


Identification of Injuries in Amateur Boxing Athletes in Gorontalo City: Study for Developing Prevention and Treatment Strategies

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Article Info	ABSTRACT
<p>Article history:</p> <p>Received July 05, 2024 Revised July 28, 2024 Accepted July 31, 2024</p> <hr/> <p>Corresponding Author:</p> <p>Ibrahim Suleman Nursing Science Study Program, Faculty of Sports and Health, Gorontalo State University, Gorontalo, Indonesia Email: ibrahimsuleman@ung.ac.id</p>	<p>Injuries in boxing athletes often occur in the upper extremities of the body, especially the head and face, which can result in concussions, cuts and bruises. This research aims to identify the types of injuries experienced by boxing athletes in Gorontalo City and explore their causes. The method applied is a survey using questionnaires as the main data collection technique. The population of this study consisted of 50 active female boxing athletes from Gorontalo City. The results showed that the most common injuries occurring in boxing were injuries to the head and face (44%), followed by injuries to the wrist (29%), shoulders (29%), knuckles (22%), knees (16%), and ankle (16%). The main factors causing injury include conditions during training or competition (36%) and the time of injury (32%). Based on the results of this research, it can be concluded that the parts of the body most frequently injured are the head and face with a percentage of 44%. These findings emphasize the importance of developing injury prevention and treatment strategies, especially to the head and face, to improve the safety and health of amateur boxing athletes in Gorontalo.</p> <p>Keywords:</p> <p><i>injuries, boxing athletes, Gorontalo City, prevention strategies, injury treatment</i></p> <p>This article is licensed under a Creative Commons Attribution 4.0 International License.</p> <div style="text-align: center;"></div>

1. INTRODUCTION

Injuries in amateur boxing athletes are a common problem that can have a negative impact on performance and long-term health. This study aims to identify the most common types of injuries that occur in amateur boxing athletes in Gorontalo City and develop effective prevention and treatment strategies. This study is important because of the lack of local data that can be used as a basis for targeted health interventions. In the context of nursing, especially in the emergency field, treating boxing injuries requires special knowledge and skills to provide immediate and effective care [1]. Emergency nursing plays an important role in the initial stabilization, evaluation, and management of acute injuries that occur during competition or practice. Quick and appropriate injury treatment can minimize long-term negative impacts and ensure optimal recovery for athletes. Emergency nurses must be able to recognize the various types of injuries common to boxing, such as concussions, open wounds, bruises, and dislocations and fractures, and provide appropriate interventions. [2].

Emergency nurses must have strong clinical skills and in-depth knowledge of anatomy and physiology to assess and manage injuries effectively. For example, in the case of a concussion, the nurse must be able to perform a rapid neurological assessment and monitor the patient's vital signs and consciousness. Open wounds and bruises require proper wound cleaning techniques and dressing application to prevent infection and minimize pain. Dislocations and fractures require immediate immobilization and radiological assessment to determine the severity of the injury and the need for further treatment, such as reduction or surgery [3].

Boxing is one of the most popular martial arts sports in the world and many people know about this sport. This sport has a long history and has been an important part of various cultures since ancient times. Modern boxing, as we know it today, has strict rules and regulations to ensure the safety of the athletes. In every boxing match, two boxers will face each other in the ring, trying to defeat their opponent by hitting with their fists. This match consists of several rounds, with each round lasting three minutes, with a one minute break between rounds. [4].

Each fighter in a boxing match has different strategies and techniques to achieve victory. The main goal of a boxer is to hit his opponent as many times as possible with well-targeted punches. Punches that hit the target well will give points to the boxer. In addition, a boxer can be declared the winner if he succeeds in knocking his opponent down so that he is unable to get back up within ten seconds by the referee, which is known as a knock out (KO). [3]. In some cases, a match can also be won by judge's decision, if a boxer is deemed superior in terms of technique, aggressiveness and ring control during the match. Although boxing is an entertaining and thrilling sport, it also has a high potential for injury for its athletes. Injuries that often occur in boxing include lacerations to the face, bloody noses, concussions, and injuries to the hands and wrists. Therefore, it is very important to use various protective equipment such as boxing gloves, gear protectors and head protectors during training and matches. Additionally, boxers must undergo regular medical examinations and follow strict safety protocols to reduce the risk of serious injury. However, the risk of injury does not reduce the enthusiasm and dedication of boxers who continue to train hard and compete to achieve achievement and honor in the world of boxing. [5].

Sports injuries are all types of injuries that occur during training, matches or after matches [6]. These injuries can occur in various forms and levels of severity, ranging from minor injuries to serious injuries requiring medical intervention. Boxing, as a sport that is intense and full of physical contact, has a fairly high risk of injury. Boxers often suffer lacerations, bruises and concussions due to hard impacts that occur during matches. This makes understanding and treating injuries very important in the world of boxing.

Injuries in boxing athletes are a serious health issue, especially considering the physical nature of this sport which involves intense body contact. Amateur and professional boxing often results in significant injuries, especially to the upper extremities of the body and the head. The head and face are the most vulnerable parts of the body, often subject to concussions, cuts and bruises. Injuries to the wrists, shoulders, knuckles, knees, and ankles are also common. These types of injuries not only affect an athlete's performance, but can also have long-term impacts on their health.

According to Setiawan in 2021, injury is tissue damage caused by technical errors, collisions, or physical activity that exceeds the training load limit. In boxing, injuries are often caused by blows received to the head and body, which can cause various types of tissue damage. Technical errors in hitting or defending can also cause injuries, such as wrist or shoulder injuries. In addition, excessive physical activity and training loads that are too heavy can cause muscles and bones to no longer be in an optimal anatomical state, which increases the risk of further injury. [6].

To reduce the risk of injury, boxers must follow proper training protocols and use appropriate protective equipment. Coaches and medical teams also play an important role in ensuring athlete safety, by providing appropriate technical guidance and conducting regular health checks. Proper recovery after injury is also vital to preventing long-term complications and ensuring the boxer can return to competition in the best condition [7]. With a holistic approach to injury prevention and management, the risk of injury in boxing can be minimized, although the sport still has elements of risk that cannot be avoided. As in other combat sports, especially boxing, intense physical contact and direct confrontation during training and matches are an integral part of this sport. Thus, it cannot be denied that boxing athletes have a high risk of experiencing serious injury. In every training session and match, boxers attempt to defeat their opponents with a series of punches, which often lead to heavy blows to the head and body. This risk of injury is a major concern in the world of boxing, both for professional and amateur boxers [4].

Based on data from the Active and Safe Central page, there are 17.1 to 23.6 injuries per 100 boxing matches. These numbers show that injuries in boxing are something that is quite common and almost unavoidable. These statistics cover a wide range of injuries ranging from minor ones such as bruises and lacerations to more serious injuries such as concussions and bone damage. In fact, it is estimated that 4 injuries per 100 minutes occur in both professional and amateur boxing matches, indicating a high frequency of injuries in this sport. Injuries like these not only affect a boxer's immediate performance, but can also have long-term impacts on their health and career.

To overcome this high risk of injury, it is important for every boxer to receive proper training on safe and effective techniques. In addition, the use of protective equipment such as boxing gloves, head protectors and protective gear must be standard in every training session and match. Close health monitoring by a medical team is also necessary to detect and treat injuries as early as possible. With a comprehensive approach to injury prevention and treatment, although boxing remains a risky sport, these efforts can help reduce negative impacts and maintain the safety and well-being of boxers [8].

The theoretical basis shows that injuries to boxing athletes often occur in the upper extremities of the body, especially in the head, which can result in concussions, cuts and bruises. Apart from that, injuries also often occur on the face, such as cuts and bruises, as well as injuries to the nose. Other areas susceptible to injury include the knuckles, which can be injured or broken by an inappropriate blow. The wrist is also susceptible to sprains, while the shoulder can be dislocated due to impacts or falls during the game [2].

Data shows that the injury rate in female boxers is lower than in male boxers. Female boxers have an injury rate of 8.9 per year, while male boxers have an injury rate of 13.3 per year. Despite this, injuries to boxing athletes, both male and female, remain a major concern in efforts to improve the safety and welfare of boxers. With a better understanding of injury patterns and the risk factors involved, more effective prevention efforts can be implemented to reduce the frequency and severity of injuries in the sport of boxing.

The various types of injuries that often occur in boxing can be divided into several categories based on the location of the body affected. Firstly, head injuries include bruises, abrasions and bleeding, which are often caused by hard blows received during the game. Second, injuries to the body include strains, sprains, abrasions, bruises and

fractures, which can occur due to impacts or hard falls on the ring floor. Third, injuries to the arms and hands include abrasions, bruises, dislocations, fractures, strains and sprains, which can be caused by inappropriate blows or excessive pressure on the joints and bones. Lastly, injuries to the feet and legs include bruises, dislocations, abrasions, sprains, strains and fractures, which often occur when boxers move actively around the ring or when dodging an opponent's attack. [9].

Valuable knowledge about the types of injuries that often occur in boxing. With a better understanding of these various injury risks, boxers and medical staff can take appropriate preventive measures to reduce the frequency and severity of injuries in this sport. The problem discussed in this research is the high incidence of injuries among boxing athletes in Gorontalo City and the lack of specific data regarding the types of injuries and their causal factors. As an effort to overcome this problem, this research aims to identify the types of injuries experienced by female boxing athletes in Gorontalo City and explore the main causes of these injuries.

2. METHOD

This research uses a descriptive method with a quantitative approach. Data from population samples were analyzed using statistical methods. The aim is to describe and explain injuries in boxing in Gorontalo City. The variables in this study were sports injuries and boxing athletes. The research population is boxing athletes who are active in Gorontalo City. The sample consisted of 50 boxing athletes who met the criteria: 1) registered at a boxing gym in Gorontalo City, 2) female, 3) mastered boxing techniques, 4) had previously competed, and 5) were willing to be research subjects. Sample selection was carried out using the simple random sampling method. The instrument used was a questionnaire prepared by researchers and distributed online via Google Forms. Validity and reliability tests were carried out before the data was analyzed using percentage calculations with the following formula:

$$P = \frac{F}{N} \times 100\%$$

Information :

P = percentage sought,

F = question item score, and

N = maximum score for question items.

After obtaining the percentage for each answer on each item, a scale was created to determine the limits of the answer percentage results. The scale is as follows:

Number 0% - 20% = very rare

Figure 21% - 40% = rare

Number 41% - 60% = sometimes

Number 61% - 80% = often

Number 81% - 100% = very often

3. RESULTS AND DISCUSSION

The subjects in this research were active boxing athletes in Gorontalo City, a total of 50 people who were randomly selected from various boxing gyms in Gorontalo City. The characteristics of the research subjects are as follows:

3.1. Result

3.1.1 Respondent Characteristics

1. Age of Gorontalo City Boxing Athletes

Table 1. Age of Gorontalo City Boxing Athletes

Age	F	%
>12 Years	0	0
12-20 Years	4	8
21-25 Years	30	60
>25 Years	16	32
Total	50	100

Source: Primary Data, 2024

2. Training Period for Gorontalo City Boxing Athletes

Table 2. Training Period for Gorontalo City Boxing Athletes

Age	F	%
>12 Years	0	0
12-20 Years	4	8
21-25 Years	30	60
>25 Years	16	32
Total	50	100

Source: Primary Data, 2024

3.1.2 Analysis Results of Boxing Sports Injury Identification in Gorontalo City

Table 3. Analysis of boxing sports injuries in Gorontalo City

No	Type of Injury	Score	Percentage	Category
1	Head and Facial Injuries	1.4	44	Sometimes
2	Wrist Injuries	0.8	29	Seldom
3	Shoulder Injuries	0.8	29	Seldom
4	Knee Injuries	0.4	16	Very rarely
5	Injuries to the Knuckles	0.6	22	Seldom
6	Ankle	0.4	16	Very rarely
Rate		0.9	26	Seldom
-rate				

Source: Primary Data, 2024

Table 4. Analysis of Factors Causing Injuries in Gorontalo City

No	Factor	Score	Percentage	Category
1	Hitting technique error	1.1	39	Seldom
2	Insufficient heating/cooling	1.1	39	Seldom
3	Collision or collision	1.2	42	Seldom
4	Lack of mastery of technique	0.6	22	Very rarely
5	Heavy training for a long time	1.3	42	Seldom
6	There was a problem with the tool	1	32	Seldom
Rate		1.1	36	Seldom
-rate				

Source: Primary Data, 2024

Table 5. Time Analysis of Injury Events in Gorontalo City

No	Time of Event	Score	Percentage	Category
1	During the match	1.1	39	Seldom
2	While warming up	0.5	19	Very rarely
3	During technical practice	0.9	32	Seldom
4	During sparring	1.2	42	Seldom
Rate		1.1	32	Seldom
-rate				

Source: Primary Data, 2024

3.2. Discussion

This study aims to analyze injuries to boxing athletes in Gorontalo City. This research was carried out by collecting data from various sources related to the incidence of injuries to boxing athletes in the city. The research results show that injuries to boxing athletes in Gorontalo City tend to occur rarely in the locations analyzed. The locations in question include areas of the head, body and other body parts that are often involved in boxing activities. From the data obtained, only 26% of the total injuries were reported by athletes. This percentage indicates that injuries in this category are low or rare. Factors that contribute to the low percentage of injuries among boxing athletes in Gorontalo City can include various aspects. One of them is the good level of training and safety procedures implemented during training and matches. In addition, athletes' knowledge and awareness of the importance of correct technique and the use of protective equipment also plays an important role in reducing the risk of injury. This research provides valuable insight for coaches, athletes and stakeholders in developing more effective strategies to prevent injuries and improve safety in the sport of boxing in the future.

The injuries with the highest percentage of boxing athletes in Gorontalo City are injuries to the head and face, with a percentage of 44%. This is because the head and face are the main targets in a boxing match, so these parts are more susceptible to injury than other parts of the body. This phenomenon does not only occur in boxing, but also in other martial arts sports such as Pencak Silat. In the sport of Pencak Silat, injuries to the head and face also often occur as stated by [10]. Apart from that, other research regarding injuries in the Tarung Derajat martial arts sport conducted by Novita and Tohidin (2020) also showed similar results, where injuries to the head and face were one of the types of injuries most frequently experienced by athletes. [4].

On the other hand, the injuries with the lowest percentage are ankle and knee injuries, which only reach 16%, falling into the very low category. The low percentage of injuries in this area is because the intensity of use of the legs in boxing is relatively low compared to other parts of the body, so the risk of injury to the ankles and knees is also smaller. This research provides important insights for coaches and athletes to focus more on preventing head and facial injuries, and shows that although ankle and knee injuries are rare, there still needs to be attention to the safety of all parts of the body during training and competitions.

Of the injury locations analyzed, the type of injury that most often occurs in boxing athletes in Gorontalo City is abrasions. Even though abrasions are the most common type of injury, the percentage is still classified as rare. This is in line with research findings from Novita and Tohidin (2020), which show that martial arts athletes tend to experience abrasions when injured. The high incidence of abrasions can be explained by the nature of the sport of boxing itself, where athletes have to perform many movements that involve intense physical contact with opponents or training equipment. [4].

Abrasions often occur because boxing athletes have to deal with impact or friction during training and matches. Constant and hard physical contact with opponents and training equipment makes abrasions difficult to avoid [11]. Despite this, the frequency of more serious injuries such as broken bones or internal injuries remains low, indicating that safety measures and correct techniques are generally well implemented by boxing athletes in Gorontalo City. This research underscores the importance of treating and preventing abrasions, as well as strengthening efforts to minimize the risk of more serious injuries through safe and effective training [12].

This research also highlights the factors that cause injuries to boxing athletes in Gorontalo City. From the results of the data analysis shown in Table 4, it is known that the factors with the highest percentage of causes of injury are the lack of warm-up and cool-down carried out by athletes, as well as training that is too heavy for a long period of time. Lack of warm-up and cool-down makes muscles less ready to receive loads in competitions and training, so muscles are more easily injured.

Apart from that, the time of injury is an important factor that needs to be considered because it can provide basic information for athletes to be more careful in carrying out their activities. The research results show that injuries most often occur when athletes practice and compete, with a percentage of 42%. This is caused by several factors, such as lack of muscle readiness when training or competing, as well as muscles that are too tired but are still forced to train or compete.

A break between training and a match that is too close can also be the main cause, because the muscles do not get enough rest time. When muscles do not have enough time to recover, the risk of injury increases significantly. This finding is consistent with the results of research conducted by Setiawan (2021), which stated that injuries to athletes often occur during training and competitions. Therefore, it is important for coaches and team management to plan training and match schedules well, ensuring adequate rest time for athletes to reduce the risk of injury. [6].

By paying attention to the factors that cause injuries and the time of injury, it is hoped that boxing coaches and athletes in Gorontalo City can be more alert and take the necessary preventive steps. Proper warm-up and cool-down, good training load management, and an adequate rest schedule will help reduce the risk of injury and improve the performance and safety of athletes. [9].

The results of this research are in line with the findings reported by Umar (2018). Lack of warm-up before practice or competition is a significant factor in increasing the risk of injury in athletes. An adequate warm-up helps increase blood flow to the muscles, prepares the body for more intense physical activity, and increases muscle flexibility. Meanwhile, cooling down after training or competition helps reduce muscle tension and speed up the recovery process [10]. Without sufficient warm-up, muscles can experience stiffness and are not ready to accept large physical loads, thereby increasing the risk of injury such as muscle strains or even more serious injuries. Therefore, it is important for coaches and athletes to prioritize warm-up and cool-down sessions as an integral part of their training and competition routines. By consistently implementing these preventive measures, it is hoped that we can reduce the incidence of injury and support the optimal health and performance of boxing athletes in Gorontalo City.

From the previous discussion, it can be concluded that boxing athletes in Gorontalo City tend to suffer injuries to the head and face, which often take the form of abrasions. The main factors that cause injuries include a lack of warm-up and cool-down before and after training or matches, as well as training that is too heavy and over a long period of time. Injuries most often occur when athletes are in intensive competition or training conditions. In terms of the use of protective equipment, boxing athletes generally use hand protectors regularly to protect the hands from injury. However, genital protectors are rarely used, perhaps due to a lack of awareness of the importance of protecting this area in the sport of boxing. Proper and consistent use of protective equipment is key to reducing the risk of serious injury to boxing athletes.

This research has great potential to become the basis for developing strategies for preventing and treating injuries in amateur boxing athletes. By identifying the most common types of injuries, as well as understanding their causal factors, this research provides much-needed data to design effective interventions. For example, if it is known that head and facial injuries are the most common, then specific measures such as increased use of better head protection or safer defensive techniques can be implemented. This approach not only reduces the risk of injury but also improves athlete safety and well-being.

This research provides important insights that can be used to design more effective training programs and policies. The resulting data can be used to develop educational programs for coaches and athletes about injury prevention, safe technique, and the importance of proper recovery. This may also include specialized training for medical and nursing personnel who work with boxing athletes, ensuring that they are prepared to treat injuries quickly and efficiently. The knowledge gained from this research can help in the development of better emergency management protocols, which are especially important in match and training situations.

The results of this research can influence health and safety policies in the sport of boxing at local and national levels. With strong empirical evidence, recommendations resulting from this research can be used to advocate for regulatory changes or stricter safety standards. For example, the introduction of mandatory use of head protection in all training sessions and matches or increased medical fitness standards before athletes are allowed to compete. Ultimately, this research will not only contribute to improving safety in amateur boxing but may also serve as a model for other contact sports, reinforcing the importance of injury prevention and proper treatment in all forms of sport.

4. CONCLUSION

From the results of research regarding injury analysis in boxing athletes in Gorontalo City, it can be concluded that the parts of the body that are most frequently injured are the head and face, with a percentage reaching 44%. This shows that injuries to this area are the most common occurrence among boxing athletes who were research subjects. Meanwhile, types of injuries that rarely occur are ankle and knee injuries, with a percentage of 16%. Although injuries to the head and face are more dominant, injuries to the ankles and knees are also quite significant in the context of injuries experienced by boxing athletes in Gorontalo City. These findings provide important insights for future injury management and prevention planning to improve the safety and well-being of boxing athletes.

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