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Analysis of Sports Injury Levels Among Central Aceh Pre-PORA Athletic Athletes

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ABSTRACT

This study aims to analyze the incidence of sports injuries, injury management, and factors contributing to injuries among athletes participating in the Central Aceh Pre-PORA athletics championship. This study employs a quantitative approach with a descriptive research design. The study subjects consisted of 14 athletes selected using total sampling. Data collection was conducted using a closed-ended questionnaire based on a Likert scale, covering indicators of injury type, causes of injury, post-injury impacts, recovery, prevention, and first aid for injuries. Data analysis was performed using percentage calculations. The results of the study indicate that the severity of sports injuries among athletes in the Central Aceh Pre-PORA Athletics team generally falls into the moderate to severe categories. The majority of athletes, namely 12 individuals (86%), fall into the moderate category, while 2 athletes (14%) fall into the severe category. The most common injuries experienced by athletes were minor, such as bruises and muscle cramps, while severe injuries like fractures and dislocations were not found. The dominant factors causing injuries included suboptimal physical condition and a lack of warm-up before training or competition. In terms of treatment, athletes tended to rely on complete rest, and some used the RICE method and medication. Injury prevention measures have generally been well implemented through warm-ups, physical conditioning, nutritional management, and the use of appropriate equipment. The findings of this study indicate that the incidence of injuries among athletes remains within manageable levels. Nevertheless, there is a need to strengthen injury prevention and management programs in a more systematic manner to maintain athletes' performance and ensure the continuity of their training.

1. Introduction

Competitive sports are physical activities that require a combination of technical skills, physical conditioning, mental readiness, and emotional stability in athletes. An athlete's success in achieving optimal performance is determined not only by technical mastery and physical fitness but also by the body's ability to adapt to high and sustained training loads. According to Irawan and Limanto (2021:18), athletic performance is the result of the interaction between technical skills, physical health, and the athlete's interrelated psychological and mental conditions.

One sport with high physical demands is track and field. This discipline includes running, throwing, and jumping events, each with distinct movement characteristics, training intensities, and physical demands (Kardi et al., 2022). These differing characteristics demand specific physical readiness and may pose a risk of injury if not balanced with optimal training management, recovery, and injury prevention. Boltz et al. (2021) emphasize that repetitive and specific training in athletics can increase the risk of injury due to mechanical stress and excessive use of body tissues.

Conceptually, a sports injury is a condition characterized by disruption or damage to body tissues resulting from physical activity that exceeds the body's adaptive capacity. Herlina et al. (2022) explain that sports injuries occur due to an imbalance between the workload and the body's ability to respond to athletic activity, both physically and psychologically. In the context of track and field athletes, this imbalance can result from high training intensity, improper movement techniques, inadequate warm-ups, and limited recovery time.

Pre-PORA athletes from Central Aceh are athletes being prepared to compete in the Aceh Sports Week through a structured training program with relatively high intensity. This situation places the athletes at a significant risk of injury, particularly during the preparation and pre-competition phases. Sports injuries not only impact physical condition but can also disrupt training continuity, reduce self-confidence, and affect performance outcomes. Fonseca et al. (2020) state that sports injuries result from the interaction of various internal and external factors; therefore, identifying the severity and causes of injuries is a crucial step in developing effective prevention strategies.

Although numerous studies have been conducted on sports injuries among athletes, most of them focus on national-level athletes or other sports. To date, studies specifically analyzing the incidence of sports injuries among athletes in the Central Aceh Pre-PORA Athletics program remain very limited. In fact, training characteristics, supporting facilities, and development systems at the regional level have the potential to result in distinct injury profiles. This data gap has resulted in the lack of empirical information that could serve as a basis for designing injury prevention and management programs tailored to the needs of regional athletes.

Sports injuries that are not properly managed can progress into more serious conditions and lead to long-term physical limitations. Setyawati et al. (2025) state that suboptimal injury management can hinder athletes' participation in training and competitions. Therefore, this study is important to provide a factual overview of the prevalence of sports injuries, their causative factors, and the forms of injury management among athletes in the Central Aceh Pre-PORA Athletics program as a basis for evaluating development programs and strengthening injury prevention strategies.

2. Method

This study employs a quantitative approach with a descriptive research design, as it aims to systematically describe the incidence of sports injuries among athletes based on numerical data obtained from questionnaire responses. The study population consists of all athletes affiliated with the Indonesian Athletics Association (PASI) of Central Aceh, totaling 14 active athletes. Given the limited population size, the sampling technique used is total sampling, meaning the entire population serves as the study sample, namely the 14 pre-PORA athletes from Central Aceh. Data collection employs a questionnaire as the primary instrument to gather data on the incidence of sports injuries, types of injuries, injury locations, severity levels, and contributing factors. The instrument used was adapted from Arinda's (2020) study and tailored to the characteristics of the research subjects.

The questionnaire was designed using a Likert scale. Respondents' answers were multiplied by the corresponding Likert scale scores, with the categories: Always (4), Often (3), Sometimes (2), and Never (1). After obtaining the total response score, the results were presented as percentages by comparing the total score to the ideal score, then multiplied by 100% (Riduwan, 2022). Data analysis was conducted using descriptive percentage techniques. This method was chosen because the study aimed to objectively describe the prevalence of sports injuries among athletes in the Central Aceh Pre-PORA program without testing relationships between variables. The percentage results were then interpreted based on predetermined categories to determine the prevalence of sports injuries among the athletes.

Table 1. Percentage Limit Scale

Category	Percentage
Very Weak	0% - 20%
Weak	21% - 40%
Medium	41% - 60%
Strong	61% - 80%
Very Strong	81% - 100%

Source : (Arinda, 2020b)

3. Results

This study aims to determine the level of sports injuries among athletes. Data was obtained through a questionnaire consisting of 30 statements divided into 6 indicators, namely: (1) sports injuries experienced (13 statements), (2) causes of sports injuries (4 statements), (3) post-sports injuries (3 statements), (4) recovery from sports injuries (3 statements), (5) prevention of sports injuries (5 statements), and (6) first aid (2 statements). The percentage of sports injuries among athletes can be seen in Table 2.

Table 2. Percentage of Sports Injuries Among Pre-PORA Central Aceh Track and Field Athletes

No	Interval	Frequency	Percentage	Category
1	0% - 20%	0	0%	Very Weak
2	21% - 40%	0	0%	Weak
3	41% - 60%	12	86%	Medium
4	61% - 80%	2	14%	Strong
5	81% - 100%	0	0%	Very Strong
	Total	14	100%	-

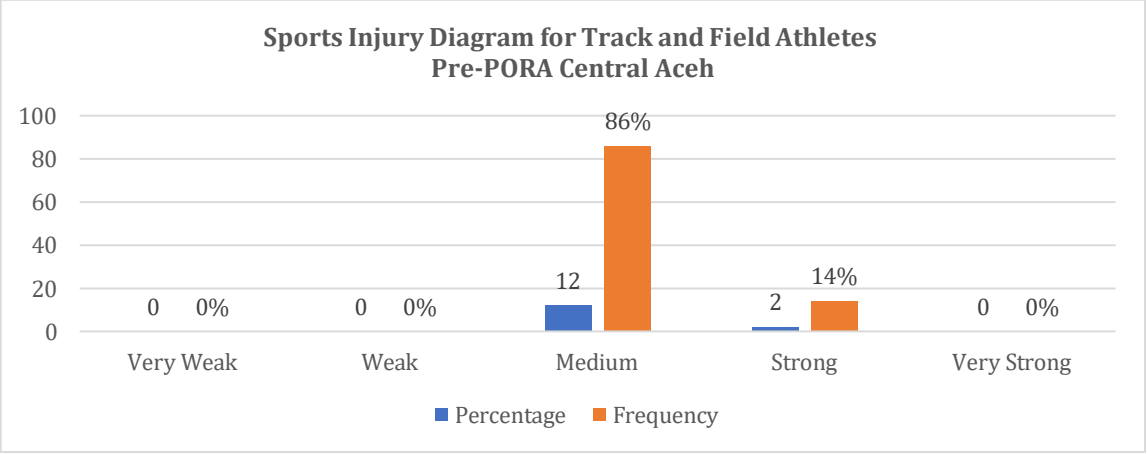

Figure 1. Diagram of Sports Injuries Among Athletes Pre-PORA Athletics in Central Aceh
Source: Research Data

Based on the tables and graphs presented, the rate of sports injuries among the Central Aceh Pre-PORA Athletics athletes falls into the moderate category for 12 athletes (86%), while the high category accounts for 2 athletes (14%). These results indicate that, in general, the athletes' conditions remain within relatively manageable limits, although they still require attention through more optimal preventive measures and management. The predominance of the moderate category suggests that most athletes possess a fairly good ability to adapt to training loads. This condition can be attributed to the implementation of a structured training program, adherence to the coach's instructions, and consistent efforts to maintain physical fitness. On the other hand, the presence of athletes in the high category

suggests the existence of potential risks influenced by several factors, such as high training intensity, inadequate warm-up, and limited recovery time following physical activity.

4. Discussion

Sports injuries are conditions involving damage to body tissues that occur when physical activity exceeds the body's adaptive capacity, thereby affecting an athlete's motor function and performance (Yusni, 2019). Based on the results of a questionnaire administered to athletes participating in the Central Aceh Pre-PORA Athletics event, no athletes were found to fall into the very weak or weak categories. The majority of athletes, namely 12 individuals (86%), fell into the moderate category, while 2 athletes (14%) were in the high category. This distribution indicates that the risk of injury for most athletes remains at a manageable level; however, the presence of athletes in the high category suggests a group requiring greater attention regarding prevention and management of physical condition.

The predominance of the moderate category indicates that the training system implemented has provided sufficient adaptability to training demands. This can be attributed to the consistency of the training program, the relatively good application of basic techniques, and the coaches' supervision during training sessions. However, the finding of two athletes in the high category suggests that adaptation to training loads is not yet uniform. This situation suggests differences in physical capacity, recovery effectiveness, or individual readiness to respond to the intensity of the training provided.

These findings also indicate that the injuries sustained cannot be understood solely as a consequence of high-intensity physical activity, but rather as the result of an interaction between internal and external factors. Based on the responses obtained, the most prominent contributing factors were related to suboptimal warm-ups, high training intensity, and limited recovery time. This indicates that training management has not fully considered the principle of balance between training load and the athlete's recovery capacity. These findings align with Gabbett's (2016) assertion that an imbalance between training load and physical adaptability is one of the primary triggers for injuries.

The presence of athletes in the high-risk category can also be interpreted as an indication that the preventive approaches implemented have not been fully integrated into the training program. If preventive measures had been consistently applied, the distribution of injury rates should be more concentrated in the low-risk category. Thus, these results suggest the need for an evaluation of the quality of warm-ups, training volume management, and regular monitoring of physical condition. This view is reinforced by Paravlic et al. (2024), who state that an optimally performed warm-up can significantly reduce the risk of injury.

In addition, the research findings indicate that athletes' understanding of initial management and the recovery process plays a crucial role in mitigating the severity of the conditions they experience. Athletes who are more aware of the importance of recovery tend to be better able to reduce the long-term effects that can hinder performance. This underscores that prevention efforts are not sufficient through physical training alone but also require ongoing education regarding recovery and initial management.

Overall, the research results indicate that the condition of the Central Aceh Athletics Pre-PORA athletes is relatively under control, though not yet fully optimal. Therefore, a more systematic evaluation of training load management, recovery strategies, and the implementation of prevention programs is necessary to minimize the risk of injury and ensure athletes remain prepared for competition.

5. Conclusion

Based on the results of data analysis, it can be concluded that the rate of sports injuries in Pre PORA athletes in Central Aceh is in the medium category, with the majority of athletes (86%) in that category and a small part (14%) in the strong category. This shows that injuries experienced by athletes are still at a level that can be controlled, dominated by minor injuries, while serious injuries are almost not found, so it is necessary to prevent and handle injuries more purposefully so that the physical condition and performance of the athlete is maintained.

6. Author Contribution

A.D.S. carried out initial coordination with the administrators and athletes of Pre Pora Central Aceh and led the entire series of research activities. A.D.S. and M.F.A carried out research socialization and provided instructions for filling out questionnaires online via WhatsApp. A.D.S., M.F.A., N.I., R.S., A., K.W.S., and A.D. collected sports injury data using a questionnaire through Google Form. A.D.S., M.F.A., N.I., and K.W.S. conduct an examination and recapitulation of the data from filling out the questionnaire. A.D.S. supervises the overall implementation and ensures that each stage of research runs according to the procedure.

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