



# Athletes' Knowledge Level About Handling Musculoskeletal Injury (Case Study of Ankle Injury of Pra-Porprov Surakarta Pencak Silat Team)

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**Abstract.** The problems in this study originated from the results of researchers' observations on the level of knowledge of the Pra-Porprov Surakarta martial arts (pencak silat) team athletes. Many factors influence it, including recurrent injuries to the pencak silat team athletes during training or pre-competitions and competitions. The recurring injuries are due to the lack of knowledge of athletes about handling ankle injuries, and many still do not care enough to complete the rehabilitation period after an ankle injury. During the post-injury rehabilitation period, an exercise therapy phase will occur before returning to sports activities to restore the joint range of motion and strengthen the muscles in the ankle joint. This research is quantitative with a descriptive form because the results are presented as systematic calculations. The sample in this study was 17 athletes consisting of 10 male athletes and seven female athletes (three male athletes in the arts category, seven male athletes in the sparring category, three female athletes in the arts category, and four female athletes in the sparring category). The sampling technique used the total sampling technique, and the data collection technique used a questionnaire. The data were analyzed descriptively. The results of this study can be concluded that the level of knowledge of the Pra-Porprov Surakarta pencak silat team athletes about ankle injuries is in the "fair" category. However, it is necessary to conduct further research on psychological, physiological, and physical condition factors and other factors related to improving the achievement of pencak silat athletes.

**Keywords:** Knowledge · Ankle Injury · Pencak Silat

## 1 Introduction

Sport is a form of activity that has several goals, including maintaining physical fitness, education, recreation, and achievement, which involves physical activity [1]. In this day and age, sports have become a necessity that everyone loves. Sports in Indonesia are diverse, ranging from team to individual sports. One of the original Indonesian martial arts branches originating from Malay culture is pencak silat [2]. To achieve maximum results in participating in a competition, athletes must go through the stages of the

training process. Regular and tiring high-intensity physical exercise can cause problems for athletes who only focus on high achievement. The problem is the incidence of sports injuries.

One of the problems often encountered by athletes and society and causes dysfunction of the musculoskeletal system is the incidence of sports injuries [3]. The emergence of sports injuries can physically interfere with athletes and hinder activities from achieving maximum performance, thus impacting athlete performance [4–6]. Injuries can occur during the training process, pre-competition, and during the competition process [7]. Based on the time of occurrence, athletes often experience two types of injuries, acute and chronic trauma, depending on when they occur. Athletes often experience injuries, with acute injuries at 64.4% and chronic injuries at 35.6% [8]. Injuries that occur suddenly, such as torn ligaments, muscles, tendons, sprains, and even fractures, are trauma or acute [9]. Acute trauma only occurs when the athlete is injured immediately and does not happen again. Athletes who often experience chronic trauma start with overuse syndrome.

According to [10], the sport of pencak silat is a sport with full body contact who are at risk of injury. [11] showed several common injuries experienced by pencak silat athletes, including bruises, fractures, sprains, and strain dislocations. Based on data on the Sports Therapy team at Universitas Muhammadiyah Surakarta for January 2021 to January 2022, several athletes were injured. The data shows that the types of injuries that occurred in the Pra-Porpopv team athletes in Surakarta City were acute injuries and chronic injuries, including injuries to the ankle (9 people), knee (5 people), back (2 people), and shoulder (1 person). The predominant ankle injury that occurs is a sprain (ligament injury). Recurrent injuries also often occur in athletes due to incomplete and insufficient training therapy processes during the post-injury recovery phase, resulting in re-injury occurring because muscle strength has not returned to the maximum. However, the injured body part has been reused for competition or other strenuous activities. Concerning this, the researchers choose the ankle injury because the Pra-Porpopv Surakarta pencak silat team athletes mostly experience the ankle injury.

This research aims to analyze the knowledge level of the Pra-Porpopv Surakarta pencak silat team athletes regarding handling ankle injuries. It is necessary for consideration and reference in determining the training program to achieve achievement. If the treatment of ankle injuries is discovered, it will provide knowledge to athletes, coaches, and medical teams so that they can minimize the possibility of injury through prevention and providing care to injured athletes. In addition, it can also prevent recurrent injury, accelerate injury healing time, and reduce treatment costs. If they still do not know how to treat an injury, the injury will get worse, the athlete will lose time, and the cost of treatment will increase.

## 2 Method

### 2.1 Research Methods

This research was included in the quantitative research type because the results were presented as systematic calculations. According to [12], the quantitative method is defined as a research process based on the positivism philosophy and applied to observe a specific

population or sample. This research was descriptive, conducted to ensure that the value of each variable in one or more variables is independent without building relationships with other variables [2]. Descriptive research aims to explain the characteristics and facts of subjects or objects studied properly and systematically [13]. Through the sample or data that has been collected, the researchers describe in a narrative form a subject or object as it is and make general conclusions.

## 2.2 Data Collection Techniques

The data collection technique for this study used a questionnaire. The questionnaire contained statements regarding handling ankle injuries, which were then given to the research subjects, namely the Pra-Porpov Surakarta pencak silat team athletes. In addition to questionnaires, researchers also used data collection techniques ranging from observation, interviews, and documentation. Observations and interviews were carried out directly, aiming to find out the extent of the knowledge of the Surakarta pencak silat team athletes about handling ankle injuries. To make it easier for researchers to obtain data, statements, and questions that will be asked in filling out questionnaires and interviews have been arranged in advance, such as making a content outline based on theoretical studies.

## 2.3 Data Analysis Techniques

Data analysis techniques can be interpreted as organizing data into categories, specific patterns, and basic sequence units. In this study, the data analysis used quantitative data analysis techniques that process numerical or statistical data. This data analysis is a descriptive analysis by analyzing the data and then describing the results obtained and used for research. The assessment of the score that has been obtained will be calculated by percentage [14].

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

Description:

P = The percentage calculated from the number of respondents' answers

F = Frequency (number of scores obtained)

N = Number of respondents

Categorization uses the mean and standard deviation. Azwar in [15] states to determine the score criteria using Norm Reference Assessment (PAN) as in Table 1.

Table 1 lists criteria based on scores with several categories: very high, high, fair, low, and very low.

## 3 Result and Discussion

Based on the survey results on the athlete's level of knowledge questionnaire about handling ankle injuries, it is known that the number based on the type of injury that has been experienced (injury history) of the Pra-Porpov Surakarta pencak silat team athletes is in Table 2.

**Table 1.** Score Criteria Using Norm Reference Assessment

| No. | Interval                       | Category  |
|-----|--------------------------------|-----------|
| 1   | $M + 1,5 S < X$                | Very High |
| 2   | $M + 0,5 S < X \leq M + 1,5 S$ | High      |
| 3   | $M - 0,5 S < X \leq M + 0,5 S$ | Fair      |
| 4   | $M - 1,5 S < X \leq M + 0,5 S$ | Low       |
| 5   | $< X \leq M + 1,5 S$           | Very Low  |

Description:

M: Mean (Average value)

X: Score

S: Standard Deviation

**Table 2.** Injury History List

| No.   | Injury History | Number of People |
|-------|----------------|------------------|
| 1.    | Ankle          | 9                |
| 2.    | Knee           | 5                |
| 3.    | Shoulders      | 1                |
| 4.    | Long back pain | 2                |
| Total |                | 17               |

**Table 3.** Results of Descriptive Statistics on Athletes' Knowledge Level about Handling Ankle Injury of Pra-Porprov Surakarta Pencak Silat Team

| Statistics     | Level of Knowledge |
|----------------|--------------------|
| N              | 17                 |
| Mean           | 119,7              |
| Std. Deviation | 16,20              |
| Minimum        | 79,4               |
| Maximum        | 147,7              |
| Sum            | 2035,6             |

Based on Table 2, the injuries that Pra-Porprov Surakarta athletes often experience are ankle injuries. Thus, the need for the prevention of injuries through programmed exercises, knowledge about injuries and how to handle them, training strategies, variations of exercises, and psychological recovery related to motivation, and interest, strengthening the confidence of the athletes of the Pra-Porprov Surakarta pencak silat team in handling ankle injuries (Table 3).

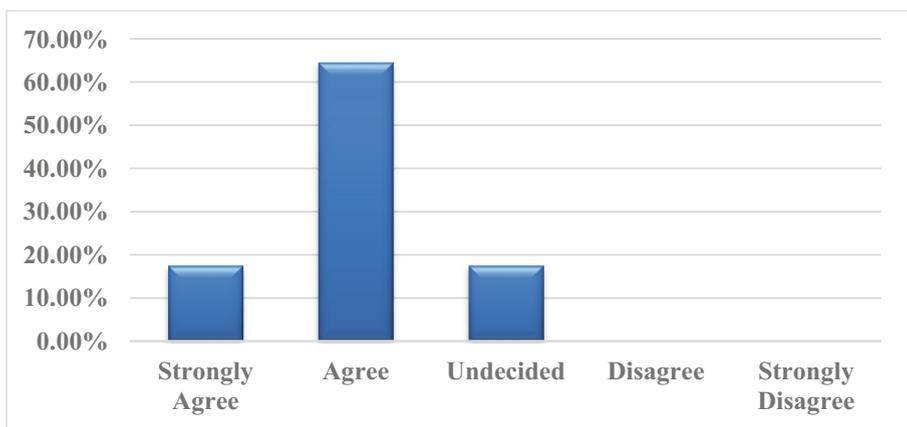
Descriptive statistical data from the results of this study regarding the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes regarding handling ankle injuries obtained the lowest score (min) of 79.4; the highest score (max) of 147.7; the average (mean) of 119.7; the standard deviation of 16.20. Based on the statistical results above, it can then be presented as a frequency distribution as follows.

Based on Table 4, the questionnaire results with statements regarding the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes about handling ankle injuries can be presented with a bar chart in Fig. 1.

From Table 4 and Fig. 1, the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes regarding handling ankle injuries is in the "Strongly Agree" category with 17.65% (3 athletes), "Agree" with 64.71% (11 athletes), "Undecided" with 17.65% (3 athletes), "Disagree" with 0.00% (none), and "Strongly Disagree" with 0.00% (no one). Based on an average score of 119.7, the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes about handling ankle injuries is in the "Fair" category.

**Table 4.** Criteria for Starting Athletes' Knowledge Level about Handling Ankle Injury of Pra-Porprov Surakarta Pencak Silat Team

| No.   | Statement         | Value | Number of Samples | Percentage (%) |
|-------|-------------------|-------|-------------------|----------------|
| 1     | Strongly Agree    | 5     | 3                 | 17,65%         |
| 2     | Agree             | 4     | 11                | 64,71%         |
| 3     | Undecided         | 3     | 3                 | 17,65%         |
| 4     | Disagree          | 2     | 0                 | 0,00%          |
| 5     | Strongly Disagree | 1     | 0                 | 0,00%          |
| Total |                   |       | 17                | 100%           |



**Fig. 1.** Athletes' Knowledge Level of Handling Ankle Injury of the Pra-Porprov Surakarta Pencak Silat Team

The results of this study found that the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes about handling ankle injuries is in the fair category, which means that some athletes on the Pra-Porprov Surakarta team already know, and the rest still do not know and understand the method or how to handle ankle injuries. The most basic way of handling ankle injuries is to control swelling and control pain with the PRICE (Protect, Rest, Ice, Compression, Elevation) method and use the RICER (Rest, Ice, Compression, Elevation, Referral) method [16]. During inflammation, the PRICE or RICER method is highly recommended for treating ankle injuries; within 0–6 days, inflammation (swelling, heat, pain, redness, and loss of movement function) must be treated as soon as possible. Most athletes already know how to minimize injuries during pre-competition and during competition and how to handle them because pencak silat is a full-body contact martial sport, so the risk of injury is very high [17]. Based on the data, apart from not knowing how to handle it, some athletes do not want to do exercise therapy, causing recurrent ankle injuries. Post-injury parts of the ankle joint that are not relieved by exercise therapy only recover by 80%, and exercise therapy will complement the other 20%, thereby reducing the risk of injury recurrence [18].

Even if only 20% of the total 100%, post-injury exercise therapy has a crucial role in injury recovery and healing rate [19]. After the athlete carries out proper post-injury treatment, it must be accompanied or continued with exercise therapy, with the hope that it will restore stability and muscle strength. They are essential to restore coordination and balance to the ankle joint. As stated by [16], exercise therapy aims to restore the joint range of motion and improve muscle strength and sensorimotor control. If the athlete knows how to handle an ankle injury well and wants to carry out exercise therapy thoroughly, it can save costs, not lose time, and can prevent injury. Exercise therapy can be successful and assisted by several internal and external factors. External factors include support from family, coaches, and friends who can encourage and understand the conditions so injured athletes are willing and able to complete a series of training therapy programs. Adequate infrastructure will also increase the enthusiasm of athletes to complete the training program. The internal factor is that athletes must have high motivation and confidence that later they will return with their best performance again. In addition, it must be supported by adequate knowledge factors related to the theory of post-injury exercise therapy, starting from the purpose, benefits, and form or type of exercise therapy. Psychologically, someone who has suffered an injury will feel traumatized. With knowledge and training, it is hoped that the trauma felt will slowly resolve and disappear. Recommendations and permits are needed from the health workers specifically for sports to carry out physical activities or sports again after experiencing an injury so that athletes feel more secure.

The results of the research on the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes regarding handling ankle injuries, half of the entire population is included in the less category, so that for the future, it is necessary to hold training related to handling ankle injuries for the Pra-Porprov Surakarta pencak silat team athletes. Training related to handling ankle injuries and the misunderstanding of athletes so far must also be corrected, as many subjects in this study have the notion that acute injuries are severe. Acute injuries are included in the category of injuries based on the time they occur, which is less than 24 h, and there are still subjects who think that after the inflammatory period

is over (such as swelling, heat, redness, and pain disappear), it means that the ankle joint has healed from the injury, so there is no need for post-injury exercise therapy. With this, the knowledge level of the Pra-Porprov Surakarta pencak silat team athletes about ankle injuries is still in the low category.

## 4 Conclusion

After an ankle injury occurs, treatment with the PRICE (Protect, Rest, Ice, Compression, Elevation) and RICER (Rest, Ice, Compression, Elevation, Referral) methods becomes the primary and foremost thing with exercise therapy which aims to increase the strength of weakened muscles and flexibility. Exercises can be used to restore limited or lost joint range of motion. The results of this study also show that many still have the notion that the disappearance of swelling, pain, redness, and heat indicates that the ankle joint can be used again for other strenuous physical activities. In the long term, it will have a negative impact, namely the occurrence of repeated injuries, because the condition of the muscles that are still not strong can be used again for sports achievement activities. It is hoped that injured athletes will handle it properly and complete the recovery or rehabilitation period with a series of training programs so that joint strength can return to its best performance, close to 100% as before the injury, and avoid recurring injuries.

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