

RESEARCH
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recreational sports programme, psychological and social adjustment, final-year secondary school students.

Abstract

This study aimed to determine the impact of a recreational sports programme on the psychological and social adjustment of adolescents in their final year of secondary education. The sample consisted of 30 students from Martyr Abdelkader Ghalmi Secondary School in Ain Defla Province, who were selected using purposive sampling. The study employed a recreational sports programme and a psychological and social adjustment scale. A pre-experimental method with a one-group design was employed, as this was deemed most suitable for the nature of the topic. The results indicated the following:

- There were differences in the mean pre-test and post-test scores for the experimental group in the personal and emotional adjustment dimensions, demonstrating that the recreational sports programme positively affects psychological adjustment levels.
 - There were differences between the mean pre-test and post-test scores for the experimental group in the health adjustment dimension, indicating that the programme positively affects health adjustment levels.
 - There were differences between the mean pre-test and post-test scores for the experimental group in the overall psychological and social adjustment score, showing that the programme positively affects psychological and social adjustment levels.
- Overall, the programme had a significant positive impact on the psychological and social adjustment of final-year secondary school students.

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1. Introduction and research problem:

In recent years, there has been increased interest in problem solving within the framework of the psychology of thinking and innovation. Methods of problem solving, particularly the identification of problems, are among the most important ways to develop thinking skills. In this study, physical activity is considered an important factor that students should not neglect due to its physiological, social and psychological significance, particularly in secondary education. Psychologists emphasise that this stage is characterised by anxiety and psychological tension for adolescents due to rapid biological growth.

The demands of this new life require individuals to adapt, necessitating the development of all aspects of life – social, behavioural, educational and physical – in all sectors of society and at all levels. The transformation of sports activities is also an important aspect of developing psychological and social behaviour, as well as enhancing human relationships. It also significantly improves physical fitness and enhances the body's functional systems, thereby improving individual capabilities and potential. These are crucial elements in shaping a student's character and preparing them for proper educational training, in line with the philosophy adopted by physical education. Additionally, it provides students with opportunities to engage with society and address the psychological and social issues they face.

Many scholars, including Dollar Miller and Walker Roberts, suggest that we are living in an era of intense conflict and pressure, accompanied by changes in all areas of political, economic, social and psychological life that increase stress levels. Environmental and personal obstacles further hinder the fulfilment of various individual needs, exacerbating psychological and social problems for all members of society, especially in educational settings.

In response, various communities and educational institutions have begun developing recreational sports programmes, aiming to positively impact individuals' behaviour, particularly that of students. This prompts us to examine the diverse activities offered by these programmes, which help individuals acquire the skills they will need in the future.

Educational institutions are responsible for managing programmes that include educational and recreational activities, serving as an intermediary link between age groups. Consequently, countries have allocated essential resources to enable students to participate in sports, with the aim of maximising participation (Zainab Al-Dib, 1984). Recreation is one of the methods used by researchers in various studies to address these issues and protect students from their effects. Several studies, including those by Apont (1971), Haifa Abu Ghazaleh (1978) and Sud and Baraba (1996), have confirmed that recreational programmes are among the most effective ways to improve psychological and social adjustment in educational institutions.

Thus, the research problem has been defined in order to bridge this gap and find a solution to the issue. It has become urgent and necessary to develop a recreational sports programme for this group in order to assess their state and achieve good educational adjustment. Based on this, the following can be proposed:

General question: Are there statistically significant differences between the pre-test and post-test averages of the experimental group in the overall adjustment score (psychological and social) among final-year secondary school students?

Sub-questions:

Are there statistically significant differences between the pre-test and post-test averages of the experimental group in the personal (psychological) and emotional adjustment dimensions among final-year secondary school students?

Are there statistically significant differences between the pre-test and post-test averages of the experimental group in the health adjustment dimension among final-year secondary school students?

2. Research hypotheses:

General hypothesis:

There are statistically significant differences in the mean pre-test and post-test scores for the experimental group in terms of overall psychological and social adjustment among final-year secondary school students.

Specific hypotheses:

There are statistically significant differences between the mean pre-test and post-test scores for the experimental group in terms of personal (psychological) and emotional adjustment among final-year secondary school students.

There are statistically significant differences between the mean pre-test and post-test scores for the experimental group in terms of health adjustment among final-year secondary school students.

3. Research objectives:

To determine whether the proposed recreational sports programme has a positive impact on the psychological and social adjustment scores of final-year secondary school students.

To investigate whether there are statistically significant differences in the mean pre-test and post-test scores for the experimental group in terms of overall psychological and social adjustment.

- To examine whether there are statistically significant differences between the mean pre-test and post-test scores for the experimental group in terms of personal (psychological) and emotional adjustment.

- To identify whether there are statistically significant differences between the mean pre-test and post-test scores for the experimental group in terms of health adjustment among final-year secondary school students.

- Emphasise the importance of recreational sports activities in regulating undesirable psychological behaviours.

4. The importance of the research

Theoretical significance:

Despite the abundance and diversity of scientific research in the field of psychology, particularly with regard to the psychological problems faced by students, studies addressing treatment through recreational sports activities – often referred to as ‘non-drug therapy’ – are scarce. This is particularly true in Arab societies, and in Algeria in particular.

This study highlights the effective role of recreational sports activities in reducing psychological and social adjustment issues among final-year students.

Demonstrating the contribution of recreational sports activities to a fulfilling personal and educational life.

Practical significance:

Utilising one of the latest scientific strategies known for its effectiveness, termed ‘non-drug therapy’. This approach has been presented at numerous international conferences and scientific forums, emphasising the use of recreational sports practices to alleviate psychological issues and anxiety among students.

The results of this study will provide effective, realistic and cost-efficient alternatives to medication, therapy sessions and medical appointments.

5. Research Terminology:

5.1 Recreation:

Linguistic definition: Defined in Arabic dictionaries as derived from the verb 'raḥa', meaning joy and happiness.

Conceptually: Kraus defines it as activities and experiences chosen voluntarily during leisure time to achieve personal enjoyment and pleasure, and to gain various personal and social values. Carlson, McLean, Dieb and Peterson describe recreation as an activity, an emotional state or an organised social pattern; a means of restoring individual vitality and strength for work; or the voluntary choice of experience during leisure time. (Mohamed Hamahmi and Aida Abdel Aziz Mustafa, 1998, p. 30).

5.2 Sports Recreation:

The term 'sports recreation' is derived from the Latin 'recreare', meaning renewal, creation and innovation. Initially, it was used to define human activity chosen for personal motivation that revitalises the individual, enabling them to perform their work. (Huda Hassan Mahmoud Mohamed and Maher Hassan Mahmoud Mohamed, 2000, p. 115).

5.3 Proposed Programme of Study (Operational Definition):

This includes a set of organised recreational sports activities, structured into educational units by the researcher, based on scientific principles and reflecting students' preferences and choices for favoured and desired activities. The aim is to promote comfort, happiness and joy, free from competition and psychological pressure, thereby alleviating anxiety levels among final-year secondary school students.

5.4 Adjustment

Linguistic definition:

Adjustment refers to the process of reaching an agreement, whereby individuals come together without any disagreement. It signifies adaptation, harmony and social cohesion. According to Al-Firuzabadi's Al-Qamus Al-Muhit, it denotes agreement and convergence.

Conceptual definition:

The Al-Mujaz dictionary indicates that adjustment is a form of social adaptation whereby an individual changes their habits and attitudes to align with their social group.

Operational definition:

Adjustment encompasses a range of behavioural changes in students resulting from their desire to meet their needs. It involves choosing appropriate means and methods to meet the demands of one's environment, including those relating to school, family and peer groups, as well as resolving conflicts. Thus, adjustment maintains good relationships with others. Adjustment refers to an individual's capacity to reconcile their desires and goals with the material and social characteristics of their environment. Mustafa Fahmy views adjustment as a continuous, dynamic process that aims to modify behaviour in order to achieve a more harmonious relationship between the individual and their environment.

5.5 Personal (psychological) adjustment

Linguistic definition:

Personal adjustment is the process by which an individual achieves balance within themselves. It is characterised by self-confidence when facing situations, a tendency towards realism, a sense of belonging and openness, and is free from pathological symptoms.

Conceptual definition:

It is the individual's ability to reconcile conflicting drives in a balanced way (Sufyan, 2004, p. 193). (Sufyan, 2004, p. 193).

Operational definition:

The student's ability to satisfy their internal needs and motives within the family and at school leads to self-acceptance and satisfaction. This process enables students to achieve equilibrium, reflected in their self-confidence, reliance when facing various situations and their inclination towards realism, belonging and openness.

5.6 Social adjustment**Conceptual definition:**

Social adjustment is the state in which an individual attempts to establish positive relationships with others and adapt to group norms. (Sufyan, 2004, p. 155).

Operational definition:

It is a student's ability to harmonise with their peers and others they interact with, forming social relationships characterised by respect, cooperation and understanding while being receptive to the ideas and norms of their society.

For the individual, the process of social interaction must include a commitment to the ethics of their community, which are derived from their spiritual, religious and historical heritage. These ethics serve as markers that guide the individual and alert them to societal norms, prohibitions and behaviours that are reflective of the cultural fabric of their community. Adhering to these ethics fosters a sense of unity with the group, as well as satisfaction at being accepted and aligned with these norms. This adjustment is evident in the individual's or group's external behaviours and results from biological and psychological congruence.

5.7 Psychological and social adjustment**Conceptual definition:**

Psychological and social adjustment is defined as the dynamic process through which an individual changes their behaviour in order to improve their relationship with themselves and their environment.

Operational definition:

It is a student's ability to fulfil their desires and needs, confront problems in specific situations and form positive relationships within the school, family and wider community by adhering to societal norms. This leads to feelings of psychological comfort and security. Psychological and social adjustment reflects an individual's ability to balance their desires and needs with societal expectations, resulting in feelings of personal and social security, self-worth, belonging, mental well-being, and freedom from antisocial tendencies.

5.8 Adolescence

Linguistic definition:

The term 'adolescence' is derived from the word 'rahaq', which means 'approaching'. (Fouad Al-Bahi Al-Sayed, 1997, p. 272).

Conceptual definition:

In this study, adolescence refers to the transitional phase between childhood and adulthood. Due to variations in gender, ethnicity, geographical conditions, economic status, cultural background and other factors, it is not precisely defined in terms of duration. However, it generally spans from around 21 to 22 years of age. This period is characterised by rapid physical, social, emotional and cognitive development. During this time, individuals transition from dependence on others to self-reliance and assume responsibility for themselves. In summary, adolescence is the stage at which gradual transitions towards physical, sexual, mental and psychological maturity occur. (Abdul Rahman Aisawi, 1984, p. 87).

6. Previous studies**A. Doctoral thesis (Dr Bouaziz Mohamed, 2017).**

Title: 'The Contribution of Recreational Sports Practice to Certain Psychological Variables and Its Relation to Professional Adjustment among Middle School Teachers in Algeria'.

Objective: To investigate the impact of recreational sports on certain psychological variables (e.g. psychological stress and anxiety) and its relationship to professional adjustment among middle school teachers.

Sample: Twenty teachers were selected using purposive sampling and divided into two groups: an experimental group and a control group from middle schools in Mostaganem.

Methodology: An experimental method was employed to suit the nature of the study.

Research procedures: A recreational sports programme, a psychological stress scale, an anxiety scale and a professional adjustment scale were utilised.

Statistical analysis: The following statistical methods were employed:

- Mean averages
- Standard deviations
- Mann-Whitney U test for independent samples
- Wilcoxon test for related samples
- Correlation coefficient

The statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS 22).

Results:

There are statistically significant differences at a significance level of $\alpha=0.05$ in the level of psychological stress between the post-test results of the experimental and control groups, in favour of the experimental group.

- There are statistically significant differences at a significance level of $\alpha=0.05$ in the level of anxiety between the post-test results of the experimental and control groups, in favour of the experimental group.
- There are statistically significant differences at a significance level of $\alpha=0.05$ in the degree of professional adjustment between the post-test results of the experimental and control samples, in favour of the experimental group.
- An inverse correlation exists between psychological stress, anxiety and professional adjustment in both the control and experimental groups.

The proposed recreational sports programme significantly reduces psychological stress and anxiety while enhancing professional adjustment among middle school teachers.

B. Study (Ahmed Abdul Fattah Muhammad Al-Sabah, 2014)

Title: The Role of Sports and Recreational Activities in Reducing University Violence Among Yarmouk University Students from Their Perspective.

Objective: The study aimed to explore the role of sports and recreational activities in mitigating university violence from the viewpoint of Yarmouk University students.

The research sample included 150 male and female students from various faculties at Yarmouk University, who were selected through random sampling.

Methodology and results of previous studies:

Methodology:

The experimental method was employed in the aforementioned studies.

Research procedures:

A 35-item questionnaire spanning 5 domains was designed.

Statistical analysis:

The researcher employed the following statistical methods for data analysis:

- frequencies and percentages
- Mean averages
- Analysis of variance (ANOVA).
- T-test
- The Scheffé method for post-hoc comparisons.

Results of the study:

The results indicated a positive impact of sports and recreational activities on reducing university violence from the perspective of Yarmouk University students.

Key recommendations:

- Provide indoor and outdoor sports facilities at the university that are equipped with the necessary devices and equipment to encourage students to participate in sports during their free time.

C. Study (Dr. Abu Hassouna, Nashet Mahmoud Dhiab, 2015)

Title: The Effect of a Cognitive-Behavioral Training Program on Reducing Test Anxiety Levels Among Students at Irbid National University.

Objective: The study aimed to investigate the effect of a cognitive-behavioral training program on reducing test anxiety levels among students at Irbid National University.

Sample: The study population consisted of psychology students at Irbid National University enrolled in the first semester of the academic year 2016-2017, totaling 822 students. A purposive sample of 82 students was selected, all of whom had a score of 36 or above on the standardized test anxiety scale, indicating high test anxiety levels. The sample was then randomly divided into two groups: the experimental group (41 students) and the control group (41 students), with an equal number of males and females in each group.

Research Procedures:

The test anxiety scale by Friedman and Bendas (1997), translated by Abu Hassouna and Ailbouni, was applied to the study population. The experimental group underwent treatment for 4 weeks, while the control group did not receive any treatment. Pre-tests and post-tests were conducted for both groups.

Methodology:

The experimental method was utilised.

Statistical analysis:

After obtaining the raw scores from the applied scale, the mean pre-test score for both groups (experimental and control) was calculated. To determine whether there were any statistically significant differences in test anxiety levels between the groups, the researcher employed the following statistical analyses:

- Kruskal-Wallis test

- Chi-square test

Results of the study:

The programme significantly reduced test anxiety levels in the experimental group compared to the control group.

Key recommendations:

Generalisation of the training programme: The training programme should be implemented for educational counsellors in universities and applied to university students to reduce their test anxiety levels.

Further research: Conduct additional studies on diverse student samples.

D. Study (Prof. Dr. Mohamed Kamal Al-Samnoudi and Assoc. Prof. Dr. Mohamed Ibrahim Al-Dhahabi, 2015).

Title: The Effect of a Recreational Games Programme on Reducing Physical Anxiety in Children at the Oncology Centre of Mansoura University.

Objective: To investigate the impact of a recreational games programme on reducing physical anxiety in children at the oncology centre.

Sample: The research team selected a purposive sample of twelve children, consisting of six males and six females.

Research procedures:

The experimental method was utilised through a two-group design for pre-test and post-test measurements.

Statistical analysis:

Data analysis was conducted using the SPSS statistical program. The researcher applied the following statistical methods:

- Mean averages
- standard deviation
- Improvement rate
- Mann-Whitney U test for differences between the means of two independent samples
- Wilcoxon test for differences between the means of two related samples.

Results of the study:

The research team concluded that the proposed recreational programme positively impacted anxiety levels among the children.

Key recommendations:

- Activation of the proposed recreational programme: The programme should be implemented in specialised medical centres.
- Establishment of a Recreational Activities Department: Create a department for recreational activities within these institutions to make effective use of the considerable amount of free time available.

7. Exploratory study:

This is a crucial step taken by researchers when investigating their research topic. It helps to gather all the relevant information and facts relating to the topic, and determines the scientific methods for studying it. It serves as the foundation for the main study, enabling the establishment of a solid scientific basis.

This study was conducted from 7 to 22 November 2022 with a sample of 30 final-year students at Martyr Abdelkader Ghalmi Secondary School in Ain Deffa. This sample was representative of the original population, but distinct from the primary research sample. The objectives of this study were:

1. Verifying the validity of the tools and instruments used to conduct the research.
2. Understanding the correct methods for taking measurements and determining response times for scales.

3. Ensuring the competence of assistants and training them to monitor students accurately.
4. Establishing the scientific parameters of the research variables.
5. Identifying potential issues that the researcher might face during implementation and ensuring that the location is suitable for programme execution.

The results of the exploratory study confirmed the validity of the tools and instruments used, the measurement methods and the scientific parameters of the research variables. It also prepared the measurement forms for the pre- and post-test assessments.

8.1 Methodology:

This study used the experimental method with a single-group design, which is appropriate for the nature of the topic.

8.2 Research population and sample

The original study population was defined by the research variables and focused on final-year secondary school students (third year) at Martyr Abdelkader Ghalmi Secondary School in Ain Defla. The total number of students was 142.

8.2.1 Research sample

The study was conducted with third-year secondary school students, selected purposively:

- Exploratory sample: 30 students.

Main research sample: 30 students.

8.2.2 Research domains

Human domain: The study was conducted with 30 third-year secondary school students.

Spatial domain: the study took place at Martyr Abdelkader Ghalmi Secondary School in Ain Defla.

Temporal domain: The theoretical part of the research commenced after the research topic was determined, followed by the fieldwork. The main study took place from the beginning to the end of 2023.

8.2.3 Research tools

Data collection tools were prepared that aligned with the research topic, its associated issues, and its hypotheses. To test the hypotheses and answer the research questions, a recreational sports programme was developed alongside the application of a psychological and social adjustment scale

9. Scientific Foundations of Research Tools

9.1 Validity of the Psychological and Social Adjustment Scale

A. Validity through expert review

The scale was presented to a panel of six expert professors. They were given a summary of the research, including the introduction, objectives, research problem and hypotheses. After reviewing the scale, the experts provided a

series of comments and observations. All suggestions and modifications were subsequently incorporated into the scale.

B. Internal Consistency Validity

Internal consistency validity was verified using the SPSS programme to calculate the Pearson correlation coefficient between the scale and each of its dimensions. As Mahmoud Al-Agha noted, ‘the strength of the correlation between the scores of each level of the objectives and the total test score, as well as the correlation of each item with the overall goals it pertains to’ (Al-Agha, 1999). The calculations showed that all 50 items of the psychological adjustment scale achieved statistically significant correlations, with values ranging from 0.709 to 0.925. This indicates that the scale possesses a high level of internal consistency validity, ensuring its appropriateness for use.

Self-validity:

Table 1 illustrates the correlation coefficients for psychological and social adjustment.

Number of items	Correlation of coefficient
50	0.923

We observe from the table above that the correlation coefficient is 0.923, which indicates a strong correlation. This suggests that the tool is valid for measuring what it was designed to assess.

C. Reliability of the Psychological and Social Adjustment Scale

Reliability refers to the accuracy, consistency, or stability of the test results when applied to a sample of individuals on two different occasions (Maqdam Abdul Hafeez, 1993, p. 152). To calculate the reliability coefficients of the scale with its 50 items, Cronbach’s alpha and the split-half method are considered essential measurement tools. These were calculated using the SPSS statistical program.

A. Cronbach’s Alpha Equation

Table 02 illustrates the overall reliability coefficient using Cronbach’s alpha for the Psychological and Social Adjustment Scale.

Number of items	Cronbach's alpha
50	0.859

B. Split-half reliability

As can be seen in the table, the Cronbach’s alpha coefficient was 0.859, which indicates that the Psychological and Social Adjustment Scale is highly reliable. This suggests that the scale is robust and appropriate for use in the study.

Split-half method:

The overall reliability of the Psychological and Social Adjustment Scale was calculated by determining the correlation coefficient between the odd- and even-numbered item scores. This correlation was then corrected using the ‘Pearson-Brown’ formula with the SPSS statistical program.

Table 03 shows the reliability coefficient of the Psychological and Social Adjustment Scale based on the split-half method.

Number of items	Split-Half Reliability	
	Correlation Coefficient	Spearman-Brown Correlation Coefficient
50	0.831	0.909

We observe from the table that the correlation coefficient reached 0.831, indicating strong reliability for the Psychological and Social Adjustment Scale. This suggests that the scale possesses robust reliability, reassuring us of its appropriateness for use in the study.

10. Development and characteristics of the proposed recreational sports programme

10.1 Programme content

Following a review of the scientific literature, previous studies and expert opinions, a selection of recreational sports games suitable for the sample and available resources was made. These games were organised into units for the proposed programme.

Programme objectives:

Every recreational sports programme has specific goals that it aims to achieve through its execution and management to ensure the intended benefits are realised. The proposed programme aims to improve certain behavioural aspects among students and instil desirable personal qualities, including:

- Reducing and alleviating anxiety among students.
- Improving students' psychological health.
- Achieving muscular and nervous relaxation.
- Renewing energy and vitality in the body and enhancing physical fitness.
- Promoting happiness and self-fulfilment.

10.2 Foundations for developing the proposed educational recreational sports programme

Activities should be tailored to students' abilities and readiness levels, as well as their motor skills.

Activities should be diverse, allowing students to choose those that fulfil their interests and needs in line with their preferences.

Each activity should have multiple levels of difficulty to cater for students' varying capabilities.

Activities should match the available facilities, equipment and safety measures.

- The activities should be engaging enough to encourage participation.
- The difficulty of exercises should progress from easy to difficult, slow to fast and simple to complex.
- Students should be given the opportunity to transition between equipment and tools in their preferred way, allowing them to explore various movements.
- Simple, diverse activities incorporating multiple basic movements (e.g. running, jumping, walking) should be emphasised, using a variety of tools to promote joy and enthusiasm.

10.3 Tools Used

Some existing tools were used and alternative tools were created as needed, including balls, hoops, ropes and boxes of various sizes and colours.

10.4 Time distribution

Based on scientific references, previous studies and expert opinions, the researcher determined that the total duration of the proposed recreational programme would be 20 sessions of 60 minutes each, distributed as follows:

A. Introductory part:

This part aims to:

1. Physically, physiologically and psychologically prepare participants for the upcoming activities.
2. Establish effective transitions to the next part, incorporating fun elements into the instructions to create a positive experience for participants.
3. Gradually increase recreational activities.
4. Ensure proper preparation to prevent injuries that students may encounter during performance.

Warm-up exercises may include:

- Various types of running (e.g. relay, hurdles, running in place).
- Small competitive games.

The duration of the warm-up or introductory part depends on the weather conditions. The colder it is, the longer this part will need to be to prevent fatigue, typically around 15 minutes.

B. Main part:

The main part aims to maintain physical and physiological wellbeing while improving students' psychological and social wellbeing through a variety of recreational sports games designed to reduce psychological pressure, particularly anxiety. This section consists of two phases, which are introduced gradually over the total programme duration of 40 minutes.

Phase One includes a variety of free and equipment-based exercises aimed at enhancing the efficiency of large muscle groups, such as those in the arms, legs, trunk, abdomen and neck.

Phase Two incorporates a variety of recreational games, including football, handball, basketball, volleyball and other activities. The main section should ensure:

- Variety in exercises and changes according to the working muscle groups, to prevent certain muscles from being overexerted for prolonged periods. When teaching basic sports skills, focus on learning the complete form first, followed by correct performance in games.
- Exercises requiring high levels of concentration, reaction time and neuromuscular coordination should be performed in the first half of the main section, before fatigue sets in.

- Recreational sports activities should include cool-down, relaxation and breathing exercises for active positive rest.

C. Closing Part

The researcher ensured that the main training session was followed by a gradual cool-down period incorporating walking and light jogging. The objectives of this stage were to:

- returning the body to its resting state.
- Selecting exercises that maintain individuals' interest and encourage them to perform these exercises independently. The session concludes with a 5-minute sports salute.

10.5 Scientific Foundations of the Programme

Validity: The programme was presented to a group of six professors specialising in sports psychology, health and sports training from physical education and sports institutes.

Objectivity: Objectivity refers to the elimination of bias or prejudice, and the avoidance of personal factors in the judgements made by the researcher (Abdul Rahman Aisawi, 2003, p. 332). The programme's objectivity stems from the following points:

- The selection of activities was based on the interests, desires and motivations of the target group, while also guiding them towards activities that align with their needs, readiness, physical capabilities and maturity level.
- The programme was scientifically planned, taking into account intensity and load, and relied on physiological indicators such as continuous heart rate monitoring before, during and after activities.
- The language used to present and direct participants was characterised by simplicity and clarity.
- Necessary modifications were made according to the reviewing professors' recommendations.

Based on all the field procedures and the aforementioned considerations, we conclude that the proposed programme is highly objective.

11. Statistical methods used:

The following statistical methods were employed in the analysis:

- percentage
- Arithmetic mean
- Standard deviation
- Pearson correlation coefficient
- Cronbach's alpha.
- Split-half method

Mann-Whitney U test for independent samples

Wilcoxon test for related samples

Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS).

12. Presentation of research results

Presentation of the first partial hypothesis results

The first partial hypothesis states that there are statistically significant differences between the means of the pre- and post-test scores for the experimental group in terms of personal (psychological) and emotional adjustment. The t-test for related samples (dependent samples) was used to identify the nature of these differences.

Table 4: Descriptive statistics for the pre- and post-test scores in the dimension of personal (psychological) and emotional adjustment.

Measurement	Mean	Standard Deviation	Median	Skewness	Kurtosis	Difference Skewness	Difference Kurtosis
Pre-test	24.13	7.43	28	-0.88	-0.97	0.59	-0.73
Post-test	31.77	4.61	33	-1.10	1.60		

As can be seen from the table, the mean pre-test score for the dimension of personal (psychological) and emotional adjustment was 24.13, with a standard deviation of 7.43. The mean score for the post-test was 31.77, with a standard deviation of 4.61.

The skewness value for the pre-test falls within the range [-1, 1], while the post-test skewness is slightly higher. The kurtosis values for both tests remained below 2, and the skewness value for the difference between the two tests was confined within ±1. This indicates that the data distribution is close to normal.

Figure 1: This figure illustrates the means and standard deviations for the pre- and post-test scores relating to personal (psychological) and emotional adjustment.

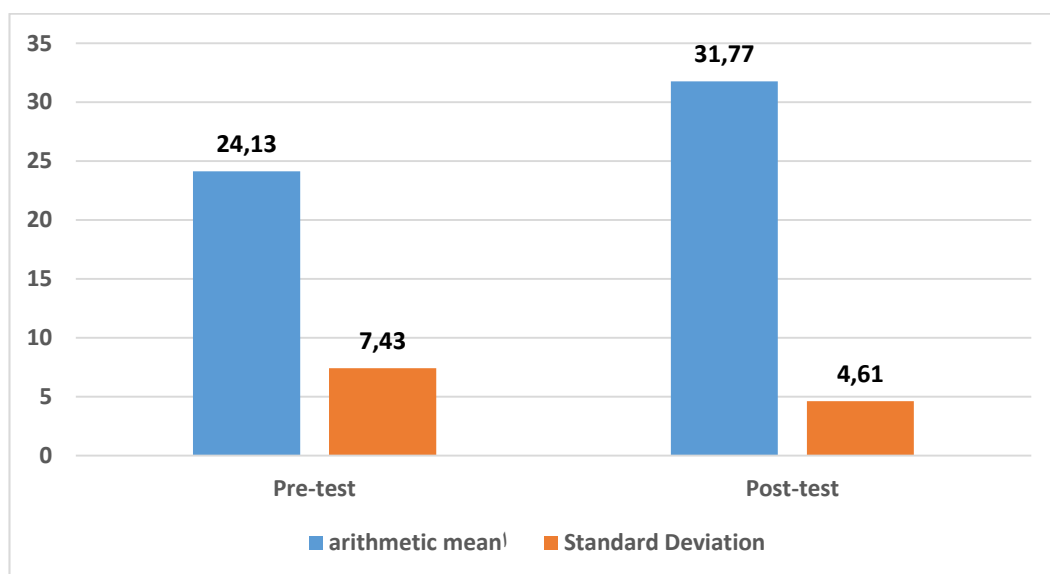


Table 05: This table presents the following statistics for differences in scores:

- Mean of differences
- Standard deviation of differences
- Standard error
- Calculated T-test value
- Significance level (Sig).
- Statistical significance

Effect size in the dimensions of personal, psychological and emotional adjustment.

Mean Differences	Standard Deviation of Differences	Standard Error	Calculated (T-test)	P. Value (Sig)	Significance of Differences	Effect Size	Nature of Effect
-7.63	4.29	0.78	9.75	<0.001	Dal	1.78	Big

As can be seen from the table, the calculated T-test value is 9.75, with a significance level of 0.001, which is less than 0.05. This suggests that there are statistically significant differences between the pre- and post-test mean scores for personal (psychological) and emotional adjustment, favouring the post-test. Additionally, the effect size was found to be 1.78, indicating a significant impact of the recreational sports programme.

Presentation of the Results of the Second Partial Hypothesis:

The second partial hypothesis states that there are statistically significant differences between the means of the pre- and post-test scores for the experimental group in the health adjustment dimension. The t-test for related samples (dependent samples) was used to determine the nature of these differences.

Table 06 presents the descriptive statistics for the pre- and post-test scores in the health adjustment dimension.

Measurement	Mean	Standard Deviation	Median	Skewness	Kurtosis	Difference Skewness	Difference Kurtosis
Pre-test	20.03	3.57	19	0.10	-1.79	-0.10	-1.34
Post-test	31.30	4.94	31.5	-0.60	-0.13		

As can be seen from the table, the mean pre-test score for the health adjustment dimension was 20.03, with a standard deviation of 3.57. The mean score increased to 31.30 in the post-test, with a standard deviation of 4.94.

The skewness and kurtosis values for the difference between the two tests are both confined within ± 1 , indicating that the data distribution is close to normal.

Figure 02: This figure illustrates the means and standard deviations of the pre- and post-test scores for health adjustment.

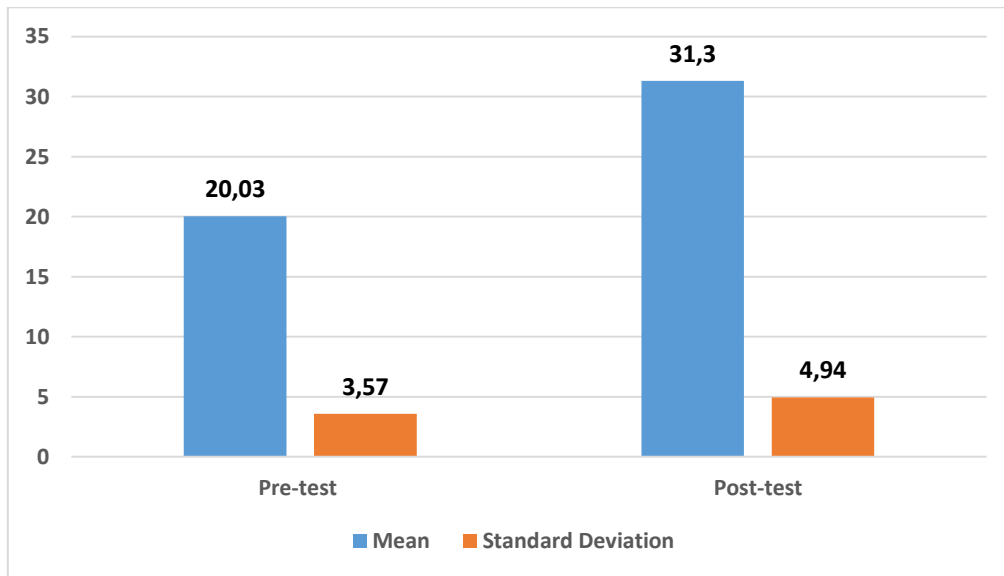


Table 07: This table presents the following statistics for the differences in scores:

Effect size in the dimension of health adjustment

Mean Differences	Standard Deviation of Differences	Standard Error	Calculated (T-test)	P. Value (Sig)	Significance of Differences	Effect Size	Nature of Effect
-11.27	4.95	0.90	12.46	<0.001	Dal	2.27	Big

As can be seen from the table, the calculated T-test value is 12.46, with a significance level of 0.001, which is less than 0.05. This suggests that there are statistically significant differences between the pre- and post-test mean scores for health adjustment, favouring the post-test. Additionally, the effect size was found to be 2.27, indicating a significant impact of the recreational sports programme.

Presentation of the Results of the General Hypothesis:

The general hypothesis states that there are statistically significant differences in the means of the pre- and post-test scores for the experimental group in the overall dimension of psychological and social adjustment. The t-test for related samples (dependent samples) was used to determine the nature of these differences.

Table 08 presents the descriptive statistics and the Shapiro-Wilk test value for the pre- and post-test scores in the overall psychological and social adjustment dimension.

Measurement	Mean	Standard	Median	Skewness	Kurtosis	Difference	Difference

		Deviation				Skewness	Kurtosis
Pre-test	67.53	12.49	72.5	-0.30	-1.18	0.96	0.39
Post-test	94.17	11.88	97	-0.56	-0.73		

As can be seen from the table, the mean pre-test score for the overall dimension of psychological and social adjustment was 67.53, with a standard deviation of 12.49. The mean score increased to 94.17 in the post-test, with a standard deviation of 11.88.

The skewness values fall within the range of [-1, 1] and the kurtosis values do not exceed 2, indicating that the data distribution is normal according to the Shapiro-Wilk test.

Figure 03: This figure illustrates the means and standard deviations of the pre- and post-test scores for the overall psychological and social adjustment dimension.

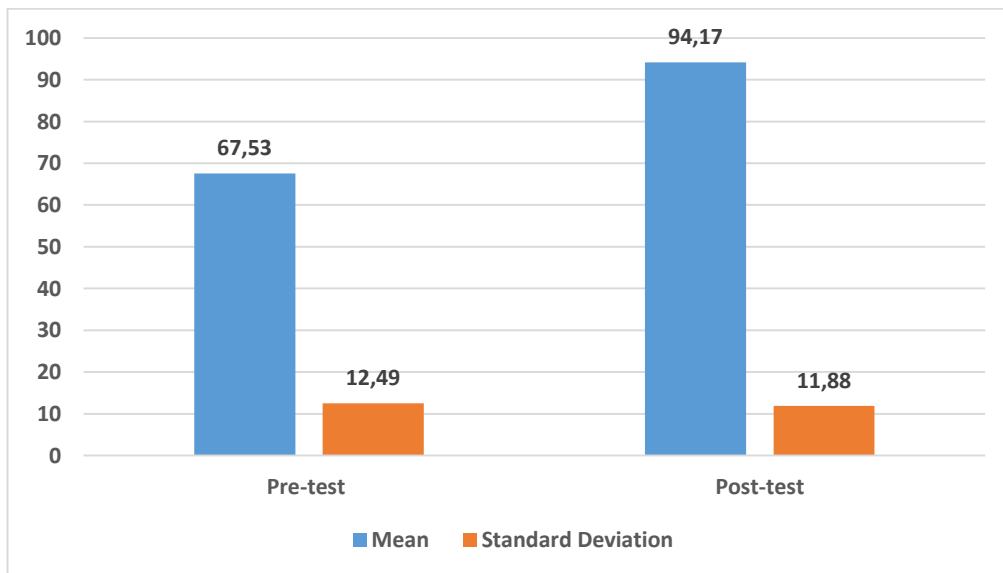


Table 09: This table presents the following statistics for differences in scores:

- Mean of differences
- standard deviation of differences
- Standard error
- Calculated T-test value
- Significance level (Sig).
- Statistical significance

Effect size in the overall dimension of psychological and social adjustment.

Mean Differences	Standard Deviation of Differences	Standard Error	Calculated (T-test)	P. Value (Sig)	Significance of Differences	Effect Size	Nature of Effect
-26.63	9.13	1.67	15.98	<0.001	Dal	2.92	Big

As can be seen from the table, the calculated T-test value is 15.98, with a significance level of 0.001, which is less than 0.05. This suggests that there are statistically significant differences in the means of the pre- and post-test scores for the overall dimension of psychological and social adjustment, favouring the post-test (i.e. the higher mean). Additionally, the effect size is 2.92, suggesting a significant impact of the recreational sports programme.

13. Interpretation of Results According to Previous Studies and Theoretical Background

13.1 Interpretation and discussion of the first partial hypothesis results:

The first partial hypothesis was confirmed, stating that there are statistically significant differences between the means of the pre- and post-test scores for the experimental group in the dimension of personal (psychological) and emotional adjustment among final-year secondary school students. This finding aligns with research conducted by Dr Belarousi Suliman in 2016, which examined the impact of an introductory games training programme on the degree of psychological and social adjustment among U17 football players. In this study, a scale for psychological and social adjustment was developed to identify its dimensions and recognise the differences. Implementing a programme of collective introductory games improved the psychological and social adjustment of the sample, with the experimental group showing greater improvement than the control group.

Similarly, Dr Jabbouri Ben Omar's 2015 study, which examined the influence of physical and sports activities on the general psychological adjustment of secondary school students and included a sample of 200 students, found no significant differences in overall psychological adjustment scores between students engaged in either individual or team sports. However, the overall results of the adjustment test showed differences favouring males in terms of personal and social dimensions, highlighting the need for educators to consider psychological factors when planning training programmes.

Furthermore, Dr Latarsh Imad's 2019 study on the role of collective sports activities in achieving certain dimensions of psychological and social adjustment revealed significant statistical differences in self-reliance between students who participated in physical sports activities and those who did not. The results indicated that practising sports enhances self-reliance among students, positively impacting their ability to fulfil their responsibilities independently.

Dr Barjam Ridwan's 2019 study on the role of physical and recreational activities in achieving psychological and social adjustment for individuals with special needs supports these findings. Conducted with a purposive sample of 25 educators from a pedagogical centre for deaf and mute individuals, the study concluded that engaging in sports significantly contributes to the psychological and social adjustment of individuals with disabilities by promoting social interaction and integration.

In conclusion, the hypothesis that there are differences between the means of the pre- and post-test scores for the experimental group in the dimension of personal and emotional adjustment has been confirmed.

13.2 Interpretation and discussion of the results of the second partial hypothesis

The second partial hypothesis, which states that there are statistically significant differences between the pre- and post-test mean scores for health adjustment in the experimental group of final-year secondary school students, was confirmed. This finding is consistent with research conducted by Dr Bouglida Hassan in 2011 which examined the

impact of participating in team sports on behavioural issues among secondary school students. The study, which included 32 male participants selected on purpose, found that participating in team sports significantly improved negative behaviours, helping students to overcome antisocial tendencies. Furthermore, engaging in sports activities had a positive impact on self-concept and self-esteem. The research emphasised that team sports should not be limited to physical education classes or specific educational stages, but should be integrated at all levels (primary, intermediate and secondary) and extend beyond school to clubs and sports teams.

Similarly, Dr Ben Mustafa Ismail's 2019 study, titled 'The Effect of Teaching Using Guided Discovery in Team Games on Developing Psychological Adjustment Among Secondary School Students (Aged 15-16)', involved a sample of fifteen male first-year secondary school students. The results showed statistically significant differences in emotional adjustment between the pre- and post-tests, favouring the post-test. This confirms that teaching through guided discovery in team games significantly contributes to the positive emotional development of students. The study also found significant differences in physical and value adjustment, further reinforcing the positive impact of guided discovery teaching methods on health and adjustment.

Furthermore, in their 2019 study, Dr Ben Youb Abdul Ali and others examined the effects of teaching methods on the acquisition of open motor skills in team games among middle school students (aged 12-15). Selecting a purposive sample of 80 students, they concluded that using training and reciprocal methods improved skill levels in various open skills in team games. They also found that modern teaching methods, such as training and inclusion, were more effective than command methods for teaching these skills. This suggests the need to incorporate modern teaching methods into instructional plans for team games.

Based on these findings, we can confirm that the second hypothesis, which posits the existence of differences between the means of the pre- and post-test scores in the health adjustment dimension, has been confirmed.

13.3 Interpretation and Discussion of the Results of the General Hypothesis

The general hypothesis, which states that there are statistically significant differences between the means of the pre- and post-test scores for the experimental group in the dimension of psychological and social adjustment among final-year secondary school students, was confirmed. The results from the statistical tables relating to the first, second and third hypotheses, together with their interpretation in light of previous studies and the theoretical background, suggest that the recreational sports programme positively impacted the psychological and social adjustment scores of the students. Therefore, we conclude that the general hypothesis has been confirmed.

Conclusion:

Through our study, which had general, theoretical and practical objectives, we aimed to address behavioural problems, specifically the phenomenon of psychological and social adjustment among students, particularly those in their final year of secondary education. We investigated the impact of a recreational sports programme on alleviating this phenomenon and improving students' psychological and social behaviours, as well as their academic performance. It is important to note that anxiety levels tend to increase during this stage due to constant exposure to evaluative situations that determine their future, such as university entrance exams.

The findings of this study confirmed all hypotheses, demonstrating the effectiveness of the recreational sports programme in alleviating psychological and social adjustment issues. Thus, the general hypothesis was validated. The results of this study align with those of several local, Arab and foreign studies, including those by Ibrahim Bajis Maali (2013), Abu Muslim and Maisa Fadl (2014), Aponte and Aponte (1971) and Abu Hassouna and Nashaat Mahmoud Dheeb (2015) in Palestine, and Abdel Fattah Mohamed Ramadan (2011) in Egypt. These studies all confirmed a positive correlation between engaging in recreational and educational sports activities and addressing various academic issues.

However, few studies have focused on the effectiveness of recreational sports programmes in reducing anxiety among final-year secondary school students in our country. Most existing research has focused on the relationship between recreational activities and occupational stress among teachers, civil protection officers and police officers, as well as on younger and older populations and individuals with special needs. This suggests that interest in

developing therapeutic recreational programmes within education is still in its infancy and requires further research to help the education system achieve its goal of preparing well-rounded citizens, both physically and psychologically.

Our experimental study of the proposed recreational sports programme confirmed that students felt more at ease and acquired skills to cope with pressure, thereby reducing negative behaviours such as anxiety, distress, agitation and confusion, which impact behaviour and academic performance. We concluded that engaging in educational recreational sports naturally fosters personality development through the social and psychological benefits of leisure activities. These activities foster psychological stability and self-satisfaction, leading to sound mental health and appropriate psychological adjustment.

The researcher believes that organised recreational sports activities contribute to the development of both motor and psychological capabilities. They transform ordinary practice into beneficial engagement, enabling students to learn how to face situations, assess problems in their academic lives and understand how their actions can be effective in improving and developing their performance in stressful situations that generate anxiety.

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