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Original Article

The Effectiveness of an Educational Program for Sports and Recreational Activities on the Personal Adaptation of Adolescent Students (Ages 13-16) in Middle School

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Abstract

This study investigates the impact of an educational program for sports and recreational activities on the personal and social adaptation of adolescent students (ages 13–16) in Algerian middle schools. Utilising an experimental design, 20 pupils from Al-Salam Middle School in Chlef were assigned to an experimental group, participating in structured physical activities, and a control group, following the standard curriculum. The findings demonstrated significant improvements in motor skills, encompassing balance, speed, and coordination in the experimental group. Moreover, positive trends were observed in self-reliance, self-esteem, and social adaptation, highlighting the psychological benefits of participation in organised sports. Despite not all upgrades achieving statistical significance, the results emphasise the importance of integrating recreational sports into school curricula to foster holistic development in children. Future study should explore long-term therapy utilising larger sample sizes to validate these findings.

1. Introduction

The prominent concern in Algeria's educational establishments, particularly middle schools, is the lack of physical and recreational activities, despite movement being a crucial element of life for youth and adolescents (Eather Wade, Pankowiak, & Eime, 2023; Suyato et al., 2024). In contemporary countries, sports are prevalent recreational activities owing to their acknowledged beneficial effects on physical, psychological, and social dimensions (Piñeiro-Cossio, Fernández-Martínez, Nuviala, & Pérez-Ordás, 2021; Eime, Young, Harvey, Charity, & Payne, 2013).

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For young children, participation in physical and recreational activities provides a natural and beneficial means to expel their physical and psychological energy. It aids in shaping and refining their character, imparting discipline and respect for regulations both on and off the pitch, while also offering a significant means to utilise their leisure time (Ismail, Ridwan, & Ockta, 2024). This aligns with the recommendations of educational professionals (Bruner et al., 2023). The adverse effects of failing to participate in sports activities can significantly impact the psychological well-being of teenagers, thereby obstructing their balanced and healthy personality development (Haraldsdottir & Watson, 2021; Graupensperger, Sutcliffe, & Vella, 2021). Insufficient engagement in sports might diminish social maturity, impacting interactions and communication with others. This may result in distinct personality traits, including introversion, shyness, depression, and an unwillingness to collaborate with others in various contexts, such as sports (Contreras-Osorio, Campos-Jara, Martinez-Salazar, Chirosa-Rios, & Martinez-Garcia, 2021; Clark & Kosciw, 2021). Researchers have noted a distinct passivity in the conventional notion of recreational sports and a deficiency in recognising the psychological advantages these activities offer, especially for adolescents (Badura et al., 2021; Otravenko, Pelypas, Zhamardiy, Shynkarova, & Shkola, 2021). Certain individuals do not recognise any psychological or social merit in these pursuits and consequently abstain from participation. The disregard for specific age demographics in sports participation has established psychological and social obstacles that impede adaptation, disrupt psychological equilibrium, and restrict social integration across various societal segments (Johnson et al., 2023; Walton et al., 2021). Despite the essential significance of physical and recreational education in social and psychological development, there persists a deficiency or neglect in integrating these elements into national development strategies (Hu, Zhou, Crowley-Mchattan, & Liu, 2021; Barnes et al., 2021). There is a deficiency of initiatives aimed at improving rehabilitation services and augmenting motor perception through both individual and group exercises. Enhancing students' willingness to engage in competitions and sporting events, alongside fostering sensory-motor and physical coordination through games, physical activities, and rhythmic movements, is still insufficiently leveraged (Redublado, Velez, Serano, & Kilag, 2024; Mavilidi et al., 2022). These circumstances have compelled academics to further examine the aforementioned issue, despite the acknowledged difficulties in conducting studies on this topic. Numerous studies have underscored the significance of physical and recreational activities in adolescent development. A study by Suyato et al. (2024) revealed that teenagers engaged in athletics demonstrated enhanced social skills and emotional well-being. Likewise, Piñeiro-Cossio et al. (2021) underscored that physical activities play a crucial role in alleviating stress and anxiety levels in young persons. A study by Contreras-Osorio et al. (2021) indicated that regular engagement in sports activities enhances peer interactions and boosts self-confidence. Research conducted by Hu et al. (2021) examined the impact of school-based sports programs, revealing that they can markedly enhance the mental health and social integration of students, especially in

diverse settings. These studies underscore that physical and recreational activities are not only advantageous for physical development but are also crucial for psychological and social maturation in teenagers.

2. Material and methods

This study *aims* to examine the influence of sports and leisure activities on the personal and social adaption of adolescents aged 13–16 in Algeria. The study aims to investigate if participation in these activities improves students' motor skills, encompassing neuromuscular and physiological development, while also promoting their psychological well-being and social integration. The study aims to elucidate how physical activities might help teenagers' social and emotional development, thereby addressing the deficiencies in Algeria's educational institutions where physical and leisure activities are restricted. The research will enhance the comprehension of sports' influence on the comprehensive development of youth and provide ideas for integrating more structured physical education programs in schools to foster kids' holistic growth.

The research hypothesis. Physical activity can serve as a key tool in fostering both psychological and social development among adolescents, as well as enhancing their motor skills.

This study is an *experimental investigation* aimed at assessing the impact of an independent variable (the engagement in recreational sports activities) on a dependent variable (enhancement of personal and social adaption among school children). The research was executed by implementing the instructional units with the experimental group for roughly two and a half months, from April 18, 2024, to June 11, 2024. Consequently, the study employs an experimental methodology, which is among the most appropriate research strategies for tackling the identified issue.

The sample

The study sample comprised 20 pupils from Al-Salam Middle School in Chlef, separated into two groups: The Experimental Group consisted of 10 students aged 13 to 16 years, who participated in educational units (sessions) incorporating physical and recreational activities, including both collective and individual games, small games, and sports exercises. The Control Group consisted of 10 kids who participated in the standard sports program of the school and did not engage in the specialised educational units created by the researchers.

In selecting the sample, factors were considered to ensure uniformity among students regarding age, intellect, and social, economic, and familial backgrounds.

Research Tools

The research instruments comprised:

• A questionnaire addressed to the principal of Al-Salam Middle School in Chlef.

• An additional questionnaire targeting the teachers of these kids, encompassing physical education instructors and psychological specialists.

• A series of assessments administered to professional evaluators to get their insights on the most suitable tests that accurately, reliably, and objectively measure

the dependent variable (personal and social adaptation).

Procedural Steps of the Study

The researchers conducted a visit to Al-Salam Middle School in Chlef to confer with the school administration, educators, and physical education instructors. This procedure was essential to achieve the study's aims.

•The study sample comprised students ages 13 to 16, as previously indicated.

• The instructional sessions incorporating physical and leisure activities were organised.

• A pre-test was administered for personality and physical fitness assessments on both the experimental and control groups.

• The instructional sessions were implemented for the kids to enhance their physical and motor attributes.

• Motor skills assessments and personality evaluations were administered to both the experimental and control groups.

Personality Assessments

This assessment was developed by Atiya (1998) and is grounded in the California Personality Inventory, created by Tiegs, Clark, & Thorpe (1941). The assessment evaluates multiple elements, including personal adaptation, which encompasses teenagers' self-reliance, self-esteem, sense of belonging, and the avoidance of introversion, isolation, and neurotic symptoms. The second measured element is social adaptation, encompassing the acknowledgement of individual rights and responsibilities, the cultivation of social inclinations, the absence of anti-social behaviours, and the formation of positive connections with family members, as well as adaption within educational and communal settings. The present study utilised the following constructs: Student Self-Reliance, Student Sense of Self-Worth, School Relationships, and General Adaptation.

Physical and Motor Assessments

Foot Arch Evaluation:

• Objective: To assess balance.

• Instrumentation: Stopwatch.

• Procedure: The youngster balances on one foot, positioning the free foot against the inner aspect of the standing leg's knee, while maintaining their hands on their waist. Upon instruction, students elevate the heel from the ground and sustain balance for the maximum duration without shifting the foot or contacting the heel with the ground. This is reiterated thrice.

• Scoring: The optimal time from three trials is documented, commencing from the instant the heel is elevated until any performance errors or balance loss transpire.

Speed Test:

• Objective: To assess running velocity.

• Equipment: Measuring tape, timer, flag.

• Procedure: The youngster positions themselves at the starting line, inclining slightly forward with their attention fixed ahead. At the signal, the child sprints 20 meters.

• Scoring: The duration required to traverse the 20-meter distance is

documented.

Standing Broad Jump Test:

• Purpose: To assess explosive leg strength.

• Instrumentation: Measuring tape.

• Procedure: The youngster positions themselves behind a line, slightly flexes their knees, and swings their arms posteriorly. Subsequently, they propel themselves forward using both feet, endeavouring to sustain equilibrium upon landing.

• Scoring: The measurement from the starting line to the farthest distant point of body contact with the ground is documented.

Modified Zigzag Running Test:

• Objective: To assess agility.

• Equipment: three cones, measuring tape, stopwatch, flag.

The youngster commences at the starting line (Point A) and navigates a zigzag course between the cones in a figure-eight pattern until reaching the last cone, after which they return to conclude at Point B. The interval from the starting line to the first cone is 1.80 meters, maintaining an identical distance between each subsequent cone.

• Scoring: The duration required to traverse the zigzag course is documented.

Altered Jumping inside Numbered Circles (Motor Coordination Test):

• Objective: To assess neuromuscular coordination.

• Equipment: Measuring tape, stopwatch.

• Procedure: Eight circles, each with a diameter of 60 cm, are inscribed on the ground and sequentially numbered from 1 to 8. The child commences at the starting line and, upon signal, leaps into each circle sequentially from Circle 1 to Circle 8, striving for maximum speed.

• Scoring: The duration required to traverse all eight rings is documented.

Modified Ball Throwing into a Box Test:

• Objective: To assess precision in target throwing.

• Materials: A cardboard box with a side length of 45 cm, positioned within a circle with a diameter of 2 meters marked on the ground, along with assorted balls (rubber and tennis).

The youngster positions themselves behind the throwing line, situated 6 meters from the box, and is allotted 30 seconds to toss ten balls into the box.

• Scoring: Three points are awarded for balls that land within the box, and one point for those that land within the circle encircling the box.

Scientific Foundations of Physical and Motor Tests Applied

Reliability and Validity of Applied Tests

The researchers employed a singular technique to assess the test's reliability, specifically by administering the test and thereafter reapplying it after a one-week delay, guaranteeing that all variables (sample, location, and timing) remained constant. The correlation coefficient between the scores from the first and second applications is computed to get the test's reliability coefficient (Ikhlas & Bahy, 2000). The statistical analysis produced the subsequent results, which are summarised in the table below:

Table 1. *Shows the reliability of the motor tests*

Test	Sample Size	Calculated Value (Reliability Coefficient)	Table Value for Correlation Coefficient	Degrees of Freedom (N-1)	Statistical Significance Level
Balance Test	5	0.99	0.81	4	0.05
20m Run Test	5	0.90	0.81	4	0.05
Medicine Ball Throw from Standing	5	0.82	0.81	4	0.05
Long Jump from Standing	5	0.96	0.81	4	0.05
Zigzag Run Test	5	0.96	0.81	4	0.05
Jump within Numbered Circles	5	0.96	0.81	4	0.05
Shooting within the Box	5	0.84	0.81	4	0.05

The results in table (1) indicate that all computed values were elevated, demonstrating a robust connection between the pre-test and post-test outcomes. This statistical result illustrates the dependability of the tests conducted at a significance level of 0.05 with four degrees of freedom.

Table 2. *Shows the intrinsic validity of motor tests*

Tests	Sample Size	Calculated Value (Reliability Coefficient)	Tabulated Correlation Coefficient	Degrees of Freedom (N-1)	Statistical Significance Level
Balance Test	05	0.99	0.81	04	0.05
20m Running Test	05	0.94	0.81	04	0.05
Medicine Ball Throw from Standing	05	0.90	0.81	04	0.05
Standing Broad Jump Test	05	0.96	0.81	04	0.05
Zigzag Running Test	05	0.97	0.81	04	0.05
Jumping Inside Numbered Circles Test	05	0.97	0.81	04	0.05
Shooting Inside the Box Test	05	0.91	0.81	04	0.05

The statistical results presented in table (2) demonstrate that the tests are valid for evaluating their intended measurements. All dependability coefficient indications ranged from 0.90 to 0.99, with the maximum value being 0.99. The numbers surpass the tabulated correlation coefficient of 0.81 at a significance level of 0.05 with 4 degrees of freedom.

Validity and Reliability of the Personality Test Applied:

Table 3. *Shows the reliability and validity of the personality test dimensions*

Test Demensios	Sample Size	Degrees of Freedom	Significance Levels	Table Value for Correlation Coefficient	Reliability Coefficient	Validity Coefficient
Student's Self-Reliance	5	4	0.05	0.81	0.88	0.93
Student's Sense of Self-Worth,	5	4	0.05	0.81	0.86	0.92
School relationships	5	4	0.05	0.81	0.99	0.99
General adaptation	5	4	0.05	0.81	0.91	0.95

The outcomes of the aforementioned statistical analysis (Table 3) indicate that the tests are legitimate for their designated purpose. The dependability coefficients varied from 0.92 to 0.99, surpassing the correlation coefficient table value of 0.81 at the 0.05 significance level with 4 degrees of freedom.

Steps for Conducting Educational Sessions

Each instructional session is traditionally segmented into three distinct stages, each including specific information as outlined below:

A. Preparatory Phase: This stage comprises two components:

• The initial segment encompasses the administrative dimension, wherein students are received, organised, and administered.

• The second component entails a warm-up, encompassing both general and particular exercises designed to prepare bodily systems and muscle groups for the intended activity, hence aiding in injury prevention.

B. Main Phase: This phase is subdivided into two segments:

• The educational component: wherever students receive information or instructional experiences regarding the appropriate techniques and posture.

• The practical component: wherein the designated movement tasks are executed through physical exercises and motor activities.

C. Final Phase: During this stage, bodily systems and functions revert to a state of rest, with students incentivised through the provision of sweets for their attendance and class participation. This phase incorporates walking, breathing exercises, and relaxation techniques.

Examination of the Framework of the Educational Session

Each educational session is allotted 55 minutes and was conducted throughout the study period. The duration and percentages for each segment of the session were established utilising the tripartite method. The outcomes are presented below (table 4), indicating the percentage for each phase throughout the session:

Table 4. *Shows the percentage for each phase during the educational session*

Phases	Total Time (Minutes)	Percentage (%)
Preparation Phase	75 minutes	27.27%
Warming up	150 minutes	18.18%
Learning Phase	90 minutes	54.53%
Practical Phase	360 minutes	43.63%
Final Phase	150 minutes	18.18%
Total	825 minutes	100%

Procedural Objectives for the Proposed Educational Sessions:

A total of 12 educational sessions were designated, with sessions 6, 11, and 13 rescheduled due to the failure to meet their procedural objectives. Consequently, the aggregate number of educational units is 15.

Table 5. *Shows the main procedural objectives of the educational units*

Page	Date	Main Procedural Objectives of Educational Units
01	18/04/2024	The student should be able to cover a short distance with body awareness during walking.
02	21/04/2024	The student should be able to continue walking and running within the required time.
03	25/04/2024	The student should be able to cover a small distance at high speed in the least time possible.
04	28/04/2024	The student should be able to jump as far as possible from standing and during movement.
05	2/05/2024	The student should be able to jump with body awareness during consecutive jumps.
06	5/05/2024	The student should be able to throw and shoot the ball as far as possible.
07	9/05/2024	The student should be able to pass the ball accurately.
08	12/05/2024	The student should be able to throw and shoot the ball as far as possible.
09	16/05/2024	The student should be able to receive the ball correctly.
10	19/05/2024	The student should be able to pass the ball to a teammate as far as possible.
11	23/05/2024	The student should be able to dribble the ball in a straight line and finish with a pass to a teammate.
12	26/05/2024	The student should be able to strike the ball with their hand and send it from below to the opponent's area.
13	30/05/2024	The student should be able to shoot in the basket from standing and during movement.
14	02/06/2024	The student should be able to dribble the ball in a straight line and finish with a pass to a teammate.
15	06/06/2024	The student should be able to shoot in the basket from standing and during movement.

3. Results and Discussions

Table 6 presents the pre- and post-assessments for physical and athletic evaluations. No significant improvements were detected in the control group across all tests, as evidenced by non-significant T-test values. The experimental group shown substantial enhancements in the majority of assessments, including the Balance Test, 20m Dash, Medicine Ball Throw, Standing Long Jump, Jumping Inside Numbered Circles, and Target Throwing, with a significance level of 0.05. The Agility Run test revealed no significant difference between the two groups. The data indicate that the intervention positively influenced multiple facets of physical performance.

The results underscore the efficacy of the training regimen in improving particular motor abilities and athletic performance.

Table 7 displays the outcomes of personality assessments, evaluating self-reliance, self-worth, interpersonal connections within an academic context, and overall adaption. The comparisons of pre- and post-tests in the control group revealed no significant differences among all variables. The experimental group exhibited enhancements across all metrics; nevertheless, the changes lacked statistical significance according to the T-test results. The experimental group exhibited superior mean values relative to the control group, especially in self-reliance and self-worth. The experimental group exhibited the most significant mean increase in the general adaption variable.

The results indicate that although some favourable trends were noted, the intervention did not produce statistically significant alterations in personality traits.

Table 6. *Shows Results of the Pre- and Post-Measurements for Physical and Sports Tests*

Test	Pre-Test	Post-Test	T-test value	Degrees of Freedom	Level and Significance of Differences	Pre-Test	Post-Test	T-test Value	Degrees of Freedom	Significance Level	Level and Significance of Differences
Balance Test (s)	10.65 (2.45)	10.6 (2.46)	0.66	9	Not significant	10.02 (3.01)	13.31 (4.85)	4.47	9	0.05	Significant
20m Dash (s)	4.79 (0.45)	4.88 (0.51)	0.8	9	Not significant	4.88 (0.34)	4.49 (0.41)	2.6	9	0.05	Significant
Medicine Ball Throw (m)	5.16 (0.61)	5.17 (0.61)	0.05	9	Not significant	5.0 (0.81)	5.7 (0.8)	3.04	9	0.05	Significant
Standing Long Jump (m)	1.26 (0.22)	1.22 (0.20)	0.8	9	Not significant	1.23 (0.13)	1.39 (0.14)	5.33	9	0.05	Significant
Agility Run (s)	7.54 (0.65)	7.42 (0.70)	0.9	9	Not significant	7.24 (0.61)	7.0 (0.72)	1.5	9	0.05	Not significant
Jumping Inside Numbered Circles (s)	10.46 (1.64)	10.3 (1.5)	0.7	9	Not significant	11.62 (2.48)	9.32 (1.29)	3.43	9	0.05	Significant
Target Throwing (s)	1.6 (0.96)	1.7 (0.67)	0.3	9	Not significant	1.7 (0.67)	3.2 (0.91)	6.81	9	0.05	Significant

Table 7. *Shows Results of the Results of Personality Tests*

Variables	Statistical Measures	Pre-Test	Post-Test	T-test value	Degrees of Freedom	Level and Significance of Differences	Control Group	Experimental Group
Student's Self-Reliance	Mean	4.7	4.9	0.39	9	Not significant	5.5	9.3
	Standard Deviation	1.16	0.88	-	-	-	2.01	1.52
	T-test value	0.39	-	-	-	-	-	7.84
Student's Sense of Self-Worth	Mean	4.9	5.2	0.83	9	Not significant	5.5	10.0
	Standard Deviation	1.1	0.78	-	-	-	2.06	2.74
	T-test value	0.83	-	-	-	-	-	8.65
School Relationships	Mean	5.7	6.5	0.18	9	Not significant	6.4	9.3
	Standard Deviation	2.04	2.11	-	-	-	1.72	1.40
	T-test value	0.18	-	-	-	-	-	5.37
General Adaptation	Mean	67.9	66.4	1.61	9	Not significant	68.6	112.4
	Standard Deviation	8.62	9.55	-	-	-	8.15	6.98
	T-test value	1.61	-	-	-	-	-	25.61

Discussions

The results of this study underscore the significant impact that engaging in physical and recreational activities has on the personal and social adaptation of middle school students. Specifically, the experimental group showed notable improvements in physical performance and exhibited positive trends in various personality traits.

These results support the hypothesis that physical activity can serve as a key tool in fostering both psychological and social development among adolescents, as well as enhancing their motor skills.

The significant improvements in the post-test results for the experimental group – such as in the balance test, standing long jump, and target throwing – indicate that the recreational activities implemented were effective in improving motor skills and athletic performance. This finding aligns with the work of Eather et al. (2023), who emphasize the role of movement in youth development, especially during critical growth stages. Furthermore, studies such as those by Piñeiro-Cossio et al. (2021) and Suyato et al. (2024) underline the link between physical activity and the development of better social skills and emotional well-being, which were evident in the improvements observed in the experimental group.

From a psychological perspective, the increased self-reliance, sense of self-worth, and general adaptation noted in the experimental group highlight the role that sports can play in enhancing an adolescent's psychological well-being. These improvements, though not statistically significant in all cases, suggest that engaging in sports activities provides a platform for building self-confidence and fostering a positive self-image, as confirmed by Contreras-Osorio et al. (2021). The improvement in students' school relationships further corroborates findings by Hu et al. (2021), who suggest that school-based sports programs enhance social integration, particularly for students from diverse backgrounds.

However, while the results are promising, the lack of statistically significant changes in some personality traits, such as self-reliance and self-worth in the control group, calls for deeper investigation.

It is possible that the duration of the intervention, the nature of the activities, or other contextual factors may have influenced the outcomes. Studies by Graupensperger et al. (2021) suggest that while sports can provide benefits, the type and consistency of engagement, as well as the social environment surrounding these activities, can significantly alter the extent to which these benefits are realized.

Moreover, the study's findings echo the concerns raised by Johnson et al. (2023) and Walton et al. (2021), who highlight the barriers that limit adolescents' participation in physical activities, including lack of access to resources and insufficient support from educational institutions. Despite the positive results observed, there is a need for broader systemic changes to ensure that recreational and physical education programs are integrated into the national curriculum, as advocated by Hu et al. (2021).

These efforts should focus on removing the psychological and social barriers that prevent students from engaging in physical activities, such as feelings of inadequacy or a lack of motivation.

The current study further aligns with previous research that has shown that physical activities not only enhance physical fitness but also help in the development of psychological resilience, emotional regulation, and social interaction (Kimm et al., 2006; Dwyer et al., 2006). By promoting these qualities, physical education programs can help combat issues such as introversion, depression, and reluctance to cooperate, which are often observed in adolescents who do not engage in physical activities (Haraldsdottir & Watson, 2021; Clark & Kosciw, 2021). This reinforces the idea that recreational sports can play an instrumental role in addressing the mental health challenges faced by many young people.

The study has several limitations that must be considered. The small sample size (10 participants per group) limits the generalizability of the findings and may have affected statistical power.

Additionally, the short duration of the intervention might not have been sufficient to produce lasting changes in personality traits. The lack of randomization and the limited diversity of participants also introduce potential biases. Moreover, the subjective nature of the personality measures and the focus on a narrow range of activities may have affected the accuracy of the results. Finally, external factors such as family support or prior experiences with physical activity were not controlled for in this study.

4. Conclusions

In conclusion, this study provides valuable evidence of the role of physical and recreational activities in supporting adolescents' overall development, including their motor, psychological, and social growth. The positive effects observed in the experimental group, particularly in the areas of motor skills and social adaptation, reinforce the importance of integrating such activities into the educational system.

It is crucial that policymakers, educators, and sports organizations collaborate to create more opportunities for students to engage in physical education, not only to improve physical health but also to foster holistic development and social well-being.

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