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Common Sports Injuries Experienced by Students During the Physical Education and Sports Baccalaureate Exam

Zohra BENALI, IEPS, University of Chlef, Algeria
Hadjer Guemri, IEPS, University of Chlef, Algeria
Soufiane MAHI, IEPS, University of Chlef, Algeria
Tahar NAHOUI, ENS Laghouat, Algeria
Mansour BENLAKEHAL, IEPS, University of Mostaganem, Algeria
Foukrach ZOUBIDA, IEPS, University of Chlef, Algeria
Henni DEHLI, IEPS, University of Chlef, Algeria
Hamel BOUHAİK, IEPS, University of Chlef, Algeria
Hamid DALI, IEPS, University of Chlef, Algeria
Ibrahim SBAIHIA, IEPS, University of Chlef, Algeria
Abdellah LAMECHE, IEPS, University of Chlef, Algeria

Corresponding author : Dr. Soufiane MAHI, s.mahi@univ-chlef.dz

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Abstract:

This article addresses the phenomenon of common sports injuries experienced by high school students while taking the Physical Education and Sports (PES) Baccalaureate exam. Despite the critical importance of this subject in building the student's personality physically and psychologically, and in guiding them during the sensitive adolescent phase, the evaluative and decisive nature of the exam is accompanied by the risk of injuries of varying severity. The study's problem revolves around identifying the factors causing these injuries, focusing on three main dimensions: inadequate warm-up, unsuitable field surfaces at examination centers, and students' frequent absence from PES classes during the school year, which leads to a decline in their physical fitness and motor coordination. The article concludes that protecting examinees requires a comprehensive preventive strategy based on: mandatory regular participation in classes to ensure physical adaptation, raising awareness of the importance of warming up and appropriate sports equipment, and the necessity for competent authorities to prepare sports facilities according to safety standards, ensuring the exam is taken in a safe environment that achieves educational and health goals.

Keywords: Sports injuries, Physical Education and Sports, Baccalaureate exam, Warm-up, Field surface, Adolescence.

Introduction:

Physical education and sports are a fundamental pillar in the modern educational system, as their goals go beyond merely developing motor skills to include building the student's personality in its physical, mental, and social dimensions. As an active educational pillar, this subject contributes to preparing a balanced generation capable of adapting to society's requirements. Its goals are clearly manifested in the high school stage, which represents a critical turning point in the student's life.

The practice of sports activities at this stage is highly sensitive due to its coincidence with adolescence, a period that psychologists and educators, such as Dorothy Rogers and G. Stanley Hall, unanimously describe as a time of profound transformations and psychological storms. These rapid physiological changes, accompanied by increased glandular secretions and unequal growth between muscles and nerves, often lead to disturbances in motor behavior and a loss of precision and balance. This makes the student in dire need of precise scientific guidance that ensures their safety and security.

Recognizing these challenges, the Algerian legislator has paid great attention to school health, where the physical education and sports laws (starting with Order No. 81 of 1976 and up to the 2004 law) emphasized the teacher's responsibility in protecting students from dangers, while establishing the subject as a mandatory and official test for all candidates in the Baccalaureate certificate exam.

However, practicing sports activities within the framework of this evaluative and decisive exam is not without risks. Although the ultimate goal of sports is to promote health and physical fitness, the reality on the ground records the occurrence of sports injuries of varying severity and intensity. These injuries occur as an inevitable result of the interaction of several internal and external conditions. Perhaps the most prominent of these is the inadequacy in warm-up operations, which is a physiological and psychological necessity to prepare the body, as well as the neglect of using appropriate sports equipment (such as sports shoes), and the different nature and rules of the competitions being tested.

Problem Statement:

Physical education and sports are an essential part of the educational system, representing a facet of general education that works to develop the student's personality and prepare them physically and mentally in perfect balance. It relies on the motor activity that characterizes it, taking on a range of physical and sports activities as a cultural and social pillar. It is considered one of the educational programs most capable of achieving the goals of society. This is evident through the extent to which the objectives of physical education and sports are achieved in the high school stage. In this context, knowing the characteristics of growth and the needs of the student is of great importance, especially since high school students are living through adolescence, which many psychologists agree is a transitional phase between childhood and adulthood that requires careful handling and a scientific approach. Dorothy Rogers believes that "adolescence is a period of physical growth and a social phenomenon, as well as a period of deep psychological transformations."

As for G. Stanley Hall, he "described it as a period of storms, anxiety, and instability due to its psychological difficulties" and physiological disturbances, which lead to disturbances in motor behavior and increased glandular secretions, resulting in rapid muscle and nerve growth, and a loss of precision and balance in movements due to unbalanced growth. For this reason, they need teachers capable of maintaining the safety and health of the students. As stipulated in 1976 (Order No. 81/10 in Clause 23 of the Physical Education and Sports Law in Algeria): the teacher must work to protect students from the dangers that may afflict them and maintain their safety. Likewise, the Physical Education and Sports Law of 2004 stipulated that the physical education and sports subject is a prescribed subject for all candidates for the Baccalaureate certificate exam. Physical education and sports are a means for a better healthy life, and health must be a goal that the student maintains when engaging in any sports activity, because the students' physical condition is the basic foundation on which the health of motor performance rests. Physical fitness is the means that serves physical activity, and no field of sports activity is devoid of the possibility of injuries of various types and severity, which occur under the influence of natural conditions and external conditions such as poor warm-up. We know that warming up is the process that physiologically and psychologically helps the student perform a certain sports movement. Likewise, shoes work to protect the student from injuries during sports competitions. Injuries vary from one competition to another due to their nature, playing methods, and rules. Based on this, we raise the following questions:

General Question:

- What are the sports injuries that third-year high school students are exposed to during the physical education and sports exam?

Sub-questions:

- Is there a relationship between poor warm-up and sports injuries among students during the physical education and sports exam?

- Is there a relationship between the unsuitability of the examination center field surfaces and sports injuries during the physical education and sports exam?

- Is there a relationship between students' non-attendance in physical education and sports classes and sports injuries?

Hypotheses:

- There is a relationship between poor warm-up and sports injuries among students during the physical education and sports exam.

- There is a relationship between the unsuitability of examination center surfaces and students' sports injuries during the physical education and sports exam.

- There is a relationship between students' non-attendance in physical education and sports classes and their injury during the physical education and sports exam.

Research Importance:

The importance of the topic of sports injuries experienced by third-year high school students during the physical education and sports exam lies, on the one hand, in its significant importance because it has not received attention in Arab studies in general and the Algerian environment in particular. On the other hand, given the negative repercussions that injuries may have on students' health and performance, this study came to address the topic of sports injuries during the PES exam in order to know their types, causes, methods of first aid, and how to treat them.

The study also reveals the test in which students are most exposed to injury, as well as the administrative and legal measures that must be taken when a sports accident occurs.

Research Objectives:

- Aiming to identify the types of injuries students are exposed to during the physical education and sports exam.
- Aiming to identify the areas of the body susceptible to injury among students during the exam.
- Aiming to identify the sports competition during which students are most exposed to injuries during the exam.
- Aiming to know the causes of injuries from the perspective of supervising teachers and injured students.
- Knowing the role of the physical education and sports teacher in the prevention and treatment of accidents and sports injuries.
- Aiming to know the legal and administrative measures that must be taken in the event of an injury during the exam.
- Attempting to uncover the shortage that educational institutions face regarding teachers framing the physical education and sports subject.
- Adding new information to the scientific and cognitive repository in this field.

Definition of Research Terms:

1- Definition of Injury: It is a disruption or impairment by an external factor to the functioning of the athlete's various body tissues and organs. This factor often has different causes; it is either a mechanical factor or a physiological technical one.

Operational Definition: Injury is what affects the student during the physical education and sports exam as a result of natural or external factors.

2- Definition of High School Phase: UNESCO defines the high school phase as the middle stage of general education, preceded by middle education and followed by higher education, in most developed and developing countries of the world alike, and it corresponds to the age group of 15 to 19 years.

Operational Definition: The high school phase refers to the third-year high school students preparing to take the Baccalaureate exam.

3- Definition of the Physical Education and Sports Exam: It is considered one of the most important evaluation and measurement tools in the educational system, a series that allows determining the state of the learner's development. Perhaps the true definition of the exam is what was stated in the legal texts for organizing official exams: it is a set of tests in different subjects of the official prescribed programs organized by the tutelary ministry and culminating in a certificate such as the Baccalaureate exam.

Operational Definition: It is the decisive exam between the high school phase and higher studies and includes four activities: Sprints, Middle-distance running, Shot put, and Long jump.

4- Definition of Education: Linguistically: Education (Tarbiyah) comes from 'Raba', meaning increased and grew. I educated the body means I refined and trained it.

Education is the action exercised by adult generations on generations that are not yet mature for social life. It aims to arouse and develop a number of physical, intellectual, and moral aptitudes demanded of them by society as a whole, and the specific environment for which the individual is destined. Education is a continuous process of adaptation and reconstruction and shaping of experience, aimed at expanding and deepening the social content of that experience, which directs the individual towards effective contribution to their environment.

Terminologically: Education is the process of adjustment or adaptation, which is the process of interaction between the individual and their social environment for the purpose of achieving adaptation and harmony between the human being and the values and attitudes imposed by the environment, depending on the degree of its material and spiritual development.

5- Definition of Physical Education and Sports: It is considered an important part of general education because it is the educational process through which various activities are practiced that develop and maintain the human body, mind, skills, and emotions, and allow the achievement of sensory-motor, emotional-social, and cognitive goals, completing both mind and body together.

Operational Definition: Physical education and sports are an integral part of general education, working to ensure that the individual is raised in the best possible way in terms of physical strength, bodily soundness, vitality, and activity through selected physical activities practiced under the leadership and supervision of teachers. This aims to prepare them appropriately from the physical, mental, and social aspects.

Study Methodology:

We used the descriptive method, which is defined as an investigation focused on a phenomenon as it currently exists to diagnose it, reveal its aspects, and determine the relationships between its elements.

Study Location:

Exploratory Study: Due to working in the field of education, we noticed through participation in the supervision committees of the physical education and sports exam in the two sessions (2018-2019) that students were exposed to sports injuries. Therefore, we saw the need to research the cause of these injuries and a means that would be sufficient to reduce them. We contacted a group of teachers of the subject who confirmed the occurrence of various and multiple sports injuries during the physical education and sports exam.

Research Sample:

The researcher determined a sample to conduct this research, estimated at 120 male and female students participating in the physical education and sports exam, distributed across three high schools in the wilaya of Chlef. The sample was chosen randomly, by drawing two lists (males, females) from the total participating lists in each high school, as shown in the following table:

Table No. (01) shows the distribution of the sample size of examined students

High School Name	Number of Males	Number of Females
Ali Chachou	20	20
Bouaissi Mohamed	20	20
Ardjoune Maamar	20	20
Total	60	60

As for the sample of teachers to whom we distributed the questionnaire, it numbered (80) teachers, distributed across the physical education and sports examination centers in the wilaya of Chlef.

Study Design:

To carry out this study, we used interviews with injured students, which included 06 closed and semi-open questions. We also used a questionnaire directed at teachers, containing closed, semi-open, open, and multiple-choice questions, categorized into three main axes.

Validity and Reliability of Study Tools:

Validity is one of the most important conditions that must be met in study tools. Lindquist (1951) defines it as the accuracy with which the test measures what it was designed for. There are many types of validity, including:

- Face validity
- Content validity
- Intrinsic validity: meaning the internal validity of the questionnaire.

We calculated the reliability of the questionnaire using the test-retest method on a sample of 15 teachers, with a time interval of 8 days between the first and second applications. The results were as follows:

Correlation coefficient value $r = 0.86$, which is a significant value at 0.05 with a 95% confidence level.

Since the reliability coefficient of the questionnaire equals 0.86, the intrinsic validity coefficient is as follows:

Intrinsic validity = Square root of the reliability coefficient.

Intrinsic validity = 0.920.

Research Tools:

The researcher's choice of data collection tools depends on many factors, as the nature of the problem and hypotheses dictate the selection process. To study the topic of injuries from all aspects and accurately identify their nature, we relied on the following tools:

- Observation
- Questionnaire
- Interview

Summary of the Observation Card:**Table No. (02) Location and symptoms of injury**

Injury Location	Symptoms	Sports Competition	Males Freq	Males %	Females Freq	Females %
Ankle	Sprain	Middle-distance, Long jump	9	28.12	11	28.94
Thigh	Contraction-Tear	Sprint	6	18.75	8	21.05
Knee	Sprain	Middle-distance, Sprint	4	12.50	5	13.15
Hand	Hand pain	Shot put	4	12.50	4	10.52

Shoulder	Shoulder pain	Shot put	3	9.38	3	7.89
Elbow	Elbow pain	Shot put	2	6.25	2	5.26
Foot	Pain when walking	Middle-distance, Shot put	2	6.25	2	5.26
Back	Lower back pain	Long jump	1	3.12	2	5.26
Abdomen	Stomach pain	Middle-distance	1	3.12	1	2.63

Analysis and Discussion of the Observation Card:

Through following up on the physical education and sports examination centers for three high schools, we recorded the following observations:

- The percentage of injuries among females is higher than that of males, estimated for females at 28.54 compared to 72.45 for males.
- The areas exposed to injury among students are the joints (ankle, knee, hand, elbow, shoulder, foot), then the muscles (thigh, lower back, abdomen).
- Most of these injuries cause mild or severe pain in students, while some complain of sprains, tears, and contractions when injured in the ankle, thigh, and knee.
- Students of both sexes were injured in all sports competitions programmed in the physical education and sports exam, to varying degrees from one competition to another.

Analysis and Discussion of the Interview Results with Injured Students:

Question 01: What is the location of the pain (location of the injury)?

Objective of the question: To know the areas susceptible to injury among students during the physical education and sports exam. Their answers were according to the following table:

Table No. (03) shows the frequencies and percentages of areas susceptible to injury

No.	Injury Location	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %
1	Ankle	9	28.12	11	28.94	20	28.57
2	Thigh	6	18.75	8	21.05	14	20
3	Knee	4	12.50	5	13.15	9	12.86
4	Hand	4	12.50	4	10.52	8	11.43
5	Shoulder	3	9.38	3	7.89	6	8.57
6	Elbow	2	6.25	2	5.26	4	5.71
7	Foot	2	6.25	2	5.26	4	5.71
8	Back	1	3.12	2	5.26	3	4.26
9	Abdomen	1	3.12	1	2.63	2	2.86

Analysis and Discussion of the Results:

It is clear from Table No. (03) that the areas most susceptible to injury among students during the PES exam are the ankle injury with a rate of 28.12% for males and 28.94% for females, then the thigh injury with a rate of 18.75% for males and 21.05% for females, followed by the knee injury for males at 12.50% and 13.15% for females, then the hand injury for males at 12.50% and 10.52% for females, and the shoulder injury at 9.38% for males and 7.89% for females, then the foot injury at 6.25% for males and 5.26% for females, followed by the back injury at 3.12% for males and 5.26% for females, and finally the abdominal injury at 3.12% for males and 2.63% for females.

Question 02: What are the causes of the injury?

Objective of the question: To know the students' opinion about the causes of the injuries they were exposed to during the physical education and sports exam. Their answers were according to the following table:

Table No. (04) shows the frequencies and percentages of the causes of injuries

Answer (Causes)	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %
Short warm-up period	28	87.50	35	92.10	63	90
Unsuitable field surface	28	87.50	30	78.94	58	82.85

Performance errors	3	9.37	18	47.36	21	30
Psychological aspect	4	12.50	12	31.57	16	22.85
Incomplete recovery from injury	6	18.75	2	5.26	8	11.42
Sports clothing	5	15.62	7	18.42	12	17.14
Fatigue	8	25	10	26.31	18	25

Total Frequency = 196 Percentage = 70

Question 03: Do you practice the physical education and sports class in the institution?

Objective of the question: To know the injured students' opinion about their perseverance in practicing the physical education and sports class in the institution. Their answers were according to the following table:

Table No. (05) shows the percentage of practicing physical education and sports in the institution

Answer	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %	Calc χ^2	Tab χ^2	Sig Level	df	Decision
Always	10	31.25	12	31.58	22	31.43	7.4	5.99	0.05	02	Significant
Sometimes	16	50	17	44.74	33	47.14					
Rarely	6	18.75	9	23.68	15	21.43					
Total	32	100	38	100	70	100					

Analysis and Discussion of the Results:

As shown by the answers in the table and confirmed by the Chi-square test, we note that the calculated Chi-square value is greater than the tabulated Chi-square value at an error level of 0.05 and 2 degrees of freedom. From this, we conclude that the null hypothesis is rejected, and thus there is statistical significance, which is reflected in the fact that 47.14% of the students (males and females) answered that they sometimes practice PES classes and sometimes do not. In contrast, we find a rate of 31.43% of students whose answer was that they always practice PES classes in the institution, while we find 43.21 of students' answers that they rarely practice PES classes.

Question 04: Is the physical education and sports class sufficient to prepare for this exam?

Objective of the question: To know the students' opinion on the sufficiency of the PES class to prepare them for this exam. Their answers were according to the following table:

Table No. (06) shows the frequency and percentages regarding the sufficiency of the PES class

Answer	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %	Calc χ^2	Tab χ^2	Sig Level	df	Decision
Yes	12	37.50	14	36.84	26	37.14	4.62	3.84	0.05	01	Significant
No	20	62.50	24	63.16	44	62.86					
Total	32	100	38	100	70	100					

Analysis and Discussion of the Results:

As shown by the answers in the table and confirmed by the Chi-square test, the calculated value is greater than the tabulated Chi-square value at an error level of 0.05 and 1 degree of freedom. From this, we conclude that the null hypothesis is rejected, and thus there is statistical significance, which is reflected in the fact that 62.86% of the students (males and females) answered that the PES class is insufficient to prepare them for this exam, compared to 37.14% who answered that the PES class is sufficient to prepare them for this exam.

Question 05: Do PES teachers offer you advice and guidance to avoid sports injuries?

Objective of the question: To know the students' opinion about the role of the teachers on the day of the exam and the advice and guidance they provide. Their answers were according to the following table:

Table No. (07) shows the frequency and percentages for the teacher's role on the day of the exam

Answer	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %	Calc χ^2	Tab χ^2	Sig Level	df	Decision
Always	7	21.88	9	23.68	16	22.86	6.53	5.99	0.05	02	Significant
Sometimes	10	31.25	11	28.95	21	30					
Rarely	15	46.87	18	47.37	33	47.14					
Total	32	100	38	100	70	100					

Analysis and Discussion of the Results:

As shown by the answers in the table and confirmed by the Chi-square test, we note that the calculated Chi-square value is greater than the tabulated Chi-square value at an error level of 0.05 and a degree of freedom equal to 1. From this, we conclude that the null hypothesis is rejected, and thus there is statistical significance, which is reflected in the fact that 47.14% of the students (males and females) answered that teachers rarely offer advice and guidance on the day of the exam to avoid injuries. In contrast, we find a percentage of 30% of the students (males and females) answered that PES teachers sometimes provide them with advice and guidance to avoid injuries and achieve good results, while a group of students, estimated at 22.86%, believe that teachers always offer advice and guidance to avoid injuries on the day of the exam.

Question 06: What is the most difficult competition in the PES exam?

Objective of the question: To know the students' opinion about the most difficult competition in the PES exam. Their answers were according to the following table:

Table No. (08) shows the frequency and percentages for the most difficult sports competition

Answer	Males Freq	Males %	Females Freq	Females %	Total Freq	Total %
Sprints	10	31.25	13	34.21	23	32.85
Middle-distance running	26	81.25	36	94.73	62	88.57
Long jump	16	50	18	47.36	34	48.57
Shot put	6	18.75	10	26.31	16	22.85

Analysis and Discussion of the Results:

It is clear from the table that the most difficult competition in the PES exam, according to the students' answers, is: the middle-distance running competition at 81.25% for males and 94.73% for females, then the long jump competition at 50% for males and 47.36% for females, followed by the sprint competition at 31.25% for males and 34.21% for females, and then the shot put competition at 18.75% for males and 26.31% for females.

From these results, it becomes clear to us that the most difficult sports competition faced by students together is the middle-distance running competition (600m for females - 800m for males) at 88.57%. The reason for this, according to the students, is the length of the race distance, lack of preparation, large number of laps, hard surface, collisions with peers during the race, and overtaking in the curves, which causes them to clash with each other and subsequently fall.

Then the long jump competition at 48.57%. The reason for this is due to lack of preparation, a hard sandpit, fear of injury during the takeoff, and then landing in the sandpit. Followed by the sprint competition at 32.85%.

The reason for this, according to the students, is that it requires a greater effort, causing physiological fatigue, the hard field surface, and lack of preparation. Then the shot put competition at 22.85%, and the reason for this is due to transporting the shot put and the lack of control and familiarity with it.

Conclusion

In conclusion, it is abundantly clear that the physical education and sports subject, despite its pivotal role in achieving psychological and physical balance for high school students, remains a potential environment for sports injuries if safety and security conditions are absent, especially during a decisive evaluative milestone accompanied by psychological pressure like the Baccalaureate exam. These injuries that disturb the peace of this educational event are not a coincidence, but rather the result of a negative interaction of a group of field and behavioral factors.

On the one hand, the inadequacy in the warm-up process constitutes an obstacle that deprives the student of the necessary physiological and psychological preparation, making them vulnerable to muscle tears and sudden traumas. On the other hand, the interruption of regular practice and non-attendance of physical education classes throughout the school year lead to a decline in physical fitness levels and a loss of motor coordination, leaving the student facing an intense and sudden effort on the day of the exam. The crucial role of infrastructure cannot be overlooked in any way, as unsuitable or unprepared surfaces in the examination centers are a real trap that threatens the safety of examinees and renders sports shoes ineffective.

Therefore, reducing the phenomenon of sports injuries in the Baccalaureate exam requires moving from a diagnostic approach to an integrated preventive approach, based on the following recommendations:

- Mandatory regular practice: Consolidating a culture of attendance and active participation in physical education classes throughout the school year to ensure the muscular and neurological adaptation of the high school student.
- Spreading a preventive culture: Educating students about the importance of proper warm-up as a biological necessity and not a mere formality, while emphasizing the wearing of appropriate sports equipment.
- Upgrading sports facilities: The competent authorities must assume their responsibilities in maintaining and preparing the field surfaces of the examination centers to meet the required safety standards before the start of official exams.

- Intensive pedagogical guidance: Enhancing the role of the subject teachers in psychological and physical framing, taking into account the emotional changes of adolescence to avoid impulsiveness or excessive enthusiasm that leads to injury. Protecting the student from sports hazards is not merely a legal obligation stipulated by school legislation, but rather an educational and moral trust that ensures they pass this critical stage safely and embodies the noble goals of physical education as a safety valve for society's health.

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