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The Relationship Between the Characteristics of Central Java Athletes in the Post-Sports Injury Recovery Period

Guntur Ratih Prestifa Herdinata[1], Aristiyanto[2], Fredy Eko Setiawan[3], Antonius Tri Wibowo[4]

[1,2,3]Sports Science Study Program, Faculty of Health, Universitas Ngudi Waluyo, Jawa Tengah, Indonesia
Street Diponegoro No.186, Ngablak, Gedanganak, Kec. Ungaran Tim., Kabupaten Semarang, Jawa Tengah 50512
[4]Sports Science Study Program, Universitas Mercu Buana Yogyakarta, D.I Yogyakarta, Indonesia
Street Wates KM 10 Yogyakarta 55753, Indonesia

Abstract (Times New Roman, Bold, all uppercase letters, 11 font sizes, spaces 1)
This study aims to determine athletes' characteristics and the length of the recovery period after a sports injury. This research is cross-sectional; this sample is 50 athletes in an epidemiological study design that studies the relationship between athlete characteristics and recovery after sports injury. Based on statistical tests selected using chi-square with $\alpha = 0.05$. Type of injury with lecture time 0.015 no relationship, Athlete age with lecture time 0.013 no relationship, Gender with lecture time 0.300 no relationship, Athlete nature with lecture time 0.001 no relationship, Training frequency with lecture time 0.348 no relationship, Length of competition with lecture time 0.050 no relationship, Player position with lecture time 0.297 no relationship, Playing techniques with lecture time 0.300 no relationship, Level of injury with lecture time 0.002 no relationship. This study concludes that there is a relationship between recovery time and age, athlete characteristics, and injury level. There is no relationship between recovery time and type of injury, gender, competition length, training frequency, player position, and playing techniques.

Keywords: *Athlete Characteristics, Recovery, A Sports Injury.*
Correspondence author: Antonius Tri Wibowo, Sports Science Study Program, Universitas Mercu Buana Yogyakarta
Email: antoniustriwibowo@mercubuana-yogya.ac.id

INTRODUCTION

The Regional Government of Central Java (Central Java) continues to improve the achievements of its athletes through the Indonesian National Sports Committee (KONI) Central Java. One of the Central Java government's efforts to enhance its athletes' achievements is introducing regional training (Pelatda). Pelatda is a long-term activity program of KONI Central Java that prepares Central Java athletes to rank in the top five of the National Sports Week (PON). The selection of Pelatda participating athletes is based on three main criteria: 1) Senior athletes who won PON XX Papua medals in 2021 or athletes who won Championships in 2021/2022, and

2) potential young athletes. Although these standards have been established, their implementation still has many obstacles, especially in physical and mental health standards, because many athletes have suffered injuries.

In Pelatda's journey, many problems, including injuries, arise that prevent athletes from achieving their performance goals. As a result of these injuries, athletes need rest and a long time to recover and perform optimally (Ardiyanto & Sumartiningsih, 2023). Athletes cannot control precisely when an injury occurs. Athletes can only reduce the incidence of injuries through exercise, but *overtraining* can lead to injury (Lesmana, 2015). Sports injuries are inevitable for professional athletes, coaches, and the general public who love sports. Sports injuries are injuries to muscles, joints, or bones during training or competition (Danio & Wiharja, 2023).

Injuries can occur due to impact, muscle weakness, overuse, and inadequate facilities and infrastructure during training and matches. The body often responds to sports injuries with signs of inflammation such as redness *(redness)*, tumors (swelling), calories (heat), pain, and hypofunction (decreased function) (Saputro et al., 2022). There are many causes of injury during a match, including physical and personal factors, incorrect technique, warm-ups, and equipment. Sports injuries affecting movement and function require physical therapy (Ardiyanto & Sumartiningsih, 2023). For the process of handling athletes in the process of injury, especially in acute injuries, the method is used to apply RICE (*Rest, Ice, Compression, Elevation).* But if the injury suffered by the athlete is severe towards tears in the tissue, it takes extra effort and a long time for the next stage of therapy, let alone will cause trauma.(Kurniawan et al., 2020).

The athlete's non-injury program must be done to keep the athlete's condition in shape to reduce fatigue in the athlete's muscles and the impact of injury (Artiningrum & Sukmajati, 2017). Some of the methods used, such as *sports massage*, assist athletes in *recovery* After the loss, in addition to using ice bath recovery athletes (Koesherawati et al., 2022). In addition, there is physical therapy/manipulative therapy, a health service for individuals and groups who use therapeutic techniques to maintain, develop, and restore motion and function throughout the life cycle. The Regulation of the Minister of Health Number 65 of 2015 states that physical therapy aims to develop, maintain, and restore motion and body functions throughout life through manual therapy and increased physical activity, equipment (physics, electrotherapy, mechanics), functional training, and communication.

When athletes experience severe injuries, it takes time for injury treatment, and recovery is quite long, depending on the severity. However, the problem is the trauma from the aftermath of the injury (Saputro et al., 2022). While injured athletes may face feelings of frustration, anxiety, isolation, and depression, which can affect their mental health and recovery, positive psychological forces such as hope and social support can help injured athletes recover (Kraemer et al., 2009). The injured athlete receives treatment from various services during rehabilitation until the athlete's condition improves and continues the strength program, donating to the sport-specific activities undertaken in preparation for returning to play. In the injury, confectionary, and recovery phases athletes will usually experience many serious mental health problems such as depression, anxiety, eating disorders, and drug use or abuse (Margot Putukian, 2019).

When an injured athlete has a normal emotional reaction that includes processing medical information about the injury provided by the medical team, as well as dealing with the injury emotionally, these emotional responses include sadness, isolation, distraction, lack of motivation, anger, frustration, changes in appetite, sleep disturbances. Therefore, this study wanted to find out whether the characteristics of athletes who experienced injuries had a relationship with the recovery period after injury.

METHOD

This research method is a cross-sectional study with an epidemiological research design that examines the relationship between athlete characteristics and recovery time after sports injuries. Cross-sectional research studies the correlation between risk factors by collecting or recording data only once at a time (Levin. KA, 2010. The design of this study investigated the relationship between the characteristics of regional athletes in Central Java during the post-injury recovery period in 2023. Cross-sectional studies that are exploratory, descriptive, or explanatory investigate the relationship between one variable and another in the population studied, the validity of the model or hypothesis formulation, and the extent to which differences between sample groups can be explained.

. Based on the chi-square statistical test with $\alpha = 0.05$. This research design studies the relationship between the characteristics of Central Java athletes during the *post-sports* injury *recovery period* in 2023. The subjects in this study were athletes from Pelatda KONI Central Java Province. A random sample of 50 athletes was taken. The design of this study investigated the

relationship between the characteristics of regionally trained athletes in Central Java during the recovery period after sports injuries in 2023. After obtaining approval, researchers will submit the aims and objectives of the research to the authorities of the Indonesian National Sports Commission (KONI) of Central Java Province.

RESULTS AND DISCUSSION

Result

This study was conducted on 50 samples of patients who came to the KONI clinic in the Jatidiri GOR complex in Karangrejo, Semarang, Central Java, suffered lower extremity injuries and received physical therapy (manual therapy / sport massage). The sample distribution data is as follows. 30 athletes (60%) had ankle sprains and 20 athletes (40%) had knee sprains. Based on the age of < samples of 20 > 16 years, there were 22 people (72%), samples of 13 people (46%) with a frequency of exercise 6 times a week, and samples of 21 people (46%) with a frequency of exercise 6 times a week. 7 times a week (33%).), 5 times 10 people (31%).

The sample with male sex amounted to 36 people (72%) and female sex there were 14 people (28%), mental depressive character there was 1 person, *isolated 4 people,* optimistic 20 people, denial 23 people and bargain 2 people. Samples with a duration of competition < 5 amounted to 26 people (19.2%) and 10-15 there were 8 people (53.3%) and > 16 there were 22 people (72%), samples with a frequency of exercise 6 times per week amounted to 13 people (46%), 7 times there were 21 people (33%), 5 times 10 people (31%).

The sample based on individual sports amounted to 37 participants (74%), team sports amounted to 13 participants (26%), and samples using fast rotation game techniques amounted to 37 participants (74%) and 13 (26%) in long and short speed games.

The sample grade of sprains amounted to 36 people (72%) at level 1, 12 people (24%) at level 2, and 2 people (4%) at level 3. There were 46 patients (92%) in the sample with a recovery period of 4 to 30 days, 3 (6%) with a recovery period of 2 to 6 months, and 1 (2%) with a recovery period of 6 months or more.

Table 1. Length of Competition/Match

Time	Number of Samples	Presented
< 5	26 people	19,2 %
10 - 15	8 persons	53 %
>16	22 people	72 %

Table 2. Exercise Frequency

Time	Number of Samples	Presented
7 times//per week	13 people	46%
6 times/per week	21 people	33 %
5 times/per week	16 people	31%

Table 3. Types of Sports

Types of Sports	Number of Samples	Percentage
Individual Sports	37 people	74 %
Team sports	13 people	26%

Table 4. Playing Techniques

Types of Playing Techniques	Number of Samples	Presented
speed rotation	37 people	74 %
Speed long and short	13 people	26 %

Table 5. Sprain Tiers

Injury Grade	Number of Samples	Presented
Grade 1	36 people	72 %
Grade 2	12 persons	24 %
Grade 3	2 persons	4 %

Table 6. Injury Recovery

Recovery Time	Number of Samples	Presented
4 - 30 days	46 people	92 %
2 - 6 months	3 persons	6%
> 6 months	1 person	2%

Chi Square *test* age of athletes with breeding time 0.015 no sex relationship with breeding time 0.300 no relationship. The nature of athletes with a breeding time of 0.000 is related. The frequency of exercise with a breeding time of 0.368 was not related. Long competition with breeding time of 0.050 is no relationship. The technique of playing with a breeding time of 0.300 is not related. The injury rate with a recovery time of 0.002 is no relationship. From the results of the stataspoint test carried out, it was found that not all athlete characteristics have a relationship with recovery time. In relation to recovery time in this study are; a) age range 21 - 25 years with injury recovery time due to physiological age change process. At that age (21 - 25 years) where the body condition is best, the healing period will be fast. Thus age with its physiological changes will affect the healing process of body tissues. b) The relationship between traits and

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Chi Square test age of athletes with breeding time 0.013 no relationship, sex with breeding time 0.254 no relationship, athlete traits with breeding time 0.000 no relationship, training frequency with breeding time 0.348 no relationship, length of competition with breeding time 0.077 no relationship, playing technique with breeding time 0.290 no relationship, injury rate with breeding time 0.002 no relationship. From the results of the stataspoint test carried out, it was found that not all athlete characteristics have a relationship with recovery time.

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approximately 6 months. However, specific tissues will repair faster if the damage is not too severe, in grade 3 conditions.

Dicussion

The pathophysiology of injury begins when cells are damaged, cells will release chemical mediators that stimulate inflammation. These mediators include histamine, bradykinin, prostaglandins and leukotrienes. These chemical mediators can cause vasodilation of blood vessels and withdrawal of the population of immune cells at the site of injury. Physiologically, the body's response is known as the inflammatory process. This inflammatory process will then gradually decrease in line with the regeneration of the process of damage to cells or tissues (Van Mechelen et al. 1992). Some of the injuries documented as follows: Traumatic injuries, the mechanism of occurrence of *traumatic injuries in* this study that are associated with the causative injury and its occurrence can be described clearly e.g. falls, can be in the form of *sprains, subluxations, dislocations*. Damage to soft tissues ranks first in sports injuries, mainly by the presence of *overstretch* so that soft tissues extend beyond the limits of elasticity.

Damage to tendon tissue, tendons are anatomical structures in the body that function to connect muscles to bones. The muscles responsible for moving bones, in other words, are the muscles that produce motion so that they allow individuals to perform activities such as sitting, standing, walking, jumping, lifting, and even moving in many combinations of ways (Kannus, 2000). In other words, the right anatomical structure will determine the proper function of the tendon (Benjamin, Kaiser & Milz, 2008).

Nerve tissue damage, nerve damage or nerve pain is usually caused by damaged nerves that send false signals, resulting in chronic pain. Bone Tissue Damage, bone tissue damage can be in the form of regular fractures or spiral-shaped, *oblique* due to indirect trauma, either open or closed. In elderly people where *osteoporosis* occurs, compression fractures are often found in *the corpus vertebrae* or *colles fractures* at the time of guessing (Benjamin, Kaiser & Milz, 2008). Joint damage, joint damage can be in the form of subluxations, dislocations, tearing of the capsule, synovial and joint pads which are usually accompanied by bleeding that occurs inside the joint cavity *(haemathrosis)* (Kannus, 2000).

It is important for coaches, team doctors, athletes and management administrators to understand that emotional reactions to injuries are normal. However, a problematic reaction is one that doesn't resolve or worsens over time, or if the severity of symptoms seems excessive (Margot

Putukian, 2019). Examples of problematic emotional reactions are as in the following cases: One problematic reaction is when student-athletes who have suffered an injury restrict their calorie intake because they feel that because of the injury, they "don't deserve" to eat, such a reaction could be a trigger for an eating disorder. This reaction becomes an obstacle to recover because energy intake will decrease, another problematic response to injury is depression, which magnifies other responses and can also have an impact on recovery so that more approaches are needed for athlete mentoring (Branch, 2017).

Based on some of the results of research that has been done, it can be concluded that there are differences in psychological characteristics between individual sports and team sports. The existence of fundamental differences in the characteristics of each sport allows for differences in the psychological characteristics of athletes. Each sport has different characteristics, ranging from body movement activities, rules used in sports and athlete behavior from those arising from each sport will form different characteristics (Hardianto Wibowo, 2008).

The difference is also due to gender. Gender is a major factor influencing best performance/behavior and world records. Athletes who have the best performance / behavior and can certainly have good psychological characteristics. Such psychological characteristics can be influenced by gender (erolyoldasmd, 2023). Male athletes have higher motivation when compared to female athletes. Personal characteristics, each athlete has different characteristics. An athlete with a bolder nature and high fighting power will have a faster recovery period. Experience, an athlete who has experienced the same injury then the recovery period will be faster. Similarly, athletes who have more experience competing will have the ability to strategize in the process of recovering from their injuries.

Training level, athletes with higher training levels must already have strength and condition abilities as the basis for better motion strength. This situation will make the recovery process a better technique. Normal movement patterns are the basis of achievement in sports. Abnormal movement patterns will result in incorrect techniques and prone to repetitive injuries and hinder the recovery process of intensive competition, athletes with intensive competition already have regular and continuous training processes. In athletes with this condition, the injury recovery process will be better. Health problems and General measures; There are some athletes who have blood clotting abilities and a slower wound healing process. In athletes with this condition, the healing process will be slower.

CONCLUSION

There is a relationship between recovery time and age, the nature of the athlete and the extent of injury. There was no relationship between recovery time and type of injury, gender, length of competition, frequency of training, player position, level of education and playing technique. It is recommended for athletes and coaches to pay attention to recovery time with age, athlete nature and injury rate in Central Java athletes

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