

EXPLORATION OF INJURY KNOWLEDGE LEVELS, PREVENTION AND FIRST AID FOR CLIMBING ATHLETES

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Abstract

Objective. The aim of this study was to determine the level of knowledge of climbing athletes regarding injury awareness, prevention and first aid specifically in climbing. In the process of exploration, the level of knowledge includes various methods and concepts, such as how well does the athlete know about injuries, types of injuries, and assistance when and what treatment should be given. *Method.* This type of research is quantitative research with a quantitative descriptive design. The population taken was students of rock-climbing athletes who love nature and the environment, Padang State University (MPALH UNP). Non-random sampling was done to obtain $n=20$ participants, consisting of 65% (male) and 35% (female) which included three climbing category numbers, namely lead climbing (LC), speed climbing (SC) and bouldering climbing (BC). *Results.* Knowledge of injuries, prevention and assistance in the sport of climbing by MPALH UNP with a score of 48.45 ± 8.4 was found to be in the fairly good category. "Good" score value category $n = 1$ (5%). "fairly good" category $n=15$ (75%). Then the score for the "Not good" category $n = 4$ (20%). *Conclusion.* The results of this study indicate that the level of knowledge of MPALH UNP climbing athletes on knowledge, prevention and first aid is still in the good enough category, although some athletes score in the poor category. Thus, specific training must be provided by the management and the climbing division of the UNP MPALH so that they can improve their capacities in terms of injuries, prevention and first aid to perform.

Keywords: Climbing Injuries; Knowledge; Prevention; First aid

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INTRODUCTION

The goal of systematic athletic training and development continues to evolve with a variety of contemporary field theories to enhance athletic performance (Balyi, Istvan; Way, Richard; Higgs 2013; Bompa and Buzzichelli 2015; Johnson et al. 2011; Moenig et al. 2023; Weinberg and Gould 2015). LC, SC and BC is a sport that has a high level of risk, although with different levels (Draper et al.

2015; Ilham and Dimiyati 2021). (Draper et al., 2015; Ilham and Dimiyati, 2021). Therefore, to carry out climbing activities, careful preparation is necessary, such as physical preparation (general-specific), preparation of knowledge of climbing techniques and strategic ability to analyze the climbing path. climbing exhaustively in order to complete the climbing course. (Horst 2012). Additionally, given the risks posed during training and competition, the skills that are very important before undertaking climbing activities, namely knowledge of injuries and appropriate assistance/actions when an injury occurs and after.

Injuries suffered by athletes can have a negative impact on the athletes themselves, such as feeling uncomfortable followed by pain during training activities, games or work, so that ongoing problems will arise such only injuries that worsen or may even interfere with the psychology of the athlete (Schweizer and Bircher 2012; Woollings, McKay, and Emery 2015). Climbing in carrying out its activities will use the physical and establish direct contact with nature/wall climbing (Dickson et al. 2012). Therefore, rock climbers need to be more alert and aware of injuries that can and have occurred, as well as first aid when such injuries occur. Without knowledge of injuries and first aid for sports injuries, success will be difficult to achieve, as it is a very necessary basic preparation for the safety of athletes in training and during competition and as a support for achieve goals. Rock climbing can be divided into two types, namely rock climbing which is done on real cliffs and aid climbing which is done on artificial cliffs or wall climbing, while numbers which are disputed in this sport are the numbers LC, SC and BC (Batuev and Robinson 2019; Giles et al. 2014).

One of the organizations active in climbing sports activities with the aim of not only leisure but also achievement, namely the Mahasiswa Pencinta Alama dan Lingkungan Hidup Universitas Negeri Padang (MPALH UNP), which is one of the Student Activity Units (UKM) at Padang State University, one of the divisions of which is the Climbing or Climbing Division. However, MPALH UNP's climbing athletes in the climbing division have never reached peak performance. Various factors that can influence success in sport climbing performance, e.g.

training programs, psychological conditions, family, finances, government support, injuries sustained, etc. (Brent et al. 2009; Krzysztof and Judyta 2019; Magiera et al. 2013).

The injury factor is of great urgency given that rock climbing is one of the extreme sports which at any time can lead to certain injuries (Pozzi, Pivato, and Pegoli 2016; Schöffl et al. 2012; Woollings et al. 2015). Based on structured interview observations, it was found that when performing rock climbing activities, members of the UNP MPALH often suffered injuries both during field activities and during training. . Additionally, it was found that n=20 athletes suffered injuries during climbing training, including injuries to ligaments, soft tissues, tendons, wrist ligaments, wrist pain, injuries and ankle injuries. So much so that it becomes an empirical factor at the origin of the lack of frequency of practice, and reduces the desire of the members of the UNP MPALH to take the climbing sector. Apart from this, there is also the fear of the members regarding the risk of injury which often occurs in climbing athletes in the MPALH UNP and is traumatic to return to sport due to post-injury.

Basically, MPALH UNP climbing athletes followed the educational steps contained in the UNP MPALH teaching program starting from basic education, continuing education and expedition activities including injury awareness climbing sports and first aid when the injury occurs. However, a rather extreme case of injury occurred in a rock climbing athlete from MPALH UNP who had an accident while performing rock climbing activities, LC on the cliffs of Lubuk Kilangan, Indarung, Padang, Indonesia. At the time of the activity, the team had carefully planned activities, including bringing crash first aid kits (P3K).

However, the accident that occurred resulted in a rather serious injury, namely a tear in the back of the scalp during a clean descent by climbing 2 hangers from the ground, while at that time the belayer did not was not nimble to pull the rope, the cliff fracture held by the climber broke so that the climber lost control and fell. So at that time, the belayer and the other athletes panicked and were confused about first aid. Finally, the victim was immediately evacuated to the

nearest health center for better treatment. During bouldering and wall climbing training, minor injuries are also common, which are sometimes just allowed to heal on their own without any treatment depending on the type of injury. Such habits should be avoided because even a minor injury can also lead to many long-term losses that will hamper your potential for success.

Based on the literature description and empirical issues above, it can be concluded that the knowledge of climbing athletes at the MPALH UNP regarding injuries and first aid in climbing sports injuries is still low. With this in mind, the purpose of this study was to examine the level of knowledge of climbing athletes in the MPALH UNP and the knowledge of first aid in sports climbing injuries of the athletes in the MPALH UNP. Thus, the benefit of this study is to determine the level of injury knowledge and knowledge at the time of first aid for MPALH UNP athletes, so that this research can become data that can be used by administrators, coaches and other climbing organizations. determine varying levels of injury knowledge and first aid knowledge for climbing injuries.

METHODS

Research Design

This type of research is quantitative research with a quantitative descriptive design. The population taken were students of rock-climbing athletes who love nature and the environment, Padang State University. The variables in this study were the level of injury knowledge (X1) and knowledge of prevention and first aid (X2) in climbing sports injuries as the independent variable, while the climbing athletes of the MPALH UNP (Y) were the dependent variable. For clarity, the conceptual framework for this study is presented schematically in Figure 1.

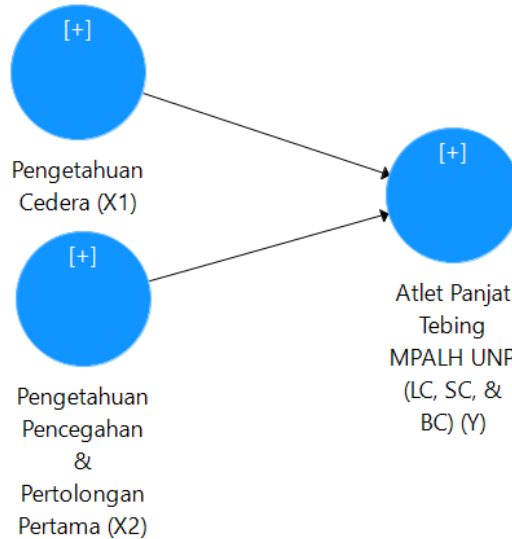


Figure 1. Injury Prevention and First Aid Knowledge Research Diagram for Climbing Athletes MPALH UNP, X1 = Knowledge of injuries, X2 = Knowledge of prevention and first aid, Y = Climbing athletes

Information:

(X) : Independent Variable

(Y) : Dependent Variable

→ : Connection Direction

To measure the two independent variables above, a questionnaire with an objective test was used in which there were several choices made by themselves depending on the substance of the variables and indicators to be measured.

Participant

Non-random sampling was done to obtain n=20 participants, consisting of 65% (male) and 35% (female) which included three climbing category numbers, namely lead climbing (LC), climbing speed climbing (SC) and bouldering. (BC). There are two demographics to see in more detail the participants who joined in this study. SEE (Tables 1 and 2).

Table 1. MPALH UNP Climbing Athlete Participants by Gender

Atlet Panjat MPALH UNP	Frequency	Percent	Valid Percent	Cumulative Percent
Man	13	65.0	65.0	65.0
Woman	7	35.0	35.0	100.0
Total	20	100.0	100.0	

Table 2. MPALH UNP Climbing Athlete Participation by Climbing Category
 Number

MPALH UNP Climbing Athletes	Frequency	Percent	Valid Percent	Cumulative Percent
Lead Climbing	9	45.0	45.0	45.0
Speed Climbing	6	30.0	30.0	75.0
Boulder Climbing	5	25.0	25.0	100.0
Total	20	100.0	100.0	

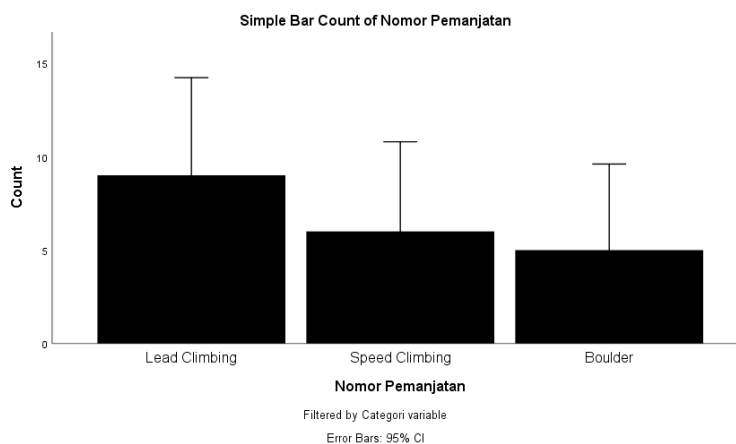


Figure 2. Illustration of participant demographics for each category of escalation number (LC, SC, dan BC).

Based on Figure 2. It also explains the demographic level of the study participants i.e., LC has a higher number, then followed by SC, then finally BC.

Measurement

The instrument used in this study was a questionnaire that previously had an instrument grid (SEE Table 3) made using the uploaded document method to determine the construct to study various literatures with an established database, such as journals with Scopus coverage to be presented with Quartile 4- Quartile 2 to determine the constructed questionnaire (Dimensions, Indicators and Factors) that will be carried out

Table 3. Research Questionnaire Grid.

No.	Variabel	Indicators	Number of Items
1.	Knowledge of sports injuries	a. Definition of Sports Injury b. Classification of types of sports injuries c. Classification of Sports Injuries d. Types of Sports Injuries	
	Types of climbing injuries	a. Blisters/Abrasions b. Bleeding under the skin c. Minor injuries d. Blisters e. Muscle bruises f. Injury to muscles, tendons and ligaments g. Nosebleeds h. Fracture	
	Prevention and management of sports injuries in climbing	a. Thanks to the skills b. Through physical exercise c. Prevention through the consumption of foods with adequate nutritional content d. Prevention by heating and covering e. Environmental prevention f. Through equipment g. Thanks to the help h. Pre-traumatic, traumatic, post-traumatic phase	

- i. Train by programming
- j. Intensity, frequency and duration of exercise
- k. Treatment according to type of injury
- l. Treatment of injuries with physiotherapy
- m. Countermeasures with massage

Then, based on the prepared grid “Injury Awareness, Prevention and Relief Questionnaire for Rock Climbing Athletes” was done with multiple choice with 4 choices namely, a, b, c, d. The validity of this research instrument was reported with a value of $v = 0.89$, while the reliability value of $r = 0.723$.

Data analysis technique

After verification of the data, all the data collected will be processed and analyzed according to the objectives and research questions. Data were analyzed using Microsoft Excel and SPSS version 25. This type of descriptive research is an analysis of data performed using the following percentage

$$\text{formula: } P = \frac{f}{n} \times 100$$

Information:

P = Presentation of the results obtained.

f = Frequency of each response.

n = number of respondents.

Once the data was collected, it was analyzed using descriptive analysis. Describe and discuss the data that has been analyzed, determine a qualitative description of the research results for each sub-variable with the average score for each indicator.

The results of data analysis refer to the classification below:

Table 3. Score Percentage Classification

No	Klasifikasi	Persentase
1.	Very good	81 – 100

2.	good	61 – 80
3.	Fairly good	41 – 60
4.	Not good	21 – 40
5.	poor	0 – 20

Next, describe and discuss the data that was analyzed, draw a qualitative picture of the research results for each sub-variable with the average score for each indicator.

RESULT AND DISCUSSION

Results

Participant demographics and descriptive results of the MPALH UNP Climbing Athlete Knowledge Tests, see **Table 5**.

Table 5. Descriptive analysis of injury knowledge, prevention and first aid for sports injuries in climbing MPALH UNP

No	Name Code	Jenis Kelamin	Climbing Category	Score	Category
1	ABCF	M	Speed	50	Fairly good
2	ADED	M	Speed	60	Fairly good
3	FAFAF	M	Lead	42	Fairly good
4	ERASFSF	M	Boulder	41	Fairly good
5	ADFA	W	Boulder	40	Not good
6	AERAR	W	Speed	45	Fairly good
7	AADFA	M	Lead	34	Not good
8	ASDFA	M	Lead	56	Fairly good
9	ASEA	M	Lead	50	Fairly good
10	ASDFA	W	Boulder	40	Not good
11	ASERA	M	Speed	60	Fairly good
12	ASDFA	W	Boulder	65	Good
13	ASFEG	M	Speed	50	Fairly good
14	FHJGH	M	Boulder	40	Not Good
15	JHJFG	W	Speed	43	Fairly good
16	GJMV	M	Lead	46	Fairly good
17	GHFGMV	W	Lead	47	Fairly good
18	VBNMVB	PA	Lad	55	Fairly good
19	BNMN	PI	Lead	60	Fairly good
20	VNVBJ	PA	Lead	45	Fairly good

AVG	48.45	Fairly good
STDV	8.46	

M: Man. W: Women. AVG: Nilai rata-rata. STDV: Standar deviasi.

The information in Table 5 of the results of the quantitative descriptive analysis revealed that the average knowledge of injuries, prevention and first aid for climbing athletes of MPALH UNP with numbers LC, SC and BC with an average score of 48.45 ± 8.4 in the Fairly Good category. The highest score is 65 in the fair category, while the lowest score is 34 in the poor category.

Table 6. Descriptive Results of Injury Knowledge, Prevention and Relief Knowledge Scores Achieved by MPALH UNP Climbing Athletes by Assessment Category

	Frequency	Percent	Valid Percent	Cumulative Percent
Good	1	5.0	5.0	5.0
Fairly good	15	75.0	75.0	80.0
Not Good	4	20.0	20.0	100.0
Poor	20	100.0	100.0	

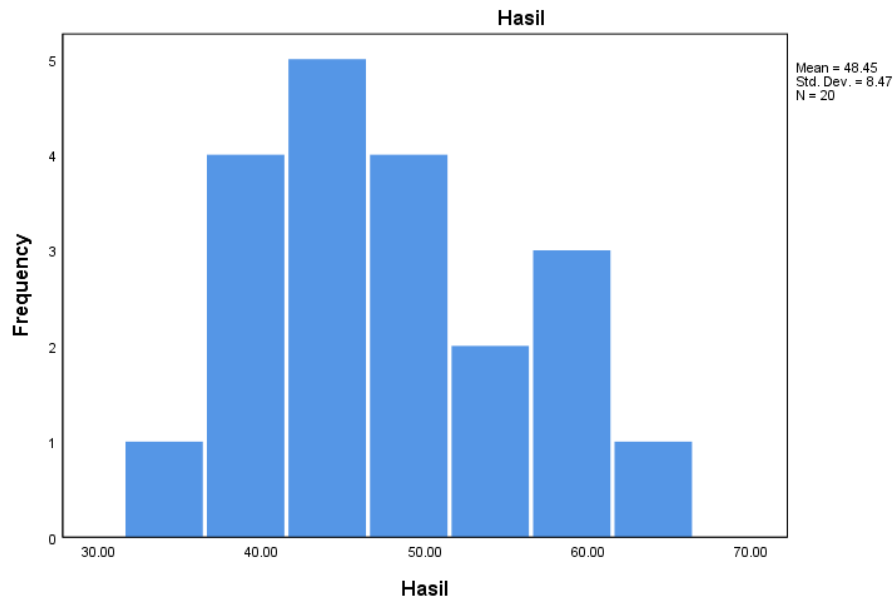


Figure 3. Histogram of results of knowledge analysis, prevention and first aid for climbing athletes MPALH UNP

Based on Table 6 and Figure 3, the results of the inferential statistical analysis revealed that the score in the "Good" category $n = 1$ (5%). "Fairly good" category $n = 15$ (75%). Then the score for the "Not good" category $n = 4$ (20%).

Discussion

Emphasis on injury awareness, prevention and relief is a core skill that must be possessed by athletes and coaches (Chen et al. 2018; Ristolainen et al. 2012; RYAN 1963; Sands and Stone 2005; Schweizer and Bircher 2012). This is closely related to long-term performance. Not a few athletes who stop at a productive age due to injury. The results of this study have an important role in presenting the data on the current conditions in a sport climbing organization, namely, MPALH UNP as information to be able to formulate policies that need to be taken after obtaining the data.

Empirically, it has been found that MPALH climbing athletes with good LC, SC, and BC numbers experienced a decrease in performance that needs to be investigated whether this is due to injuries that have been or are being sustained.

This is in line with research which found that MPALH UNP climbing athletes had a fairly good knowledge, in which case some of them performed worse. This is in line with research which indicates that injury risk factors will affect athletic performance in climbing (Backe et al. 2009; Larew and Haibach-Beach 2017; Schweizer and Bircher 2012; Sukarmin et al. 2021; Woollings et al. 2015)

The limitations of this study did not examine in detail the differences between the data for men and women. Also, it also doesn't look at the different categories of climbing numbers (lead, speed, or Boulder) if different data needs to be chosen. In addition, limitations in the number of samples greatly influenced this study. A larger number of participants is therefore necessary to make the questionnaire valid and reliable.

CONCLUSION

The results of this study indicate that the knowledge level of MPALH UNP climbing athletes with good LC, SC and BC numbers is still in the fairly good category, even though some athletes score in the poor category. Even if they did debriefings in elementary school. This can be the offer during basic education which is limited to general knowledge, namely first aid for injuries related to outdoor activities (Out-door CPP). So, special training should be provided by management and climbing division of MPALH UNP with good LC, SC and BC numbers to improve injury, prevention and first aid skills that need to be done when you feel yourself or a colleague. who is injured.

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