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RESEARCH ARTICLE

# Proposal for a recreational programme using athletics to develop basic motor skills in primary school students aged 6–8

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**Abstract**

This study aims to propose a recreational programme using athletics to help children develop certain basic motor skills, such as speed, static balance and soft ball throwing, and to evaluate its effectiveness in developing these skills among primary school students aged 6–8. Additionally, the study seeks to explore the role of athletics in enhancing basic motor skills such as speed, static balance and soft ball throwing. The researchers employed an experimental design involving two equivalent groups, which were divided equally into an experimental group and a control group. A targeted sample of 40 students (both male and female) from Djilali Ben Youssef Primary School in Boumdeffir Municipality, Ain Defla Province, was selected. The researcher relied on a recreational programme utilising athletics for children, alongside tests recommended by experts. These tests included assessments of basic motor skills, such as a 20-metre speed test, a static balance test on a board and a soft ball throwing test. The study concluded that the recreational programme had a positive effect on improving certain basic motor skills. Furthermore, the engagement and enthusiasm of this age group with the provided games and activities was observed.

**Citation**

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## 1. Problem statement:

Play is not only characterised by its recreational value, which brings joy to a child's life, but it also plays a significant role in socialisation. Through play, children learn to interact with others and cooperate in various activities. Athletics activities are important for children as they include games that contribute to the development of various basic motor skills. These activities provide multiple opportunities to develop and build a child's body, strengthen different organs and internal systems, and acquire various basic motor skills and physical qualities. This has a positive effect on the child's personality and abilities. Primary school students lack this in their physical education classes.

Additionally, play provides recreational value, leading to joy, and plays a crucial role in socialisation. It teaches children to interact with others and work together during various activities. Specific programmes, curricula, strategies and teaching methods are in place for those working in the field of physical education and sports. Basic motor skills are a fundamental component of a child's movement, so special attention must be given to recreational programmes designed for children, to help them acquire a wide range of basic motor skills. Children's athletics are therefore more engaging and yield better results, as children perform in situations similar to basic competitions, fulfilling the need for large muscle activity and skill development.

The International Association of Athletics Federations has shown a keen interest in children, with experts striving to develop children's practices to be suitable and responsive to their needs and motivations for a better future. This led to the initiation of the IAAF Children's Competitions Project, designed specifically to serve all children. These competitions are exciting and introduce new forms of athletics competitions that develop various basic motor skills in a fun and playful atmosphere, which any child can participate in through a program prepared by specialists.

The recreational programme for children uses athletics to develop these motor qualities. We have developed a series of games based on scientific principles to help children acquire and develop skills. Based on the principle of group work, our research focused on determining what enables these random movements to serve as a preliminary step in developing motor coordination and systematic perception. This will allow us to refine this raw material. This motivated us to dedicate our research time to determining the impact of children's athletics on the development of basic motor skills in primary school students aged 6–8.

Acquiring basic motor skills and achieving motor coordination requires children to undergo multiple motor experiences within directed programmes. However, we observe in our society that many children do not develop these skills appropriately, which could negatively impact their ability to engage in advanced physical activities in the future. The aim of recreational athletics programmes for children is to enhance basic motor skills. Despite numerous programmes being proposed to develop these elements, the desired outcomes have not been reached, even though objectives are clearly outlined for the second generation in physical education classes at primary level.

In this context, we pose the following general question: Does the recreational programme involving athletics contribute to the development of certain basic motor skills and enhance cognitive abilities among primary school students aged 6–8?

### 1.1 Partial questions

The following partial questions fall under this general inquiry:

1. Are there statistically significant differences between the control and experimental groups in the pre-test of basic motor skills among primary school students aged 6–8?
2. Are there statistically significant differences in the basic motor skills pre- and post-test results for the control group of primary school students aged 6–8 years?
3. Are there statistically significant differences between the pre-test and post-test results for basic motor skills in the experimental group of primary school students aged 6–8?
4. Are there statistically significant differences in the post-test results for basic motor skills between the control and experimental groups of primary school students aged 6–8 years?

**1.2 General hypothesis:** The recreational programme involving athletics contributes to the development of basic motor skills and enhances certain cognitive abilities among primary school students aged 6–8.

### 1.3 Partial hypotheses:

1. There are no statistically significant differences between the control and experimental groups in the pre-test of some basic motor skills.
2. There are no statistically significant differences in the pre- and post-test results for the control group in some basic motor skills.
3. There are statistically significant differences in some basic motor skills between the pre-test and post-test for the experimental group.
4. There are also statistically significant differences between the control and experimental groups in the post-test results for some basic motor skills.

### 1.4 Objectives of the study:

- Developing a recreational programme using athletics to enhance certain basic motor skills among primary school students.
- Assess the impact of the proposed programme on basic motor skills.

- To understand the role of athletics in developing certain basic motor skills in children.

### 1.5 Importance of the study

The significance of this research lies in two areas:

- Scientific aspect: This is an attempt by the student to contribute to the field of knowledge, particularly for teachers, by providing a scientific reference focused on enhancing basic motor skills at primary education level.
- Practical aspect: This aspect involves referring to the study when preparing recreational sports programmes or educational units to be implemented in the field.

## 2. Operational concepts and terminology:

### 2.1 The concept of the recreational programme:

Terminological definition: It has been defined by Shiller as 'a collection of selected recreational activities based on sound scientific foundations and suited to the beneficiaries' physical, mental, psychological, social and health capabilities in order to achieve the programme's objectives' (Baha Eddine, Ramadan & Amani, 2022, p. 15). (Baha Eddine, Ramadan & Amani, 2022, p. 15).

Operational definition: The researcher defines it as a collection of constructive movement activities practised by young people in their free time under the supervision of a teacher, with the aim of developing certain basic motor skills among primary school students.

### 2.2. Athletics for Children:

Terminological definition: Athletics has been designed and modified for children, creating a fun atmosphere during sports practice and integrating new, innovative events and processes. These allow children to explore various skills, such as running and jumping, in different environments (play areas) (Jozli Charles, 2006, p. 84). (Jozli Charles, 2006, p. 84).

Operational definition: It comprises a series of games and activities practised by primary school students, characterised by a scientific methodology in the sequence of planned objectives, while maintaining an enjoyable and accessible style of performance.

### 2.3 Basic Motor Skills:

Terminological definition: These are a series of connected types that fall within the general categories of essential motor capabilities required to perform tasks. Any individual with a sound physical composition can perform these movements. (Abdul Hussein & Mutab, 2014, p. 97).

- Operational definition: These are movement activities that are common among most children. They include activities such as running, jumping and throwing, which are necessary for the games children play.

### 2.4 Previous and Similar Studies:

#### 2.4.1 First study:

Study by Abdul Hafiz Qadri (2018): 'The Effect of a Proposed Programme in Movement Education on Developing Certain Basic Motor Skills in Students Aged 6–7 Years'. The study aimed to determine the impact of a proposed programme in movement education on developing certain basic motor skills in students aged 6–8 years, and to evaluate the effects of the programme on enhancing basic motor skills in children aged 6–7 years. The study's hypothesis focused on the statistical and practical effects of the movement education programme, taking into account gender differences in the development of basic motor skills in students aged 6–7.

The researcher employed an experimental design with a crossover group approach (two experimental groups) and pre- and post-tests (initial and follow-up). This design is also known as a repeated measures design, in which the independent experimental variable (the proposed movement education programme) was introduced to the first experimental group while the second experimental group remained in their normal conditions prior to the crossover.

The study sample consisted of 68 students (34 in the first group and 34 in the second group) during the 2016/17 academic year. These students were selected at random from a total of 115 Year 3 pupils (the research population). The sample was randomly selected through a lottery from three classes. The study concluded that the proposed movement education programme outperformed the conventional programme prepared by the primary school teacher, both statistically and practically. Additionally, significant gender-based differences in jumping, bending, extending and throwing skills were found between the two experimental groups.

#### 2.4.2. Second study

Study by Samir Marzouki (2019) titled 'Effectiveness of a Proposed Physical Education Programme for Developing Certain Basic Motor Skills and Physical Qualities in Primary School Students Aged 8–10 Years'. The study aimed to assess the impact of the proposed programme on developing specific basic motor skills and physical qualities among primary school students. It also examined the influence of utilising this programme on enhancing these skills and qualities.

The researcher employed an experimental methodology with a two-group design, comprising an experimental group and a control group, and administered pre- and post-tests. The study included students in the third, fourth and fifth years of primary school. Due to recurrent absences and the need to conduct the pre- and post-tests, the sample was selected randomly and consisted of 166 students. These students were selected from a total of 219 students distributed across the three grade levels, thus creating a stratified random sample. The groups were selected by lottery: Group A was the experimental group and Group B was the control group.

The results of the study indicated that the proposed physical education programme played a significant role in developing the basic motor skills and physical qualities under consideration (including walking, hopping, the standing long jump, ball throwing, ball handling, sprinting, agility and endurance) across the three year groups (Years 3, 4 and 5), albeit with varying degrees of effectiveness.

### 2.4.3 Third study

Study by Mand Foudil et al. (2022), titled 'The educational importance of children's athletics (running, jumping and throwing) in learning through play to improve certain physical and motor capacities in female students aged 10–11 years'. The study explores the educational value of children's athletics in enhancing specific physical and motor capacities through play-based learning among 10-11 year old girls. The researchers hypothesised that teaching children's athletics through play would positively impact the improvement of specific physical and motor capacities in these students.

Due to its suitability for the study, an experimental approach was employed. A random sample of 30 female students was selected and distributed evenly into two groups (15 in the control group and 15 in the experimental group). A set of standardised tests were used to measure various physical and motor capacities among the students. After analysing the data, it was revealed that teaching children's athletics through play had a positive effect on enhancing certain elements of physical and motor abilities in 10–11-year-old girls.

Based on these results, the researchers recommended diversifying the curriculum content and using the proposed educational units as a model for conducting physical education lessons effectively and achieving the desired competencies. They also recommended that teaching responsibility be assigned to a physical education instructor.

### 2.4.4 Fourth study:

Study by Abdul Hamid Al-Ghorour and Yahiaoui Said (2017), titled 'The effect of the physical education curriculum on improving certain transitional basic motor skills: Running, Jumping and Hopping in Primary School Students Aged 6–7 Years'. The study aimed to implement educational units based on the curriculum, along with the accompanying document and educational guide for physical education, to assess their impact on enhancing basic motor skills in primary school students aged 6–7. The study sought to identify differences in improvement in transitional motor skills (running) and transitional motor skills (jumping and hopping) after the implementation of these units.

The study hypothesised that there would be statistically significant differences among members of the experimental group in terms of improvement in specific transitional basic motor skills (running, hopping and jumping). It also posited that there would be statistically significant differences in the improvement of these skills between the experimental and control groups.

The researchers employed a two-group experimental design with pre- and post-tests. The sample consisted of 50 students (25 boys and 25 girls) who were selected purposefully. Ten of these students were selected for psychological and motor characteristic assessments related to the motor tests. The study concluded that there were statistically significant differences among members of the experimental group in improving certain transitional basic motor skills (running, hopping and jumping), but no significant differences were found between the experimental and control groups in these skills, except for in the quadruple jump test.

### 2.4.5 Commentary on Previous and Similar Studies:

We concentrated on a recreational programme by presenting previous and similar studies that addressed the variable of children's athletics and also focused on basic motor skills by proposing different programmes (movement education, educational programmes). Studies applied to samples of different sizes and age groups revealed disparity in results. This variation can be attributed to differences among researchers in how they defined the study objectives, the variables they considered and the nature of the sample population.

## 3. Research Methodology and Field Procedures:

### 3.1 Research Methodology:

The researchers employed an experimental method with a two-group design (one experimental and one control group) and both pre- and post-tests, in line with the nature of the study's variables.

### 3.2 Research community and sample

The research population was identified as students from Djilali Ben Youssef School in Boumdeffir Municipality, Ain Defla Province. The control sample comprised the second-grade Class 1, totalling 42 students, while the experimental sample was taken from the second-grade Class 2, totalling 40 students registered for the 2022–23 academic year, aged between 6 and 8.

The main sample was purposely selected from the research population and consisted of 40 students, divided into two groups: a control group of 20 students and an experimental group of 20 students.

### 3.3. Research Areas:

### 3.1 Spatial area

The fieldwork took place at the 'Djilali Ben Youssef' primary school in Boumdeffir municipality, Ain Defla province.

### 3.2 Temporal area

The practical study commenced in early January 2024. During this period, specific tests for basic motor skills were conducted alongside the recreational programme involving athletics for children. Results and information pertinent to the

study were collected until mid-June 2024. The data were then analysed, interpreted and processed until the beginning of 2025.

### 3.3. Equivalence of control and experimental samples in developmental variables

The developmental variables include age, height and weight. The following table illustrates the equivalence of these variables for the control and experimental samples.

Table No. (01): Illustrates the normality of the distribution of the developmental variables.

| Variable | Group | Skewness coefficient | Kurtosis coefficient | Shapiro–Wilk value | Sig value | Statistical significance |
|---|---|---|---|---|---|---|
| Age | Control | 0.14 | -1.26 | 0.94 | 0.21 | (-) |
| | Experimental | 0.03 | -0.93 | 0.96 | 0.59 | (-) |
| Height | Control | 0.16 | -0.61 | 0.98 | 0.93 | (-) |
| | Experimental | 0.34 | -0.55 | 0.98 | 0.86 | (-) |
| Weight | Control | -0.28 | -0.34 | 0.97 | 0.74 | (-) |
| | Experimental | -0.22 | -0.30 | 0.98 | 0.89 | (-) |

Since the sig values for the Shapiro–Wilk test are greater than 0.05, the data distribution is normal. Consequently, all developmental variables follow a normal distribution.

Table No. (02): Shows the equivalence of the control and experimental samples in developmental variables for the pre-test measurements.

| Variable | Group | Mean | standard deviation | t-value | sig-value | differences |
|---|---|---|---|---|---|---|
| Age | Control | 86.15 | 2.70 | 0.36 | 0.72 | Not significant |
| | Experimental | 86.45 | 2.50 | | | |
| Height | Control | 125.80 | 2.69 | 0.53 | 0.60 | Not significant |
| | Experimental | 126.30 | 3.21 | | | |
| Weight | Control | 25 | 2.32 | 0.07 | 0.95 | Not significant |
| | Experimental | 24.95 | 2.31 | | | |

Table 2 shows that the T value for the difference in age between the control and experimental groups is 0.36, with a significance value of 0.72, which is greater than the significance level of 0.05. Therefore, the differences are not significant. Similarly, the T value for the difference in height between the two groups is 0.53, with a significance value of 0.60, which is also greater than the significance level of 0.05, meaning that the differences are not significant. The T-value for the difference in weight between the two groups is 0.07, with a significance value of 0.95, which is also greater than the significance level of 0.05; therefore, the differences are not significant.

This indicates that the control and experimental samples are equivalent in developmental characteristics: (age, height and weight).

### 3.4 Pilot study

Undoubtedly, ensuring the proper execution of any field research requires the researcher to conduct a pilot study. This allows them to assess the suitability of the study area for the procedures involved, verify the validity of the tools used and identify any potential difficulties they may encounter. A pilot study provides the researcher with feedback on the effectiveness of the applied tools, offering initial reassurance regarding the anticipated results. It also gives researchers prior experience of applying the programmes, tools and tests they plan to use, enabling them to conduct their study with skill.

#### 3.4.1 Psychometric Properties of Some Basic Motor Skills Tests:

**A) Content validity**

To ensure the content validity of the tests, the researcher reviewed and analysed previous studies. Through a bibliographic survey of studies utilising this test in both foreign and Arab contexts, it was established that this tool met scientific standards. Consequently, the researcher was reassured about the validity of the content.

**B) Reliability of Motor Skills Tests**

The researchers used the test-retest method to calculate the reliability coefficient for a sample of 12 students. The test was administered to the sample, and then, after 15 days, it was re-administered. The results were as follows:

Table No. 03 shows the reliability and validity coefficients for the motor skills tests.

Table 3 shows that the basic motor skills tests, which included the 20-metre speed test, the static balance test on a board and the soft ball throwing test, exhibited reliability coefficients of 0.73, 0.92 and
0.91 respectively. These values qualify the tests for final application. Meanwhile, the validity derived from the reliability values was 0.85, 0.95 and 0.95 respectively, indicating high levels of validity.

**E) Objectivity:**

Objectivity is the opposite of subjectivity. It means removing the examiner's personal opinion from the
marking process to ensure that test scores do not depend on who marks them or vary based on different markers. It may also imply that the answers are predetermined by the test designer. It also refers to the clarity of instructions for administering the test and calculating scores and results (Hossain,
1995, p. 260). According to the pilot study we conducted, there was a high level of understanding and responsiveness to the instructions among the research sample, and the tests were easy to administer.

**3.5 Tools of the Study:**

Tests of Basic Motor Skills: An overview of how to conduct basic motor skills tests, supervised by expert teachers.

**3.5.1 20-metre speed test:**

| Statistical measures / Tests | | Sample size | Degrees of freedom | Level of statistical significance | Table R value | Reliability coefficient | Validity coefficient |
|---|---|---|---|---|---|---|---|
| Basic motor skills | 20 m speed test | 12 | 11 | 0.05 | 0.55 | 0.73 | 0.85 |
| | Static balance test on the board | | | | | 0.92 | 0.95 |
| | Soft ball throwing test | | | | | 0.91 | 0.95 |

Objective: To measure speed.

- Materials: A designated running distance on a solid surface and a stopwatch.
- Performance description: Ideally, at least two students should run simultaneously. Each student should stand behind the starting line in a high start position. Upon receiving the start signal, they run at maximum speed until they cross the finish line.

**Testing Implementation Rules:**

The time elapsed between the start of the run and crossing the finish line is recorded.
Only one attempt is allowed.

**Recording and calculating results**

For the balance test, the time is recorded to the nearest tenth of a second.

**3.5.2 Static balance test on a board:**

Purpose: To measure static balance for the longest possible duration.
Materials: stopwatch and balance board (height: 15 cm; length: 30 cm; width: 10 cm).
Performance specifications: The child stands on the board with their right foot, ensuring it is aligned longitudinally with the centre of the board, while keeping their balance. The other foot is positioned behind the heel of the first foot and rests on the ground. Upon hearing the start signal, the child lifts the foot on the ground so that both feet remain on the board.

- Scoring: The child is recorded as having successfully maintained their balance on the board until their free foot leaves the board, they touch the board or the ground with any part of their body, or they move their hands from their centre. (Fatima Yas Al-Hashimi, 2012, p. 190).

**3.5.3 Soft ball throw test:**

Purpose: To measure throwing ability with the arm.

- Materials: measuring tape and a soft ball.

Performance method: The student stands behind the designated starting line and throws the soft ball as far as possible.

- Recording: The distance is measured vertically from the throwing line to where the ball lands on the ground. (Mohamed & Naif, 2008, p. 503).

**3.6 Recreational Programme Using Athletics for Children**

The proposed programme comprises a series of individual and group activities and recreational exercises designed to develop basic motor skills such as speed, static balance and throwing.
After reviewing various scientific and educational references, as well as Arab and foreign studies focused on children's athletics and the basic motor skills concerning psychological and physical characteristics and needs, the researcher

constructed the recreational programme. The programme was designed to address these factors. Additionally, the researcher considered the inclinations and preferences of the participants in the study sample, ensuring that individual differences were accounted for. The programme was constructed based on scientific recreational and play theories, with the aim of providing the participants with maximum enjoyment of children's athletics through play and recreation, and fostering comfort and joy among primary school students.

### 3.7 Statistical methods used for data processing

The researcher used the Statistical Package for the Social Sciences (SPSS) to extract the results, employing the following statistical tools:

- Mean
- Standard deviation
- Pearson and Spearman correlation coefficients
- T-test for studying differences
- Effect size

## 4. Presentation, analysis and discussion of results:

**4.1 First hypothesis:** There are no statistically significant differences between the control and experimental groups in the pre-test of certain basic motor skills.

Table 4 shows the equivalence of the control and experimental groups in the pre-test measurements.

| Variable: | Group | Mean | standard deviation | t-value | sig-value | The meaning H | differences |
|---|---|---|---|---|---|---|---|
| Speed (20 m) | Control | 5.35 | 0.30 | 2.66 | 0.09 | (-) | Not significant |
| | Experimental | 5.72 | 0.54 | | | | |
| Static balance on board (s) | Control | 33.18 | 0.26 | 0.025 | 0.98 | (-) | Not significant |
| | Experimental | 33.17 | 1.95 | | | | |
| Soft ball | Control | 3.53 | 1.60 | 1.11 | 0.27 | (-) | Not significant |
| | Experimental | 3.40 | 0.37 | | | | |
| (*): Significant at the 0.05 level; (**) Significant at the 0.01 level; (***) Significant at the 0.001 level; (-) Not significant. Not significant. Degrees of freedom: (38). | | | | | | | |

From Table No. 4, it is evident that:

- The T-value for the difference in mean sample scores on the speed test is 2.66, with a significance value of 0.09, which is greater than the significance level of 0.05; therefore, the differences are not significant.
- The value (T) for the differences in the means of the sample scores in the static balance test is 0.025, with a significance value of 0.98, which is also greater than the significance level of 0.05; therefore, the differences are not significant.
- The value (T) for the differences between the means of the sample scores in the soft ball throwing test is 1.11, with a significance value of 0.27, which is greater than the significance level of 0.05; therefore, the differences are not significant.

Examining the table reveals that the sig values for the t-test are all greater than 0.05 for the study variables. This indicates an absence of statistically significant differences in the pre-test measurements between the two groups and confirms equivalence.

**4.2 Second hypothesis:** There are no statistically significant differences between the pre-test and post-test results for certain basic motor skills in the control group.

Table No. 5 shows the significance of the differences between the pre-test and post-test results for certain basic motor skills in the control group.

| Variable | Measurement | Mean | standard deviation | t-value | sig-value | Significance | Effect size |
|---|---|---|---|---|---|---|---|
| Speed (20 m) | Pre-test | 5.35 | 0.30 | 0.57 | 0.58 | (-) | / |
| | Post-test | 5.32 | 0.30 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Static balance on board (s) | Pre-test | 33.18 | 1.95 | -0.28 | 0.78 | (-) | / |
| | Post-test | 33.19 | 1.96 | | | | |
| Soft ball | Pre-test | 3.53 | 0.34 | 0.71 | 0.48 | (-) | / |
| | Post-test: | 3.55 | 0.32 | | | | |
| (*): Significant at the 0.05 level; (**): Significant at the 0.01 level; (***): Significant at the 0.001 level; (-): Not significant. Degrees of freedom: (19). | | | | | | | |

**From Table No. 5, we find that:**

- The mean pre-test speed score for the control group is 5.35 with a standard deviation of 0.30, while the post-test mean score is 5.32 with a standard deviation of 0.30. The T value is 0.57 with a significance value of 0.58, which is greater than the significance level of 0.05; therefore, the differences are not significant.

Similarly, the mean score for static balance in the control group in the pre-test was 33.18 with a standard deviation of 1.95, while the post-test recorded a mean score of 33.19 with a standard deviation of 1.96. The T-value is -0.28 with a significance value of 0.78, which exceeds the significance level of 0.05; therefore, the differences are not significant.

We also observe that the mean soft ball throwing score for the control group in the pre-test is 3.53 with a standard deviation of 0.34, while the control group recorded a mean score of 3.55 with a standard deviation of 0.32 in the post-test. The T-value is 0.71 with a significance value of 0.48, which exceeds the significance level of 0.05; thus, the differences are not significant.

As shown in the table, the T values for the differences between the pre-test and post-test in some basic motor skills for the control group are not statistically significant, as the sig values were greater than 0.05. Therefore, the control group did not show any improvement.

**4.3 Third hypothesis:** There are statistically significant differences between the pre-test and post-test results for certain basic motor skills in the experimental group.

Table No. 6 shows the significance of the differences between the pre-test and post-test for certain basic motor skills in the experimental group.

| Variable | Measurement | Mean | standard deviation | t-value | sig-value | Significance | Effect size |
|---|---|---|---|---|---|---|---|
| Speed (20 m) | Pre-test | 5.72 | 0.54 | 24.91 | < 0.001 | (**) | 5.57 |
| | Post-test | 4.51 | 0.38 | | | | |
| Static balance on board (s) | Pre-test | 33.17 | 1.60 | -44.39 | <0.000 | (***) | 9.92 |
| | Post-test | 117.43 | 8.11 | | | | |
| Soft ball | Pre-test | 3.40 | 0.37 | 24.59 | < 0.001 | (**) | 5.50 |
| | Post-test: | 4.79 | 0.44 | | | | |
| (*): Significant at the 0.05 level, (**) Significant at the 0.01 level, (***): Significant at the 0.001 level, (-): Not significant, Degrees of freedom: (19) | | | | | | | |

**From Table No. (06), we find that:**

- The mean score for speed in the experimental group for the pre-test is (5.72) with a standard deviation of (0.54), while in the post-test, the experimental group recorded a mean score of (4.51) with a standard deviation of (0.38). The T value is (24.91) with a significance value of (0.001), which is less than the significance level (0.05); thus, the differences are significant in favor of the post-test, with an effect size of (5.57), indicating a very strong effect.

- The mean score for static balance in the experimental group for the pre-test is (33.17) with a standard deviation of (1.60), while in the post-test, the experimental group recorded a mean score of (117.43) with a standard deviation of (8.11). The T value is (44.39) with a significance value of (0.000), which is less than the significance level (0.05); therefore, the differences are significant in favor of the post-test, with an effect size of (9.92), indicating a strong effect.

- The mean score for soft ball throwing in the experimental group for the pre-test is (3.40) with a standard deviation of (0.37), while in the post-test, the experimental group recorded a mean score of (4.79) with a standard deviation of (0.44).

The T value is (24.59) with a significance value of (0.001), which is less than the significance level (0.05); thus, the differences are significant in favor of the post-test, with an effect size of (5.50), indicating a very strong effect.
Table No. 06 clearly shows that the T values for the differences between the pre-test and post-test for all variables in the experimental group are statistically significant, based on sig values of less than 0.05 favouring the post-test, with large effect sizes. This indicates the effectiveness of the recreational programme implemented.
**4.4. Fourth hypothesis:** There are statistically significant differences between the control and experimental groups in the post-test for certain basic motor skills and cognitive abilities.
Table No. 07 shows the differences between the control and experimental groups in the post-test measurements.

| Variable | Group | Mean | standard deviation | t-value | sig-value | Significance | Effect size |
|---|---|---|---|---|---|---|---|
| Speed (20 m) | Control | 5.32 | 0.30 | 7.51 | <0.000 | (***) | 0.60 |
| | Experimental | 4.51 | 0.38 | | | | |
| Static balance on board (s) | Control | 33.19 | 1.96 | 45.13 | <0.000 | (***) | 0.87 |
| | Experimental | 117.43 | 8.11 | | | | |
| Soft ball | Control | 3.55 | 0.32 | 10.13 | <0.001 | (***) | 0.73 |
| | Experimental | 4.79 | 0.44 | | | | |
| (*): Significant at the 0.05 level; (**): Significant at the 0.01 level; (***): Significant at the 0.001 level; (-): Not significant. Degrees of freedom: (38). | | | | | | | |

**From Table No. 7, we find the following:**
- The mean post-test score for speed in the control group is 5.32 with a standard deviation of 0.30, while the experimental group recorded an improvement with a mean score of 4.51 and a standard deviation of 0.38. The T-value is 7.51 with a significance level of 0.000, which is less than 0.05; therefore, the differences are significant with an effect size of 0.60, indicating a very strong effect.
The mean score for static balance in the control group for the post-test was 33.19 with a standard deviation of 1.96, while the experimental group recorded an improvement with a mean score of 117.43 and a standard deviation of 8.11. The T-value is 45.13 with a significance level of 0.000, which is less than 0.05; therefore, the differences are significant, with an effect size of 0.87, indicating a very strong effect.
- The mean score for soft ball throwing in the control group in the post-test was 3.55, with a standard deviation of 0.32. The experimental group recorded an improvement, with a mean score of 4.79 and a standard deviation of 0.44. The T-value is 10.13 with a significance level of 0.001, which is less than 0.05; thus, the differences are significant, with an effect size of 0.73, indicating a very strong effect.
As can be seen in the table, the T values for the differences between the control and experimental groups in the post-test for all variables are statistically significant, based on the sig values which were less than 0.05. This favours the experimental group, which has large effect sizes. This indicates the effectiveness of the recreational programme implemented.
**5. Discussion of the hypotheses:**
**5.1 Discussion of the results in light of the first hypothesis:**
**The hypothesis states:** There are no statistically significant differences between the control and experimental groups in the pre-test at the 0.05 significance level.
The statistical results obtained from Table 4 clearly indicate that there are no differences in the pre-test results for the basic motor skills tests under investigation (the 20-metre speed test, the static balance test and the soft ball throwing test) between the control and experimental groups. The sig values for the t-test were greater than 0.05 for the study variables, indicating no statistically significant differences in the pre-test measurements between the two groups and confirming the condition of equivalence. This shows that the two groups are equivalent before the recreational programme is applied to the experimental group, making it easier to evaluate the impact of the programme on the dependent variable (basic motor skills). Consequently, we can affirm the validity of the first hypothesis.
**5.2 Discussion of the second hypothesis:** There are no statistically significant differences between the pre-test and post-test for the control group in certain basic motor skills.
Based on the results obtained from Table No. 5, there are no statistically significant differences between the pre-test and post-test for the control group in the basic motor skills tests under investigation (the 20-metre speed test, the static balance

test and the soft ball throwing test). This is attributed to the control group practising ineffectively during educational sessions conducted by the primary school teacher within the educational institution. The teacher merely performs a warm-up and then instructs the pupils to sit down during physical education classes. Additionally, we observed that physical education classes at primary level are sometimes replaced with other subjects due to a lack of specialisation and sports equipment within the institution. Nevertheless, physical education is a fundamental subject at primary level, as confirmed by the curriculum and the authorities overseeing primary education in Algeria.

Therefore, we can confirm the validity of the second hypothesis.

### 5.3 Discussion of the Third Hypothesis

The hypothesis states: There are statistically significant differences between the pre-test and post-test for the experimental group, in favour of the post-test, for certain basic motor skills.

The statistical results obtained from Table 6 indicate that there are statistically significant differences between the pre- and post-tests for primary school students in favour of the post-test for basic motor skills (20-metre speed, static balance and soft ball throwing).

These positive differences can be attributed to the content of the recreational activities, which included children's athletics and various activities from the children's athletics competition programme aimed at developing speed capabilities. The researcher attributes the improvement in 20-metre speed to the appropriate repetitions incorporated into children's athletics, which allow for complex practice of this skill through various movement tasks. Executing the running skill in various ways over different distances and directions positively influences the coordination of arm and leg movements, enhancing performance speed and reducing time. This coordination improves precision and speed, increasing students' confidence in their abilities.

Additionally, this improvement can be attributed to providing suitable tools for students at this critical stage, such as hurdles, cones of various sizes, markers, rings and medicine balls. Having these tools available on the playground encouraged and motivated students, stimulating their interest in children's athletics and increasing their drive to participate. Consequently, making full use of time during recreational sessions had a positive impact on the development of basic motor skills. The recreational programme utilising children's athletics combined games, competition and excitement to encourage active participation. This compelled them to put in extra effort, particularly in the 20-metre speed race and static balance tests, in order to achieve the best times.

Regarding the throwing skill, we observed that the recreational sessions focused on throwing took place towards the end of the programme. We noted an increase in students' vitality, energy, strength and flexibility, which facilitated their acquisition of the throwing skill. Our initial planning, which focused on running competitions followed by body balance, helped students to execute the throwing skill with ease, particularly the leg movements that transition through the torso to the upper limbs. This generated additional power for the throwing arm. Effective planning of children's athletics enables students to achieve optimal performance in a coherent and sequential manner without interruption. Disruption to the proposed recreational programme using children's athletics affects skill acquisition.

As confirmed by Abdul Hamid Al-Ghorour and Yahiaoui Said (2017), statistically significant improvements in certain transitional basic motor skills (running, jumping and hopping) were observed in the experimental group. The researchers attribute these positive results to the educational unit content, which is represented by movement activities. They also attribute the positive outcomes in measuring transitional motor skills to changes occurring in students at this stage. Around the mid-seventh year, certain changes in body proportionality become evident. For example, significant growth is observed in large muscles, such as those in the arms and legs, which develop at a faster rate than smaller hand muscles.

Thus, it can be concluded that the third hypothesis has been validated.

**5.4 Fourth hypothesis:** There are statistically significant differences between the control and experimental groups in the post-test, favouring the experimental group.

Table No. 7 shows that there are statistically significant differences in the mean scores of the control and experimental groups in some of the basic motor skills tests under investigation, favouring the experimental group. The superior performance of the experimental group in improving their basic motor skills can be attributed to the effectiveness of the recreational programme implemented for them. This programme included a wide range of children's athletics activities in a recreational context, aimed at developing basic motor skills.

Additionally, the organisation and planning of the sessions, characterised by diversity in the athletic activities included in each recreational session and optimal utilisation of the allocated time for executing the recreational programme, contributed to increased active participation from all students. This, in turn, led to increased movement and activity, as well as the development of these skills. We affirm that utilising a variety of children's athletics activities during recreational sessions significantly increases physical activity and the development of basic motor skills.

The findings of this study are consistent with those of Mand Foudil et al. (2022), who also found statistically significant differences in basic motor skill performance between the control and experimental groups in the post-test, favouring the experimental group. The researchers attributed this improvement to the movement tasks provided by children's athletics, which had a meaningful impact on the students. Furthermore, the movement programme applied to the experimental group included diverse and varied activities appropriate for this age group.

Therefore, we can conclude that there are statistically significant differences in the post-test results for the basic motor skills tests (20-metre speed test, static balance and soft ball throwing) in favour of the experimental group, thereby validating the fourth hypothesis.

## Conclusion:

In our study, we have shed light on an important segment of society: childhood. This stage of life, particularly in developed countries, is an invaluable asset and true wealth for any community. It is therefore essential to support this demographic, as they will soon become the leaders who will face various challenges. Childhood is a critical phase in individuals' lives, laying the foundation for healthy development during their formative years. Thus, we focused on an important aspect: basic motor skills.

Play is the primary means through which children express themselves, and they spend most of their time playing. As educators, we must therefore pay attention to this group and guide them correctly by investing in their potential, especially during the first three years of primary education. When building physical education and sports curricula, it is crucial to consider the unique characteristics of childhood and ensure that they are based on sound scientific principles. One essential tool that helped us achieve our goal was the recreational programme based on children's athletics, which relies heavily on motivation and positive experiences.

The importance of children's athletics in early childhood has been demonstrated thanks to its playful, exciting and competitive nature. We therefore emphasise the importance of creating purposeful recreational programmes with simple resources to prepare well-rounded students for the future.

Therefore, as specialists in physical activity and sports sciences, it is imperative that we develop recreational programmes using children's athletics that address all aspects of a child's development, particularly motor development. Physical education must be given significant importance in primary schools, and specialised educators must be trained at primary level and equipped with knowledge and experience of physical and sports activities, as well as suitable facilities and sports equipment. This will ensure an environment conducive to effective learning and development.

## Recommendations

Based on the research findings, the researcher makes the following recommendations:

1. Focus on incorporating children's athletics into recreational programmes to improve primary school students' basic motor skills.
2. Train teachers in recreational sports activities to raise awareness of the importance of basic motor skills. Include situations and exercises in recreational sessions to help students achieve neuromuscular coordination, especially in the early years of primary education.
3. Emphasise the importance of regularly practising basic motor skills to mitigate factors that may negatively affect research outcomes.
4. Conduct further recreational research addressing basic motor skills.
5. Provide primary schools with the necessary resources, materials and foundational structures to enable specialised teachers to implement recreational physical activities.

## Ethical Considerations

This study was conducted in accordance with internationally recognized ethical standards for research involving human participants, particularly children. Prior to data collection, official permission was obtained from the administration of **Djilali Ben Youssef Primary School** and the relevant local educational authorities. Informed consent was secured from the parents or legal guardians of all participating children after providing clear information about the study's objectives, procedures, and potential benefits. Participation was entirely voluntary, and children were free to withdraw at any stage without any negative consequences. The researchers ensured the confidentiality and anonymity of all participants, and all data were used exclusively for scientific research purposes. The recreational activities were designed to be safe, age-appropriate, and consistent with children's physical and psychological well-being.

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## Author Contributions

- **Dr. Abderrahmane Mourad**: Conceptualization of the study, design of the recreational programme, data collection, and drafting of the original manuscript.
- **Pr. Guergour Mohamed**: Methodological supervision, validation of measurement tools, data analysis, and critical revision of the manuscript.

- **Dr. Rabouh Salah**: Contribution to literature review, interpretation of results, and final editing and proofreading of the manuscript.

All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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**Conflict of Interest**

The authors declare **no conflict of interest** related to this study. The research was conducted independently, and the results were not influenced by any financial, institutional, or personal relationships.

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