Universal Journal of Public Health 11(2): 277-283, 2023 http://www.hrpub.org
DOI: 10.13189/ujph.2023.110210

# Assessment of the Level of Knowledge and Management of Medical Emergencies in Sports by Students of the University of Sports of Tirana, Albania

**Lindita Agolli[1], Aida Bendo[2,*]**

[1]Department of Kinesiology, Faculty of Science Rehabilitation, Sports University of Tirana, Albania
[2]Department of Movement and Health, Faculty of Physical Activity and Recreation, Sports University of Tirana, Albania

*Received January 31, 2023; Revised March 6, 2023; Accepted April 7, 2023*

***Cite This Paper in the Following Citation Styles***

***(a):*** *[1] Lindita Agolli, Aida Bendo , "Assessment of the Level of Knowledge and Management of Medical Emergencies in Sports by Students of the University of Sports of Tirana, Albania," Universal Journal of Public Health, Vol. 11, No. 2, pp. 277 - 283, 2023. DOI: 10.13189/ujph.2023.110210.*

***(b):*** *Lindita Agolli, Aida Bendo (2023). Assessment of the Level of Knowledge and Management of Medical Emergencies in Sports by Students of the University of Sports of Tirana, Albania. Universal Journal of Public Health, 11(2), 277 - 283. DOI: 10.13189/ujph.2023.110210.*



**Abstract** *Aim*: The aim of this study is to identify the level of knowledge and the ability to manage critical situations in sports among sports students in Tirana, the Albanian capital. *Material and methods*: This was a cross-sectional study. A questionnaire was administered to 418 students. The questionnaire was divided into 2 parts; the general knowledge about medical emergencies and their knowledge of how to manage the critical situations in sports. The source of information was asked in the questionnaire as well as demographic questions. Students who participated in the questionnaire were divided into two groups: Gr. A sport students and Gr. B non-sports students. This questionnaire was carried out before the start of the medical emergency program. The applied method is observation and comparison. Spearman's correlation coefficient was used to assess linear associations and paired t-test was employed to compare matched/paired numerical variables. *Results*: From the questionnaire, 86% of students answered that they had general knowledge about medical emergencies and 47% of them had partial knowledge in management of them but only 3.6% thought that they could apply their knowledge. 72% of students answered that they had information about head injury where 36% knew how to manage and only 1.5% could apply their knowledge. Even for heart disease, asthma attack, allergic reaction; students answered that they had general information, but less than 2% of them could apply this knowledge in an emergency situation. *Conclusions*: Sports students are more informed about emergencies in sports compared to non-sports students. They also have more knowledge of medical emergency in sports management. Very few of all students think they're good at managing them. The main sources are school curriculum, first aid course. There is insufficient knowledge about medical emergencies in sports and non-sports students. This situation obliges us to do more extensive study. By collecting data in a more significant number of cases, more reasonable conclusions should be reached to carry out training with teachers, sportsmen, as well as the possibility of opening a new curriculum in study programs.

**Keywords** Medical Emergency, Sports, Students, Albania

## 1. Introduction

Nowadays digital technology has influenced how people spend their time on a daily basis. They are spending more time on their technology devices and less time on physical activities and exercise. This reduction of physical activity has influenced in increasing the number of cases of diseases such as: obesity, diabetes, heart diseases, depression, etc. For these reasons, the governments of different countries, supported by civil society, have

promoted policies to make the population more aware of the necessity of physical activity and sports as a crucial part of living a healthy lifestyle. Various policies have been applied, such as: involving the young generation in sports at schools, the improvement of the conditions of sports facilities, the increase of extracurricular activities, the stimulation of sportsmen and the increase of sports activities. Exercising different sports, besides health benefits, is also fun and their exercise should be as minimally dangerous as possible. But sometimes medical emergencies can occur. This requires knowing when an event should be considered an emergency and how to act when faced with such a situation.

Coaches and other staff members often find themselves acting as first responders, and the actions they take can be critical to the outcome in a case of a medical emergency. In these situations, an important question arises: how much information do athletes, trainers, support staff, physical education teachers have on emergencies in sports and how prepared are they to manage these situations? According to data from various Olympic Federations, 1% [1, 3, 8] of sports emergencies end up in the medical emergency [1, 8, 10]. This percentage is considered important considering that these situations are life threatening. Emergencies in sports are different and are influenced by internal and external factors [2, 12]. By knowing them and following well-defined protocols we can prevent various situations and save lives. There are six most common medical events that occur in sports: Head and Neck Injuries, Heat Stroke [5, 7], Asthma, Allergic Reaction/Anaphylaxis, Cellular Suffering Due to Extreme Stress/Exercise [5], Sudden Death [12].

The University of Sports in Tirana offers sports science and education training to athletes and trainers of all sports, physical education teachers and sports physiotherapists. In different sports medicine curricula, some emergencies in sports are treated separately. In the professional Master's program, the module of critical situations in sports is treated in a special curriculum. Evaluating the importance of training students on medical emergencies, we decided that before developing the course, we would know the level of knowledge of the students in order to design a program that is as suitable and beneficial for them as possible. This program should include a necessary material base as well as an interactive relationship between the lecturer and the student for the acquisition of knowledge on recognition for the prevention of critical situations as well as the preparation of a generation capable of providing first aid.

## 2. Materials and Methods

### Study Design

This was a cross-sectional study, in which students completed a structured and anonymous questionnaire on medical emergencies in sports. The study aimed at gathering information in terms of knowledge about medical emergencies and the ability to respond to them. It was conducted by the students of the first year of Professional Master for the years 2020-2022. This cohort includes students who practice sports and students who study to become physical education teachers. The questionnaire was completed before the development of the course.

### Study Participants

418 students were included in this study, of whom, 243 were athlete students and further 171 were students who do not participate in any sport activity. All the students studied at the Sport University of Tirana.

### Data Collection

The questionnaire is divided into sections that include questions about emergency knowledge as a whole, according to each emergency (the top 6), as well as their ability to provide first aid for any situation, specifically highlighting cardiopulmonary resuscitation (CPR). Before filling out the forms, the students were informed about the content of the medical emergencies in sports course module as well as the purpose of filling out the form. The questions were analyzed as a whole and divided into two groups. Group A-student athletes and group B students who do not play sports in organized teams. The forms were filled out by the free will of the students. It was observed on the knowledge about emergencies, management protocols and their ability to manage these situations within the allowed legal limits.

Students who had knowledge were asked if they could indicate the sources from which they had it. The knowledge between students who were athletes and those who do not practice any sport was compared.

### Statistical Analysis

Data was collected and analyzed by use of SPSS, version 20. Mean values and their respective standard deviations were calculated for numerical variables. Absolute frequencies and their respective proportions (percentages) were calculated for categorical variables. Conversely, paired samples t-test was used to compare mean values of matched (paired) numerical values. On the other hand, Spearman’s rho, a non-parametric version of Pearson’s correlation coefficient, was used to assess the linear association between numerical variables. In all cases, a p-value $\leq 0.05$ was considered as statistically significant.

**Table 1.** Results of sources of emergencies expressed in percentage.

| Knowledge sources in sports emergencies Gr.A: n= 243, Gr.B: n = 171. | | | | | | |
|---|---|---|---|---|---|---|
| | **School curriculum** | **First aid course when obtaining a driving license** | **Internet** | **Movies** | **Media** | **Sports event** |
| Gr.A | 75.7% | 71.2% | 39.1% | 12.8% | 30.1% | 63.4% |
| Gr.B | 77.2% | 44.4% | 49.1% | 16.4% | 28.4% | 18.7% |

**Table 2.** Questionnaire data in percentages for three kinds of emergencies.

| **Emergencies** | **Knowledge in emergencies** | | | **Knowledge in emergency management** | | | **Ability to act in emergencies** | | |
|---|---|---|---|---|---|---|---|---|---|
| Average for eight questionnaires | Tot. (59%) | Gr.A (64%) | Gr.B (36%) | Tot. (22.8%) | Gr.A (77%) | Gr.B (23%) | Tot. (11%) | Gr.A (87%) | Gr.B (13%) |
| General knowledge | 86 | 59.5 | 40.4 | 47.6 | 67 | 33 | 3.6 | 73.3 | 26.7 |
| Head and neck injuries | 72 | 54.7 | 48.3 | 36 | 88.6 | 11.4 | 1.5 | 89.9 | 10.1 |
| Heat stroke | 72.2 | 72.6 | 27.4 | 48 | 84 | 16.1 | 48 | 83.9 | 16.1 |
| Asthma | 51.7 | 48.1 | 51.9 | 11.4 | 49 | 51 | 0.96 | 50 | 50 |
| Allergic reactions/Anaphylaxis | 38.4 | 58.5 | 41.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Suffering from great effort/ training | 37.9 | 64.7 | 35 | 13.5 | 96.4 | 3.6 | 13.5 | 96.4 | 3.6 |
| Sudden death | 41.8 | 97.7 | 2.3 | 9.4 | 77 | 23 | 0 | 0 | 0 |
| Knowledge of (CRP) | 71.7 | 65 | 35 | 16.3 | 69.1 | 30.9 | 0.96 | 75 | 25 |

# 3. Results

From the number of students n=418, n=414 of them completed the questionnaire and 4 questionnaires were found to be invalid. Hence, the number of questionnaires that were used in the analysis was n = 414. The division into groups resulted in Gr. A = 243 (student athletes) and Gr. B = 171 (students who do not practice organized sports). The method used is observation and comparison.

For the group A, the main sources of knowledge in sports emergencies are: school curriculum 75.7%, first aid course 71.2 % and sport event 63.4 %, and the second sources are internet 39.1%, media 30.1% and movies 12.8%. For the group B, the main sources are: school curriculum 77.2%, Internet 49.1% and first aid course 44.4%, followed by media 28.4%, sport event 18.7%, and movies 16.4%.

From the comparison of the sources for both groups, the sources of first aid and sports event are superior for group A, while the source of internet is more dominant for group B.

### General Knowledge

Regarding the knowledge about emergencies in sports, in general 86% of students have knowledge and as a consequence a positive response from which 59.5% from group A and 40.4% from group B (figure 1), whilst for management of emergencies a total 47.6% of students were divided mainly 67% from group A and 33% from group B (figure 2). The small vale of 3.6 % in ability to apply the knowledge in emergency situations consisted of 73.3% for group A and 26.7 % for group B (figure 3).

### Head and Neck Injuries

The students have a 72% of knowledge of emergencies cases related to head and neck injury, from which 54.7% student athletes and 48.3% non athletes' students. 36% of emergencies management are consisted mainly 88.6% for group A and a small part of 11.4% from group B. The low value of 1.5% in ability to act in emergency situations is almost 90% for group A and 10% for group B. Thus, they in general have knowledge about the management of neck trauma, but they think that in this case it is up to the first aid to act to help.

### Heat Stroke

The knowledge of heat stroke emergencies is 72.2% divided into 72.6% and 27.4% respectively for A and B groups. While the management and ability to apply the knowledge in heat stroke, have the same percentage of participants of 48%, divided into equal values of 84% and 16% for both groups respectively. However, the students know enough about its management and how to apply the knowledge in this emergency (figure 1; figure 2).

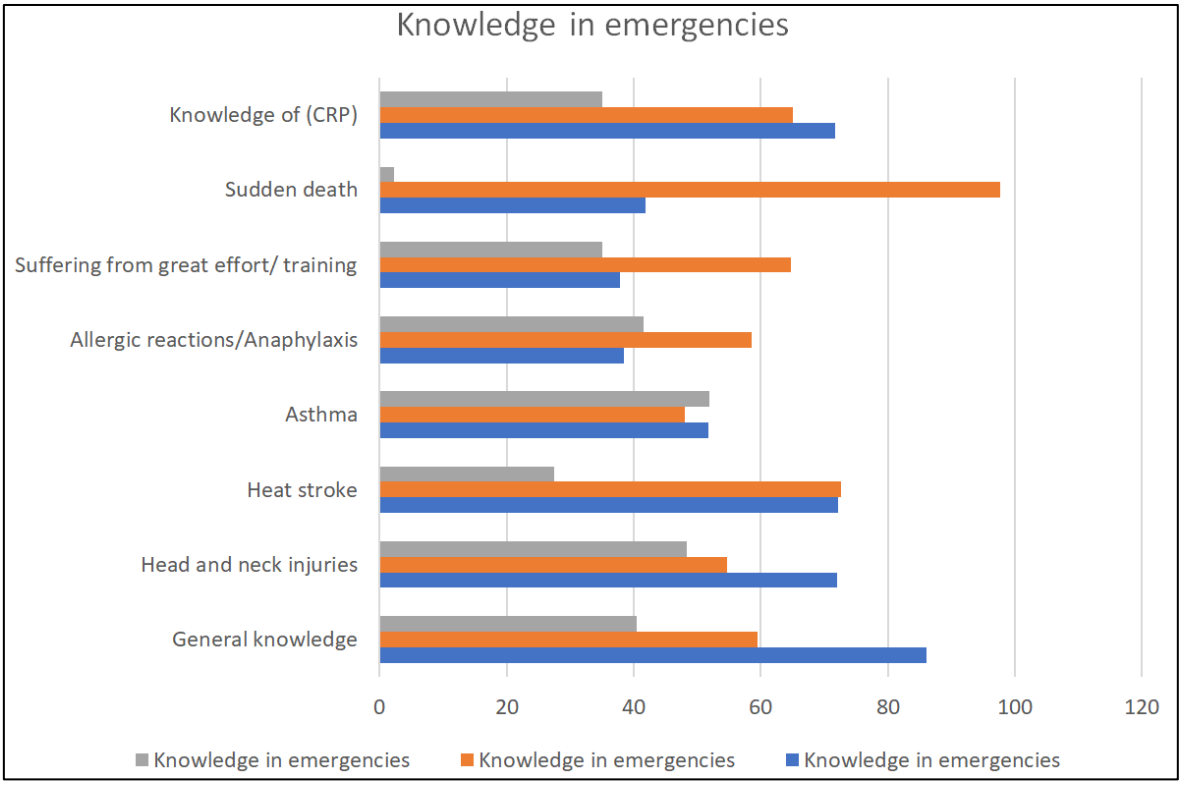


**Figure 1.** The knowledge of emergencies.

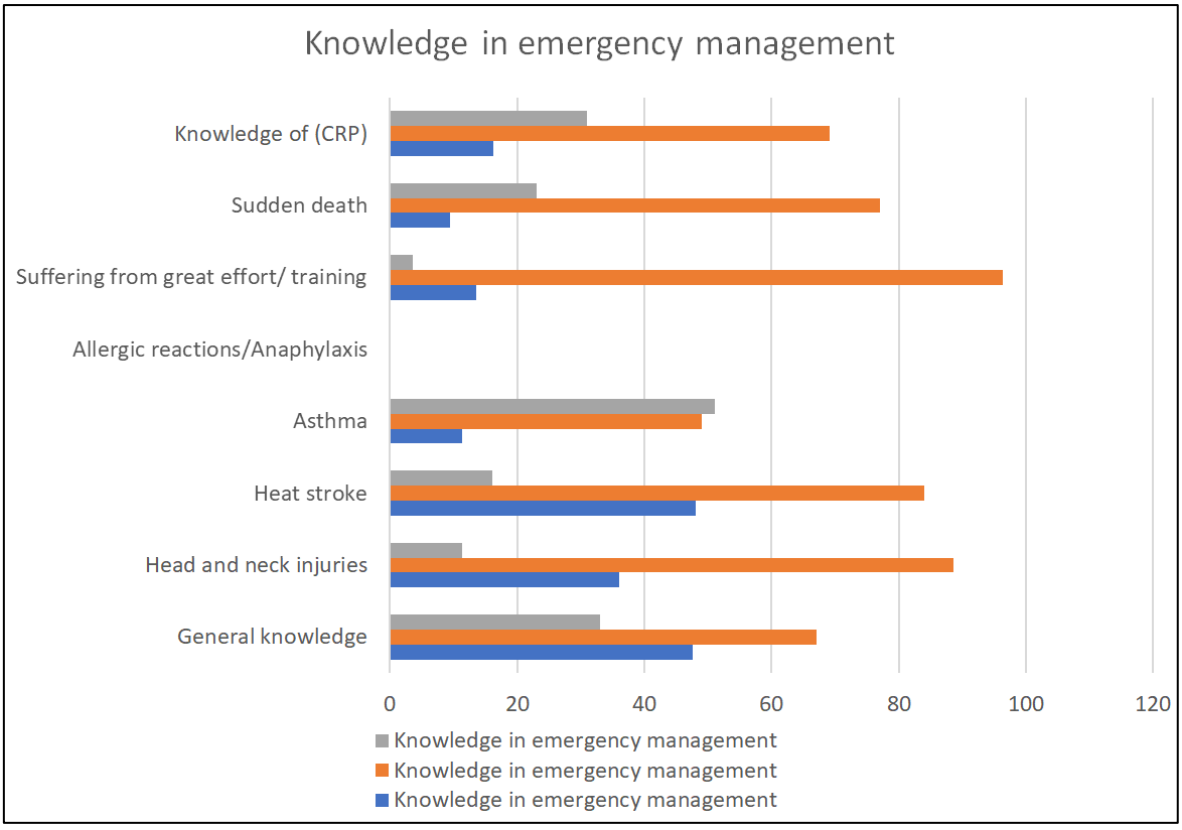


**Figure 2.** The knowledge in emergency management

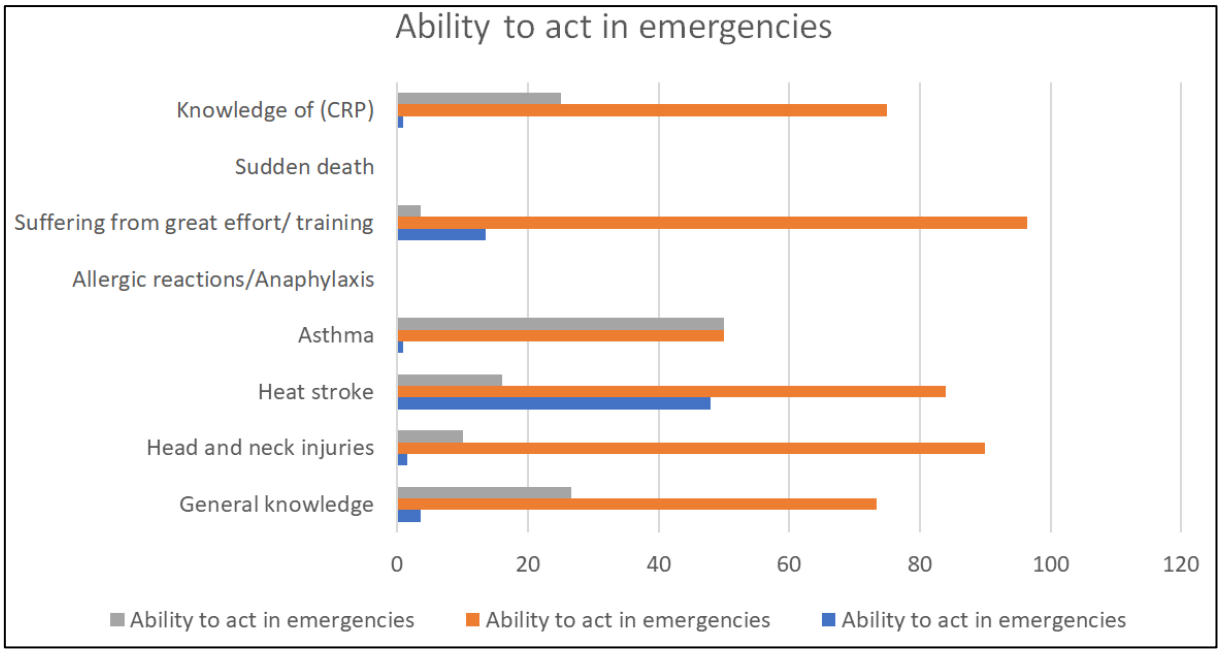


**Figure 3.** The graph of ability to act in emergencies.

### Asthma

The same situation is reported in asthma emergencies, which are related to management 11.4% and ability 0.96% in total, and both are divided into 49% and 51% for management and in equal values 50% for both groups. The knowledge of students regarding asthma is 51.7% in total, from which 48% athlete's students and 52% nonathletic students. Most of them had partial knowledge about management; also they consider first aid as the responsibility of the health service.

### Allergic Reactions/Anaphylaxis

The knowledge of allergic reactions emergencies is only theoretical. Anaphylaxis was known by 38.4%, divided into 58.5% and 41.5% values, while the students have no knowledge of how to manage and how to apply this knowledge in emergency cases. Everyone thinks that first aid is the responsibility of the health service.

### Cellular Suffering/Great Efforts

Cellular suffering due to great efforts/Training emergencies has the small number of responses participants 37.9%, from which 64.7% and 35% for two groups respectively. But this question has the same effect regarding management and ability to apply 13.5% in total, consisting of 96.4% of group A and 3.6% of group B. Most of the students have partial knowledge to manage and how to apply it in this situation.

### Sudden Death

Sudden death emergencies are the knowledge which is known by 41.8%, from which 97.7% by athletes' students and 2.3 % by non athletes' students. Also, from 9.4% of total management of emergencies, the main part is known 77% from group A and 23% from the other group. It is noticed the fact that in this case, no one from both groups has the ability how to act in this emergency situation.

### Knowledge of Cardiomyopathy (CPR)

The last questionnaire about CRT knowledge has a 72.7% of total positive responses of participants, from which 65% athletes' students and 35% non-athletes' students. Management knowledge has a positive response of 16.3% of students divided into 69.1% and 30.9% respectively for groups A and B. The number of students who have taken part in CPR questionnaire is very low which is 0.96% in total, with 75% from group A and 25% from group B. Analyzing three kinds of knowledge in emergency cases, 59% in total are divided into 64% and 36% for groups A and B respectively, knowledge in emergency management 22.8% in total is divided into 77% and 23% between two groups, and the third kind emergency in ability to apply the knowledge in emergency cases has the smaller responses participants, 11% in total, consisted mainly 87% by athletes' students and 13% by non athletes' students. These data show that in general they have the knowledge of how it is managed, and they have the knowledge for the ability to apply CPR cardiopulmonary resuscitation (providing first aid), but doubt that they can apply it.

**Table 3.** The correlation coefficient and statistical significance

| Variables | Correlation coefficient | p-value (2-tailed) | Interpretation |
|---|---|---|---|
| Knowledge in emergencies versus two groups | 0.710 | <0.001 | Strong linear relationship, highly statistically significant |
| Emergency management versus two groups | 0.631 | 0.093 | (moderate correlation, borderline statistically significant) |
| Ability to act in emergencies versus two groups | 0.942 | <0.001 | Very strong correlation, highly statistically significant |

**Table 4.** Results of t-test paired sampled statistics.

| Emergencies | Pairs | t-value | Degrees of freedom (df) | p-value | Interpretation |
|---|---|---|---|---|---|
| Knowledge | group A- group B | 4.763 | 7 | 0.000 | Statistically significant |
| Managing | group A- group B | 2.875 | 7 | 0.024 | Statistically significant |
| Ability to apply | group A-Group B | 1.909 | 7 | 0.098 | Borderline statistically significant |

Table 3 reveals the significant relationship and correlation between three kinds of emergencies and two groups of students. In the table shown, the factor of emergencies is classified by the kind of variables affecting the group. The coefficient of correlation r = 0.710 shows a marked relationship between the knowledge of emergencies versus two groups and p= 0.000 < 0.05 (p-value) is a significant relationship between them [15]. For the second variable emergency management versus two groups, the value r = 0.631 shows a moderate correlation, but p = 0.093 > 0.05 shows a relationship not statistically significant. This is explained by the small positive response in the management of emergencies, with a value of 22.8% overall. However, the coefficient of correlation r = 0.942 shows a very high correlation and p = 0.000 < 0.05 indicates a very dependable relationship and statistically significant. This is closely related to the value of 87% of sports group which knows to apply the knowledge in emergencies situations.

The data for emergency kinds and two groups of student's participation were analyzed using Paired samples t-test [14]. Table 4 shows that for the knowledge variable, the respective results for this test are: t(t) = 4.763; p = 0.000 < 0.05 statistically significant. The significance level for the second variable in t-test is as follow: t (7) = 2.875 and p = 0.024 < 0.05 statistically significant. The third kind of variable ability to apply the knowledge of emergencies is reported by values: t (7) = 1.909 and p = 0.098 > 0.05, statistically no significant. Finally, the results taken from table 4 may be interpreted as that the knowledge of emergencies of management compared in paired samples t-test for both groups is statistically significant, despite the number of participant's positive response, while the ability to apply the knowledge of emergencies t-test results shows a p- value greater than 0.05, despite the high coefficient of correlation and its significance which is related closely with the value of 87% of sports group, which can be explained with a very small number of participant's response of 11% in total.

# 4. Discussion

Students have several sources of knowledge. The source of the Red Cross driver's license exam is the reason that there are a greater number of positive responses to first aid knowledge, with no difference between the two groups (figure 1).

Another source that has influenced is the acquisition of knowledge in the first cycle (bachelor) through medical subjects such as: human physiology, blood diseases, trauma, endocrine diseases, etc. The above data confirm this. Managing situations from the above data is significant. But it is noted that the knowledge of how to act and how capable they are of acting in a critical situation is problematic and guides us to important conclusions in terms of education and training through the school curriculum. The largest number of students who answered positively is that of sportsmen compared to students who do not practice organized or collective sports (figure 2). Athletes' students have better knowledge than students who are not athletes [13]. The difference between the groups is more visible in the most frequent emergencies in sports where even the first aid is given by the medical staff which assists during training or competitions. In the sports group, an essential role too is the protocols that athletes must follow to prevent emergencies such as dehydration [8], heat stroke [6,7], cellular suffering due to great exertion [5], neck and head trauma [4,11].

In general, the results show that there is a big difference between knowledge about emergencies, and knowledge about their management (figure 2, figure 3). Their ability to

apply emergency management protocols leaves much to be desired [9]. The main reason, we think, lies in the insufficiency of practical training, which has led to a lack of confidence in their application in critical situations. They view these situations as separate from action and think that only specialized people are authorized and can do it.

## 5. Study Limitations

This study may have several limitations including the sample representativeness, the possibility of information bias, and the study design. The sample included in this study may not necessarily be representative of all students attending the University of Sports in Albania. Also, the possibility of information bias cannot be excluded, an issue which may have affected the results of the study. In addition, the study design was cross-sectional and, as such, does not allow to draw conclusions regarding the causality of the observed associations (relationships).

## 6. Conclusions

There is insufficient knowledge about medical emergencies in sports. This situation obliges us to do a more extensive study, which includes athletes in teams and physical education teachers. By collecting data in a more significant number of cases, more reasonable conclusions should be reached to carry out training with teachers, sportsmen, as well as the possibility of opening a new curriculum in study programs.

## REFERENCES


[1] Preventing Common Sports Emergencies/preventing common sports emergencies. Risk management library (forms, articles, templates, videos) https://www.sadlersports.com/riskmanagement/

[2] Julian R. Jonathan G. Emergencies in Sports Medicine. Clin Med(Lond).12(5), 493, 2012. doi: 10.7861/clinmedicine.12-5-493

[3] DF Peterson, et al. Etiology and incidence of sudden cardiac arrest and death in young competitive athletes in the USA: a 4-year prospective study. Brit J Sport Med. 55(21):1196-1203; 2021. DOI: 10.1136/bjsports-2020-102666

[4] Coulson R, et al. Best practices and current care concepts in prehospital care of the spine-injured athlete in American tackle football. J Athl Training, Vol; 55(6); 545–562, 2020. DOI: 10.4085/1062-6050-430-19

[5] University of Connecticut, Korey Stringer Institute. Exertional Sickling. https://ksi.uconn.edu/emergency-conditions/exertional-sickling/

[6] Casa DJ, et al. National Athletic Trainers Association's position statement: Fluid replacement for Athletes. Athletic Training. 35(2): 212-224, 2000. https://www.reliasmedia.com/articles/51114-national-athletic-trainers-8217-association-8217-s-position-statement-fluid-replacement-for-athletes

[7] Luhring K, et al. Cooling effectiveness of a modified cold-water immersion method after exercise- induced hyperthermia. J Athl Training. Vol. 51(11), 946–51; 2016. DOI: 10.4085/1062-6050-51.12.07

[8] Donna L. Merkel, and Joseph PT, MS, SCS, CSCS1 T. Molony Jr, PT, MS, SCS, CSCS2 Medical Sports Injuries in the Youth Athlete: Emergency Management. Int. J Sports Phys Ther.7(2):242-251; 2012. https://pubmed.ncbi.nlm.nih.gov/22530197/

[9] Denis Ca. Epidemiology of Injury in Pediatric and Adolescent Sports. Injury in pediatric and Adolescent Sports Book. Springer. 2016, p: 191-203. https://link.springer.com/book/10.1007/978-3-319-18141-7

[10] Kathrin Steffen. Epidemiology of Injury in Elite Youth Sports. Injury in Pediatric and Adolescent Sports. Epidemiology, Treatment and Prevention. Springer. 2016. P: 79-90 https://link.springer.com/chapter/10.1007/978-3-319-18141-7_6

[11] Basri Lenjani, et al. Emergency Medical Care and Management of Sports Injuries on the Football Court. Albanian Journal of Trauma and Emergency Surgery. 5(1). P. 773-777, 2021. https://doi.org/10.32391/ajtes.v5i1.172

[12] Stephen Stache 1, David Howell, William P Meehan 3rd. Concussion Management Practice Patterns Among Sports Medicine Physicians. Clin J Sport Med; 26(5):381-5. 2016. DOI: 10.1097/JSM.0000000000000270

[13] CE Article Education: Training Emergency care in Athletics Part 1. 2021. https://www.hmpgloballearningnetwork.com/site/emsworld/education/ce-article-emergency-care-athletics-part-1

[14] Field A. Discovering statistics using spss,3rd edition, 2009, Chap. 2,3.

[15] Griffiths Mike. Basic Quantitative Methods. Computer exercises & Reference Information, 2011-12, p: 26-29, 40-42, 82-83.