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ACCIDENT PREVENTION IN PHYSICAL EDUCATION LESSON AT THE FACULTY OF MACHINE BUILDING AND INDUSTRIAL MANAGEMENT

BY

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Abstract. Injury prevention during physical education lessons is essential to ensure the safety of students and to enable them to actively participate in sports activities without risk. The term prevention is commonly used to stop or prevent from happening, but it also means to slow, hinder, or prevent an event before it happens. To prevent it is enough to decrease the probability of the occurrence of events from which such accidents result.

Keywords: engineering, students, prevention, injury, health.

1. Introduction

The paper focuses on four sections: a General warm-up information, Activity-specific heating, Traumatic injuries and Accident prevention in which very useful information is presented both to the students of the Faculty of

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Mechanical Engineering but also to the future engineers in order to maintain a good state of health and suitable for 8 or 12 hour activities in the field of work.

2. General warm-up

General warm-up in sport is an essential part of physical preparation before a physical education lesson or a competition. Its main aim is to prepare the body for physical exertion, reducing the risk of injury and improving sports performance. It usually consists of a series of low- to moderate-intensity exercises targeting the main muscle groups and joints.

The objectives at this stage of the lesson are related to increasing body temperature and warming up raises the temperature of the muscles, which improves their elasticity and the efficiency of contractions (Iacono *et al*., 2021). Increased blood flow which helps better oxygenation of the muscles helps prevent early fatigue. Activation of the nervous system which improves coordination and reaction speed (Phillips, 2015). Injury prevention should be achieved by carefully selecting mobility and stretching exercises which help prevent muscle strains and tears.

3. Activity-specific heating

After the general warm-up, the last phase of warm-up follows, namely the warm-up before the start of the programmed activity-the activity-specific warm-up. This warm-up is the transition to those movements that are common to the sport or activity that the student is to perform in the next phase of the lesson.

This is performed at progressively increasing intensities and helps to prepare the specific muscles and movements required to achieve optimal neuromuscular performance (McArdle *et al*., 2010). Specific warm-up periods differ depending on the sport or activity programmed into the lesson set. There are numerous approaches to specific warm-up periods and some examples include the following means: sprints performed through technique drills and specific movements (e.g., A-skip, single exchange, triple exchange), followed by slow to fast sprints. Upper and lower body exercises; bilateral and unilateral jumps, 10-second acceleration, deceleration and change of direction drills (2-3 sets of 6-10 repetitions; about 5 minutes).

In team sports (soccer, handball) as a specific warm-up we can exemplify: two 3-minute halves of small games with a 1-minute passive recovery between games.

There is a recommendation from most specialists in the field to include flexibility exercises as part of the warm-up. Flexibility is a combination of the range of motion of a moving joint and the extensibility of the tissues surrounding that joint. The most direct way to increase an athlete's flexibility is through stretching.

There are three types of stretching:

1. Static: Passive movement maintained for a set period of time, usually 10 to 30 seconds;

2. Dynamic: Controlled movement to and from a stretched position without holding at the end of the interval;

3. Combination of static and dynamic stretching in which an end position is reached an end position, but the movement (usually a jumping motion) (Potach and Meira, 2022).

4. Traumatic injuries

Traumatic injuries occur when a single stressor or force introduced in exertion on a body segment. When it exceeds its tolerance injury occurs. Sometimes these forces are introduced from the outside (as in the case of contact with an object or an opposing player), and sometimes it may be internal (as in the case of a muscle). Most anatomical structures can be injured by trauma, and the most commonly encountered are:

– Ankle sprains which involve tearing of the fibers of the lateral (outer) ligaments, and frequently occur when the foot turns inward (inversion) to a greater degree than the ligaments can tolerate.

– Achilles tendon ruptures in which tearing of the fibers that connect the main plantar flexors of the calf to the heel occurs - occur when greater forces are transmitted through the tendon than the tendon can tolerate (Bratu, 2013).

– Fractures of the radius bone, which often involve the ulna in the fracture, can occur when an athlete falls on an outstretched hand, transmitting more force than the bone can tolerate (Paraschiv *et al*., 2013).

– Dislocations or subluxations of the shoulder often occur when a student moves too far anteriorly, introducing a force greater than the glenohumeral labrum - a stabilizing edge of cartilage in the shoulder.

– Traumatic injuries to the tendon behind the knee frequently occur while the tendon is producing a large force and is then required to produce more force than it can tolerate (due to position, speed or both) (Sbenghe, 2008).

5. Accident prevention

There is a probability, as a result of the experience gained as a specialized teacher, that at some point, due to a combination of factors, various events may occur that result in more or less serious injuries (Bejinariu *et al*., 2017). A proper warm-up before physical activity prepares muscles and joints, reducing the risk of injury, while stretching plays an important role by increasing flexibility and preventing muscle strains.

The appropriate equipment to be able to perform the exercises without difficulty (Bernevig-Sava *et al*., 2019). Students should wear appropriate clothing

and footwear for physical activities. Quality athletic shoes and clothes that allow free movement are essential.

The teacher must explain and demonstrate correct techniques for executing exercises and movements. Exercises performed incorrectly can lead to injury.

Careful monitoring of students, the teacher should closely supervise students to identify mistakes or dangerous movements and correct them immediately. Exercises and activities should be adapted to the age, level of readiness and health status of the students. Over-exertion can cause injury.

Regular breaks and proper hydration help maintain performance and prevent fatigue, which can contribute to injury. Teachers should be trained in first aid techniques and have a first aid kit available in case of minor injuries.

These measures help create a safe environment in PE lessons, reducing the risk of injury and promoting an active and healthy lifestyle.

6. First aid in the physical education lesson

The incidence of injuries during a physical education lesson or training is quite low due to the respect of the rules established by the teacher at the beginning of each academic year.

However, due to certain factors, such as lack of concentration, non-compliance with important rules during the teaching process, accidents may occur which may be minor or more serious.

In the case of minor traumas, such as for example scratches, various wounds created by a fall, the teacher can act with components from the first aid kit, which should be obligatory in every sports base, disinfect the wound and stop the bleeding with sterile compresses, if necessary, the respective segment can be immobilized.

There is also the category of severe trauma, in which we can exemplify bone fracture, trauma that requires special attention, the injured part should not be moved or if necessary, as little as possible. Seek specialist help or call an ambulance.

Dislocations or dislocations, an extremely serious trauma in which the ends of the bones come out of the joint, causing severe injuries. In this case too, the injured person should produce as few movements as possible and specialized help should be sought (Paraschiv, 2023).

Sprains are the most common traumas encountered in the classroom, they can be mild or more serious, the mild ones can be treated locally with ice and anti-inflammatory ointments, also internally with anti-inflammatory drugs. In the case of more serious sprains, a specialist should be consulted, as failure to treat them correctly can have negative effects for long periods of time.

7. Conclusions

Therefore, the general warm-up phase contributes to the prevention of injuries, bringing the body to the parameters necessary for physical exertion. The purpose of the activity-specific warm-up is to make the transition from general exertion to that specific to the programmed activity. The most common injuries that occur in Physical Education lessons can be prevented by following the rules established at the beginning of each academic year.

The first aid measures can be applied in cases of mild injuries, in case of severe traumas, specialized help is always required. The rigorous respect of all the factors involved in the development of a Physical Education lesson contributes successfully to the achievement of the established objectives, accident prevention being the most important aspect of a lesson.

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PREVENIREA ACCIDENTĂRILOR ÎN LECȚIA DE EDUCAȚIE FIZICĂ LA FACULTATEA DE CONSTRUCȚII DE MAȘINI ȘI MANAGEMENT INDUSTRIAL

(Rezumat)

Prevenirea accidentărilor în timpul lecțiilor de educație fizică este esențială pentru a asigura siguranța studenților și pentru a le permite să participe activ la activități sportive fără riscuri. Termenul de prevenire este utilizat în mod obișnuit pentru a opri sau a împiedica să se întâmple, dar înseamnă și să încetinești, să împiedici sau să previi un eveniment înainte ca acesta să se întâmple. Pentru a preveni este suficient să micșorăm probabilitatea de producere a unor evenimente din care să rezulte asemenea accidentări.