notable impacts on children's motor, social, cognitive, and emotional development.

Research indicates that motor games improve children's motor skills, especially during elementary school. Harrowell et al. (2017) examined the effectiveness of motor games in elementary school children and concluded that these games improve motor skills (Harrowell et al., 2017). Edwards et al. (2017) found that motor games enhance the motor skills of disadvantaged children (Edwards et al., 2017). McCoy et al. (2018) emphasized the positive impact of indigenous games on the motor and social development of six-year-old children (McCoy et al., 2018). Larson et al. (2018) demonstrated that sports, play, and physical activity significantly contribute to social development, facilitating and accelerating the socialization process (Larson et al., 2018).

The role of indigenous games in children's motor and social development is particularly positive. Additionally, innovative games designed by educators and specialists, utilizing simple and inexpensive tools, have shown positive effects on children's social, cognitive, and motor development. Foam tube games are one such innovation, enhancing physical fitness, promoting teamwork, and developing children's social and cognitive skills. The primary goal of indigenous-local games is to create an enjoyable environment with minimal resources, teach ethical lessons, encourage physical activity, and foster teamwork and social participation. Studies on local games reveal that they are free of psychological and physical harm and can be implemented at no cost to parents (McCoy et al., 2018).

The preadolescent period is critical for children's moral and cognitive development (Miller & Kocurek, 2017). Moreover, during the ages of 6 to 14 years—mid-childhood to early adolescence—children undergo significant biological and psychological changes, with notable shifts in their social roles and relationships as they enter school, participate in programs, and engage with peers and adults outside their families (Mousavi et al., 2022). This period (childhood and preadolescence) appears to require greater attention (Papanastasiou et al., 2017).

Recently, creative motor games developed by educators and child play specialists have gained significant popularity. These games use simple and inexpensive tools, such as foam tubes. Foam tube games are simple to organize, suitable for children of various ages, and create a fun and engaging environment that encourages movement and physical activity. Group play is another advantage of these games, which can promote children's social development. Some suggest that creative motor games enhance children's perceptual-motor growth and contribute to the development of focus, attention span, and thought processes. Furthermore, these games improve physical fitness and abilities. Foam tube games are a new and innovative form of play designed for elementary school children. In these games, foam tubes are used in various motor activities, and it is claimed that these games enhance children's physical and motor fitness, increase their participation in physical activity, and strengthen teamwork, collaboration, and sportsmanship.

However, studies utilizing foam tube games, particularly those examining their effects on children's cognitive, motor, and social development, are rare. Given the importance of play in children's comprehensive development and the variability and influence of different types and protocols of play, identifying the most appropriate, optimal, and cost-effective play protocol for children is highly significant. Furthermore, as the role of indigenous and local games in children's motor, cognitive, social, and emotional development has been well-documented in various studies, this research aims to compare the newly introduced foam tube games with these traditional games. Thus, the objective of this study is to evaluate and compare the effectiveness of indigenous-local games with selected foam tube-based games on the social, cognitive, and motor development of elementary school children.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quasi-experimental design with a pretest-posttest structure and a control group. The statistical population included all elementary school students in Raz and Jargalan County. The research sample consisted of 30 elementary school children selected from two elementary schools using convenience sampling. From each school, 15 eligible children with appropriate physical and motor conditions were voluntarily selected and divided into three homogenous groups: the foam tube games experimental group (10 participants), the indigenous-local games experimental group (10 participants), and the control group (10 participants engaged in regular school activities).

Inclusion criteria included the completion of an informed consent form by parents, verbal assent from the children, absence of musculoskeletal, neurological, developmental, or cognitive disorders based on the children's health form, right-handedness, and no prior experience in play or sports classes. Exclusion criteria included absence from more than two game sessions, withdrawal of parental consent for any reason and at any stage, lack of cooperation by the child during game sessions or testing, and the emergence of contagious disease symptoms in the child.

Before the tests, parents completed a personal information form. Participants and their parents were assured that all personal information would remain confidential and that names would not appear in the research. After selecting 30 elementary school students based on the study criteria (e.g., informed consent form and handedness assessment), the participants were divided into three groups: foam tube games (10 participants), indigenous-local games (10 participants), and control (10 participants). The Bruininks-Oseretsky Test of Motor Proficiency, Vineland Social Maturity Scale, and CBCL were used to assess motor, social, and cognitive development, respectively.

2.2. Measures

2.2.1. Preferred Hand

This test, developed by Chapman and Chapman in 1987, measures handedness. Participants report their preferred hand for 13 activities, including writing, drawing, throwing, hammering, brushing teeth, erasing, and using scissors. Internal consistency reliability for this questionnaire is reported as 0.96, and test-retest reliability is 0.97. Its correlation with behavioral assessments of handedness is 0.83. In Iran, Alipour (2006) psychometrically validated this test, reporting a Cronbach's alpha of 0.94 and test-retest reliability of 0.92 (Rahimi, 2023).

2.2.2. Preferred Hand

Bruininks-Oseretsky Test of Motor Proficiency (BOT-2)

This test evaluates children's motor skills and includes eight subtests measuring fine and gross motor skills. Test-retest reliability is reported as 78% for the long form and 86% for the short form (Jamshidian et al., 2024).

2.2.3. Behavior Problems

This tool measures children's behavioral problems and is typically completed by a parent or someone familiar with the child. To assess cognitive development, the subscales for "thought problems" and "attention problems" are used. In Iran, Tehrani-Doost et al. translated and validated this questionnaire, reporting internal consistency coefficients between 0.63 and 0.95 and temporal stability coefficients between 0.32 and 0.67 (Minaei, 2005).

2.2.4. Social Maturity

This developmental scale assesses an individual's ability to meet practical needs and take on responsibilities. It comprises eight categories, including self-help in eating, dressing, self-control, and verbal communication. Test-retest reliability across all subscales is reported above 0.92, with internal consistency measured using Cronbach's alpha at 0.68 (Eliassy et al., 2021).

2.3. Intervention

For this study, foam tubes and selected foam-based games were used, including activities such as throwing foam rings, jumping into foam circles, navigating foam spirals, and striking balloons with foam tubes. These games were specifically designed for children's motor and social activities.

As an intervention, indigenous-local games and foam tube games were conducted for the two experimental groups. Foam-based games included throwing foam rings, jumping into foam circles, navigating foam spirals, and striking balloons with foam tubes. Indigenous-local games included activities such as "Dodgeball," "Air Step," "Seven Stones," "Five Stones," "Zo-Zo," pantomime, and hopscotch. The experimental groups engaged in their respective games for 4 weeks, with three sessions per week, each lasting 40 minutes during the morning shift. The control group continued their regular daily school activities.

Session 1: The first session will introduce participants to traditional local games. An overview of the intervention protocol will be provided, explaining the purpose of the program and the expected outcomes. The participants will be informed about the research questionnaires and tests to be administered throughout the study. This session will also provide instructions for each subsequent session's activities.

Session 2: The second session will involve administering pre-tests, including the Mental Health Questionnaire, the Weiland Questionnaire, and the Motor Development Test. These assessments will provide baseline data to track any changes throughout the intervention.

Session 3: The third session will be identical to Session 2, administering the same pre-tests again to ensure consistency and reliability in the baseline data collection.

Session 4: In this session, the group will begin their first game, "Leili," a traditional game that encourages social interaction and physical movement. After a proper warm-up, participants will engage in the game, followed by a cool-down period to prevent injury and promote relaxation.

Session 5: The focus of this session will be on "Zozo," another traditional game. The participants will warm up before the game and then practice its specific movements. Afterward, a cool-down period will follow.

Session 6: This session will be dedicated to the game "Seven Stones," which involves strategic thinking and physical coordination. Participants will warm up before playing and end the session with a cool-down phase.

Session 7: The seventh session will introduce "Pantomime," a game of acting without speaking. Participants will warm up, perform pantomimes, and engage in light exercises afterward to cool down.

Session 8: In the eighth session, the game dodgeball will be taught. After a warm-up, the group will practice the game's rules and movements. The session will conclude with a cool-down period.

Session 9: The focus of this session will be on "Five Stones," a game that promotes coordination and concentration. Participants will first warm up, engage in the game, and finish with a cool-down.

Session 10: In this session, the group will learn the game "Air Step," which involves jumping and footwork. After warming up, participants will practice the game, followed by a cool-down to relax muscles.

Session 11: The eleventh session will return to "Seven Stones," providing more opportunities for practice. A warm-up will precede the game, and the session will conclude with a cool-down period.

Session 12: This session will focus on "Zozo" again, allowing the participants to further refine their skills in this game. After warming up, participants will practice the game and then cool down.

Session 13: The thirteenth session will again feature dodgeball, enabling the participants to practice and improve their skills. After a warm-up and the game itself, participants will engage in a cool-down period.

Session 14: The game "Air Step" will be revisited in this session. Participants will warm up, practice jumping exercises, and complete the session with a cool-down period to avoid fatigue.

Session 15: The final game in the intervention will be "Pantomime." This session will allow participants to enjoy acting and physical expression through non-verbal communication. A warm-up will precede the activity, and the session will conclude with a cool-down period.

Session 16: The sixteenth session will involve the post-assessment phase, where the same questionnaires and motor development tests used in the pre-tests will be administered again. This will provide data on any changes or improvements following the intervention.

Session 17: The final session will mirror Session 16, administering the post-assessments once more to gather additional data for comparison with the baseline measurements. This will mark the conclusion of the intervention protocol, offering insights into its effectiveness.

2.4. Data Analysis

Descriptive and inferential statistical methods were used to analyze the data. Descriptive statistics provided an overview of the participants' characteristics in the different groups, including means and standard deviations for the measured variables. For inferential statistics, the normality of the data was first assessed using the Shapiro-Wilk test, and homogeneity of variances was checked with Levene's test. Upon confirming data normality, analysis of covariance (ANCOVA) was performed to control for the pretest covariate effects on cognitive, motor, and social development variables. All analyses were conducted using SPSS 21, with a significance level set at $\alpha = 0.05$.

3. Findings and Results

The means and standard deviations for the variable of social development and its subscales in the pretest and posttest phases for the two experimental groups (foam tube games and indigenous-local games) and the control group (regular preschool activities) are presented in Table 1.

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Table 1

Descriptive Statistics for Pretest and Posttest Variables Across Study Groups (M ± SD)

Variable	Stage	Foam Tube Games	Indigenous-Local Games	Control
Motor Development	Pretest	99.5 ± 5.276	103.0 ± 6.716	101.4 ± 4.477
	Posttest	123.0 ± 4.922	123.2 ± 4.237	105.1 ± 3.695
Gross Motor Skills	Pretest	43.1 ± 4.202	43.8 ± 3.765	42.7 ± 3.773
	Posttest	53.6 ± 2.989	54.0 ± 2.582	43.8 ± 3.011
Fine Motor Skills	Pretest	41.9 ± 1.969	44.2 ± 2.616	42.8 ± 2.365
	Posttest	51.5 ± 3.951	51.8 ± 3.645	44.9 ± 3.035
Upper Limbs	Pretest	14.5 ± 0.850	15.0 ± 1.491	15.4 ± 1.776
	Posttest	17.9 ± 0.994	17.3 ± 1.252	16.5 ± 1.434
Social Development	Pretest	56.1 ± 3.665	55.3 ± 4.084	52.3 ± 3.622
	Posttest	71.6 ± 5.522	70.2 ± 5.473	54.6 ± 5.103
Quality of Life	Pretest	58.3 ± 6.308	60.8 ± 5.514	59.3 ± 7.379
	Posttest	72.5 ± 5.836	70.0 ± 3.496	61.0 ± 7.055

As shown in Table 1, all groups demonstrated improved posttest scores compared to pretest scores. The experimental groups (foam tube games and indigenous-local games) showed greater improvements than the control group.

Before testing the hypotheses, the Shapiro-Wilk test was used to assess the normality of the distribution for the research variables and their subscales. The results indicated that the data distribution for the variables of social, cognitive, and motor development, as well as their subscales, was normal in both the pretest and posttest phases ($P > .05$).

Additionally, Levene's test was conducted to examine the homogeneity of variances for the variables of cognitive, motor, and social development, confirming variance homogeneity. Based on the fulfillment of ANCOVA assumptions, the results of the covariance analysis for posttest scores (after removing the covariance effects of pretest scores) are shown in Table 2.

Table 2

Results of Between-Group Effects from ANCOVA

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Motor Development	2181.145	2	1090.572	79.360	.000	.859
Gross Motor Skills	641.920	2	320.960	40.384	.000	.756
Fine Motor Skills	269.160	2	134.580	14.401	.000	.526
Upper Limbs	18.632	2	9.316	14.055	.000	.520
Social Development	1255.919	2	627.959	22.586	.000	.635
Cognitive Development	753.419	2	376.709	17.022	.000	.567

Based on the ANCOVA results in Table 2, the intervention in the experimental groups (foam tube games and indigenous-local games) significantly impacted all dependent variables (motor, cognitive, and social development). Table 5 presents the results of pairwise comparisons between the study groups using Bonferroni's post hoc test to identify significant differences.

Table 3

Pairwise Comparisons of Study Groups for Research Variables

Variable	Group 1	Group 2	Mean Difference	Standard Error	Sig.
Motor Development	Control	Foam Tube Games	-18.691	1.676	.000
		Indigenous-Local	-17.434	1.670	.000
	Foam Tube Games	Indigenous-Local	1.258	1.717	1.000
Gross Motor Skills	Control	Foam Tube Games	-9.723	1.262	.000
		Indigenous-Local	-9.988	1.270	.000
	Foam Tube Games	Indigenous-Local	-0.265	1.264	1.000
Fine Motor Skills	Control	Foam Tube Games	-7.034	1.374	.000

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		Indigenous-Local	-5.338	1.448	.003
	Foam Tube Games	Indigenous-Local	1.695	1.497	.803
Upper Limbs	Control	Foam Tube Games	-1.998	0.377	.000
		Indigenous-Local	-1.066	0.367	.022
	Foam Tube Games	Indigenous-Local	0.932	0.368	.053
Social Development	Control	Foam Tube Games	-12.008	2.108	.000
		Indigenous-Local	-8.239	2.114	.002
	Foam Tube Games	Indigenous-Local	3.769	2.133	.267
Cognitive Development	Control	Foam Tube Games	-15.564	2.568	.000
		Indigenous-Local	-14.467	2.491	.000
	Foam Tube Games	Indigenous-Local	1.098	2.368	1.000

According to Table 3, Bonferroni's post hoc test results revealed significant differences between the experimental groups and the control group for motor, cognitive, and social development variables. However, no significant differences were observed between the foam tube games and indigenous-local games experimental groups for any variables.

4. Discussion and Conclusion

The aim of this study was to determine the impact of foam tube-based games and traditional games on the social, motor, and cognitive development aspects of elementary school children. The inclusion criteria for this study were personal consent and the absence of a history of physical or mental illness. Since the participants were beginners and had no previous experience with foam tube-based or traditional games, a training session was held before the study began to familiarize the participants with the research procedure and the games and to allow them to practice. The main variables of the study included tests of social development, motor development, and cognitive development. All participants in the foam tube-based games group, the traditional games group, and the common preschool activities group performed the pre-test of the measures, and the results were recorded as pre-test data. The intervention consisted of 12 sessions, each lasting one and a half hours, during which the experimental groups engaged in foam tube-based and traditional games, while the control group participated in common preschool activities. After the training period, children completed the tests of social, motor, and cognitive development again 24 hours after the last session, and the results were recorded as post-test data.

The results showed that foam tube-based and traditional games had a significant impact on some aspects of children's social development compared to common preschool activities. Particularly, significant differences were observed in the overall social development variable and its components, such as general self-help, self-help in dressing, communication with others, self-regulation in behavior, and socialization, compared to the control group. Additionally, these games had a greater impact on children's motor development, and there were significant differences between the foam tube-based and traditional game groups and the control group in the cognitive development variable. These differences were likely due to the increased social interactions of the experimental group children with their friends and classmates during the games and the specific characteristics of the foam tube-based and traditional games.

The findings of this study are consistent with the results of studies by Abubakar and Uke (2021) and Harrowell et al. (2017), which indicated a significant impact of foam tube-based and traditional games on social development (Abubakar & Uke, 2021; Harrowell et al., 2017). These results also align with the studies by Brown et al. (2020) and Fitzpatrick et al. (2017), which may provide further support for these findings. It can be said that in group activities such as various games, individuals learn to help others, adapt to group members, cooperate, show generosity and sacrifice, develop independence, self-confidence, and friendship, all of which contribute to social development (Brown et al., 2020; Fitzpatrick et al., 2017a, 2017b). In fact, play can be seen as a suitable method, favored by children, to facilitate social interactions with peers and friends, thereby promoting children's social growth.

According to psychoanalytic theorists, especially the studies by Cosso et al. (2022) and Madondo and Tsikira (2022), the primary importance of play lies in its emotional function, as it allows children to reduce their anxiety (Cosso et al., 2022; Madondo & Tsikira, 2022). These studies suggest that many of the child's emotions, including "anger, irrational fear, sexual curiosity, and the desire for destruction and wastefulness," often lead to dissatisfaction among adults. Since adults oppose these feelings, the child fears expressing them, and many of these feelings can trigger anxiety responses in the child. Play enables children to explore these unpleasant emotions without the consequences

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of adult activities. In a study by Alpen et al. (2022), the very limited view of Freud that play's most important function is anxiety reduction is rejected (Alpen et al., 2022). Instead, it is argued that play helps in the development of physical and social skills, which can enhance the child's self-esteem, and thus also has the function of "creating the self." Playing with peers, sharing imagination and reality with them, and displaying skills in social situations are all forms of play that empower children's self-concept, helping them realize that they can succeed in the larger society.

Sports activities provide opportunities for individuals to set goals, take on tasks, and benefit from teamwork outcomes. In this context, play, as an essential part of physical education, is a latent force that helps children and adolescents establish better relationships and create a dynamic social force within society. Play is a multidimensional process that serves the development and growth of children, providing an outlet for their inner energies and making learning easier. It contributes to social development and enhances communication skills. As observed, the subscales of communication with others, self-regulation in behavior, and socialization in the foam tube-based and traditional games groups showed significant differences compared to the common preschool activities group.

Additionally, the results revealed that foam tube-based and traditional games provided more opportunities for practice and play than common preschool activities. In underprivileged areas, the lack of equipment and facilities may limit play opportunities, but foam tube-based games, utilizing simple and accessible equipment, can still positively impact children's development.

The study also found that many children today show a preference for individual games, such as video games, which reduce their motor and social activities. Therefore, group and physical games, like foam tube-based and traditional games, can serve as effective alternatives to individual games, providing important opportunities for social interactions and motor skill development (Engel-Yeger et al., 2017). Thus, play can be considered a central element in child education, encompassing both physical development and motor skills, while also being essential for successful education, as it satisfies children's physical and psychological needs during play.

Finally, the constructive role and benefits of team sports in social development and mental health for children and adolescents can be listed as: enhancing cooperation, willpower, and decision-making skills, fostering initiative, eliminating indifference, creating motivation for success, respecting others' rights, socialization, and curing isolation. However, these findings contradict those of Edwards et al. (2017) and Khaskheli et al. (2022), who found no significant effect of physical activity on children's social development (Edwards et al., 2017; Khaskheli et al., 2022). Possible reasons for these contradictions include the type of physical activity used in the study, as well as the age and gender of the participants. Since female students were used as participants in this study, the role of preschool programs can be emphasized.

Another important value and impact of games and sports in the lives of children and adolescents is that talent development leads to increased interest in these activities, which has significant value for their lives and mental health. Experiences gained from sports activities in fostering interests, recognizing abilities, and talents, which are key to mental health, have proven beneficial effects. According to preschool counselors, natural interests and inclinations toward sports and recreational activities serve as tools for self-knowledge, fulfilling needs, developing talents, and guiding children toward future academic and career paths. The connection between sports and pleasure creates a bridge that instills in children a sense of individual responsibility and adherence to ethical principles. Sports experiences enhance positive inclinations, satisfaction, and character development, and help correct inappropriate behaviors, fostering a sense of responsibility, respect for the law, and overall mental health. Therefore, it is evident that, in addition to the psychological aspects and effects of play on children's spirits, play also brings about physical attributes such as agility, speed, precision, reaction, strength, endurance, and coordination between the nervous and muscular systems, enabling children and adolescents to participate in various sports with greater skill and physical readiness, resulting from psychological progress. Thus, it can be said that play also has physical value.

Children's play, in terms of physical development, movement of body parts, and coordination among body members, is of great importance. Play allows children to expend excess energy, maintain their psychological and emotional balance, and develop sensory and motor skills. Through play, sensory organs like vision, hearing, and touch are developed, and eye-hand coordination improves, along with the development of finger and hand muscles. These factors can explain the impact of foam tube-based and traditional games on the subscales of general self-help, dressing self-help, and physical markers in motor and

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cognitive growth variables. The findings of this study regarding the role of play and selected programs on motor development are consistent with the results of prior studies (Battaglia et al., 2019; Cosso et al., 2022; Franks et al., 2022; Hidayati, 2020; Larson et al., 2018; Madondo & Tsikira, 2022), all of which report positive effects of programs on children's motor development.

What is important here is the effect of exercise and the environment on motor development. Well-designed physical education programs have numerous benefits for health preservation and enhancement. These findings contradict maturation theory, which states that the growth process is controlled by internal factors (genetics), not external factors (environment), and that environmental factors temporarily affect growth, with genetic factors ultimately controlling development. On the other hand, the findings align with the ecological views of Bernstein, Kalger, Kelso, and Norvay (branch of dynamic systems), which assert that growth is the result of the interaction between genetic and environmental factors (individual, task, and environment) throughout life. According to the ecological perspective of Roger Barker, Bory, and Branfer Barker (branch of behavior regulation), growth is interpreted as the individual's perception of specific environmental conditions interacting with historical, cultural, and social environments, which aligns with the results of this study, emphasizing the positive role of indigenous play in motor development.

The conclusion of this research indicates only the positive effect of foam tube-based and traditional games on physical and social development dimensions.

This study faced several limitations that may have impacted the generalizability of its findings. First, the sample size was relatively small and restricted to elementary school students from a specific geographical area, limiting the applicability of results to broader populations. Second, the intervention duration was short, which may not fully capture long-term effects of the games on social, motor, and cognitive development. Third, the study relied on self-reports and parent-completed questionnaires, which are susceptible to subjective biases. Finally, cultural differences in traditional games and their familiarity to participants could have influenced the outcomes, as these games may evoke varying levels of engagement and interest depending on the participants' background.

Future research should consider expanding the sample size and including participants from diverse socio-cultural and geographical backgrounds to improve the generalizability of findings. Longitudinal studies could provide valuable insights into the long-term effects of traditional and foam tube-based games on children's development. Incorporating objective measurement tools, such as motion tracking for motor skills or peer observations for social interactions, could enhance the reliability of the data. Additionally, designing culturally adaptable game protocols and testing them in various educational settings would allow for a deeper understanding of their universal applicability. Finally, workshops and training programs for educators and parents could further support the integration of these games into school curricula and daily activities.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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