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Identification of Sports Injuries in Young Badminton Men's Athletes 10-11 Years Old

Abdul Aziz Purnomo Shidiq
Faculty of Sport Science, Universitas Sebelas Maret, Jl. Ir. Sutami No.36, Kentingan, Surakarta City, Central Java 57139, Indonesia
e-mail: azizps@staff.uns.ac.id

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Abstract

This study aims to determine the cause of injury to male junior athletes 10-11 years old. This Research uses qualitative descriptive methods. Research data sources include male junior athletes 10-11 years old. Data collection techniques use observations, questionnaires, and documentation. The results of this study are minor injuries (cramps, bruises on the legs, and abrasions) and severe injuries (injuries to muscles or tendons/strains, ligaments/sprain). Severe injury (dislocation of the shoulder joint, knee joint, thumb of the hand). So, it can be concluded that mild injury in badminton clubs in Indonesia, including on the criteria, is rare, with a percentage range of 43,3%. Then, minor injuries on the criteria occurred, with a percentage range of 66,67%. Severe injuries in the requirements rarely happen, with a percentage range of 33,33 %. Because injuries to male junior athletes aged 10-11 years are included in the criteria ever occurred due to joking with friends at training, the body is in an unhealthy state, the field is uneven or slippery, not serious when warming up, lack of warm-up, lack of concentration when playing badminton does not cool down after the completion of training, and cooling off not seriously.

✉Alamat korespondensi: Jl. Dr. Setiabudhi No.29, Isola, Kec. Sukasari, Kota Bandung, Jawa Barat 40154
E-mail: azizps@staff.uns.ac.id

INTRODUCTION

Badminton is one of the most popular sports in Indonesia. Badminton requires athletes to play with dynamic and skilled movements (Mori et al., 2018). Badminton is a sport that requires vital energy and physical and mental strength (Van Cutsem et al., 2019). Badminton matches are depicted in high-intensity games and short-duration rallies interspersed with breaks (Chiminazzo et al., 2018). In badminton, the shuttlecock moves quickly and complexly, so players must detect it precisely (Cao et al., 2021). This club has athletes at an early age or aged 10-11 years because, at an early age, they are

still passionate about training, and it is easy to develop into champions. At an early age, many factors influence its development (Stewart et al., 2018).

The growth dynamics in early childhood need to be considered and determined (Geserick et al., 2018). This stage is characterized by rapid and dynamic brain development and plays a vital role in cognitive and psychomotor development (Gilmore et al., 2018). Children at an early age are expected not to be obese for maximum growth and development (Bjerregaard et al., 2018). Early childhood requires policy emphasis as the basis for later success (Egert et al., 2018). Early childhood has the same behavioural tendencies as their parents (Devine & Hughes, 2018). The most crucial emphasis is on his mental and emotional well-being (Wakschlag et al., 2018). At an early age is also very likely to achieve achievements in badminton. However, each sport has its injury characteristics, including badminton (Khairunnisa & Pitriani, 2019). Badminton has a great chance of injury.

The exercise program was significantly related to the injury prevention program (Izzo et al., 2021). Injury prevention programs continue to be developed to reduce the risk of injury (Kozin et al., 2021). The risk of injury that often occurs in sports is lower extremity injury (Al Attar et al., 2021). Sports injuries occur in body parts during sports, sports competitions, and physical activities (Kerr et al., 2018). Injuries occur due to excessive forces impinging on the musculoskeletal system or other systems (Nielsen et al., 2018). In addition, injuries are also caused by mechanical fatigue (Edwards, 2018). Improper recovery and muscle unpreparedness can increase the risk of damage to the musculoskeletal system (Article et al., 2018). Injuries have potential long-term consequences (Prien et al., 2018).

The repeated injury will stabilize psychological trauma (McPherson, Feller, et al., 2019). If the injury recovery is maximal, it can reduce the risk of subsequent injury (Lanteigne, 2019). So every time you have an injury, you have to rest for a while to maintain muscle fatigue (Brilian et al., 2021). Risks in sports must be considered carefully because risk is an everyday possibility or tendency of loss that causes direct or indirect injury to the perpetrator (Young, 2019). The risk involves impaired sensorimotor function during exercise (McPherson et al., 2018). Some of the most common injuries are ACL injuries (Losciale et al., 2019). One must have good fitness to avoid the risk of injury (Carmody et al., 2020). Injuries impact emotional responses such as frustration and anger, so recovery will also affect a person's psychological well-being (Arvinen-Barrow & Walker, 2013). The risk of injury that will result in damage will repeatedly occur with a greater chance of injury (Dekker et al., 2017). Some things that need to be considered in injury management are the risk of an athlete experiencing an acute injury, the typical pattern and severity of the damage, and the

comparison of the extent of injury in the type of sport, as well as the characteristics and factors that influence risk (Bahr et al., 2020). Anterior Cruciate Ligament (ACL) injuries in badminton usually occur when landing on one foot after an overhead stroke on the backside court (Sasaki et al., 2018). This study is as evaluation material for coaches to inform their athletes about the importance of warming up before training and paying attention to athletes when warming up. In addition, the club provides first aid as an evaluation for coaches to pay more attention to their athletes to be serious in training.

Scratches on the toes usually occur due to shoes that are too narrow and can also be a shoe that is already thin. Bruises to the knee usually occur from falling while chasing the shuttlecock. In addition to blisters on the toes and knees, blisters on the arms usually occur on the elbows. The causes of hand-arm abrasions on the elbow are usually due to falling while chasing the shuttlecock and getting hit by the racket when hitting the shuttlecock. Handling minor injuries, especially bruises, is done by compressing using ice to prevent excessive bruising. While handling minor injuries, especially abrasions, provide first aid and first aid such as being given red medicine and then bandaged so that the blisters are not exposed to dirt or sweat. Cramp injuries occur because athletes warm-up that is not serious and can also be too tired when playing badminton, so athletes experience cramps in the hamstrings. The hamstring injury experienced by badminton athletes aged 10-11 years is minor.

The hamstring function is vital in sports activities (Green et al., 2020). The cause of a hamstring injury is overstretching of the muscles, especially during sudden and explosive movements. Mild hamstring injuries in athletes aged 10-11 years with less severe symptoms can generally be managed independently. Self-care for minor hamstring injuries can include rest and inactivity, applying ice for 20 minutes every 2-3 hours for several days, and applying an elastic bandage to the injured area to reduce swelling. Minor injuries also need special resing. Treatment of moderate injuries, especially injuries to tendons, is to stop activity, rest the injured limb, apply ice to the injured area for 15 minutes every two hours, and most importantly avoid sports activities, alcohol consumption, and massage or massage areas. Injury can reduce swelling. In addition, you should rest between training days and should, warm up longer and use excellent and correct badminton equipment. Sprains in the legs are injuries that players often experience.

Ligament injuries (sprains) are common in the knees, heels, wrists, and thumbs. ACL injury exposes psychological disorders in athletes (Paterno et al., 2018). Ligament injuries in the knee can cause ligament injuries such as improper body shape, poor facilities and infrastructure, not warming up, and a tired body. Ligament injuries occur due to falling while chasing a

shuttlecock with improper knee support, joking with friends during physical exercise such as sprints that cause falls, and when the body is tired. Handling ligament injuries can be done with PRICE, namely, protection that protects the ligamentous muscles, rest is resting the muscles or ligaments, ice is cooling muscles or ligaments, compression is pressing muscles or ligaments, and finally, elevation is increasing or increasing strength. Dislocations in badminton athletes, especially athletes aged 10-11 years, are usually minor dislocation injuries and can still be healed independently. Handling dislocation injuries to the knee are to restore the bone that comes out or shifts to its original position and prevents damage to nerves or blood vessels around the joint. After that, you can also do self-care by compressing the joint with ice or warm water for 15-20 minutes, resting the sprained joint, and avoiding movements that cause pain. The latter trains the joints with light exercises and is done slowly. Factors that increase the risk of dislocation are loose ligaments due to a history of injury, decreased muscle strength, or external factors that exceed the natural resistance of the tissues in the body.

Knowledge of the factors that cause injury to male junior athletes is needed to support future achievement. Some of the possible injuries described providing support for the importance of Research into the causes of injury. This is a preventive measure against the junior athlete. This study will provide an overview of what causes injuries to male junior athletes aged 10-11.

METHODS

This Research is qualitative descriptive Research. This Research is done with descriptive statistical and qualitative analysis (Ramadan & Juniarti, 2020). Descriptive statistics serve to describe and give an idea of the object being studied. This descriptive statistic describes phenomena in the implementation of Research operating statistics, including presenting data in tables from questionnaire data. In contrast, the qualitative analysis illustrates the form of sentences to the results of the Research. The data collected in this study includes primary and secondary data. The primary data source was obtained from the effects of filling out questionnaires/ questionnaires with male junior athletes 10-11 years old at the badminton club in 2021. At the same time, secondary data is obtained from various sources such as books on sports injury theory, journals on sports injuries, badminton club profiles in 2021 and also from athlete award charters, coach certificates, club awards, and others. The subjects in the study were 10-11-year-old male junior athletes at a badminton club of 30 people. The topics in this study will provide the information the researcher needs in conducting the survey.

The data collection techniques in this study use observation, questionnaire, and documentation. The study consisted of 20

statements with a choice of "yes" or "no" answers and was filled in by giving a checklist (V) on one of the answer options. Indicators in the preparation of questionnaires are determined based on the theory of frequent injuries and the right injury causative factors in theoretical studies. Data obtained from collecting data through questionnaires is an injury that has occurred during training and what factors cause the damage. The result of the questionnaire is the primary data that will be analyzed. Documentation is a complement to observation and interview methods in qualitative Research. In this study, the information documented is a questionnaire for junior badminton athletes 10-11 years old at training. The questionnaire includes the athlete award charter, coach certificate, club award, and others.

FINDINGS AND DISCUSSION

Findings

The variable table of injuries that have occurred describes the large percentage of minor injuries, minor injuries, and severe injuries. The results of different rates are due to several factors: the condition of the club's facilities and infrastructure, the way of delivery of training materials by the coach, and the athlete's character. This minor injury includes abrasions, bruises, cramps, and torn wounds. The intermediate type of injury includes strains, sprains, nosebleeds, and fainting. This type of severe injury consists of dislocation. Sports injury is pain caused by exercise that can cause defects, injuries, and damage to muscles, joints, and other body parts. Injuries that have occurred resulted in the percentage of minor injuries, which is 43.3%.

From the identification that has been done obtained, the results that athletes have suffered minor injuries to the legs and abrasions. One bruising injury is local scleroderma, a group of connective tissue disorders affecting the skin and tissue, most commonly in children ages 10-11 (Siddiqui & Kumar, 2018). However, bruising injuries exist of several different types (central or marginal) and other layers (epidermis, dermis, hypodermis, and muscle) of the wound (Maggioni et al., 2021). The minor injury occurs due to one result of impaired sensorimotor function (McPherson, Nagai, et al., 2019).

Bruises can occur due to improper movement, resulting in athlete sprains that cause bruising on the part. In addition to the wrong signal, minor injuries, especially bruising, can also be caused by a lack of warm-ups, joking with friends, and uneven or slippery pitches. In bruising injuries, the tissue beneath the skin's surface is damaged, and small blood vessels rupture, allowing blood and cellular fluid to seep into surrounding tissues. Abrasions often occur on the toes, knees, and hands. Minor injuries were also identified, with a percentage result of 66.67%. Intermediate injuries are injuries to tendon muscles (strains) and injuries to ligaments (sprain). Tendon muscle injury that often occurs in athletes aged 10-11 years is an injury

to the tendon muscle in the calf. Strain injuries are a significant concern because they require a lengthy healing time and decrease performance (Lee et al., 2018).

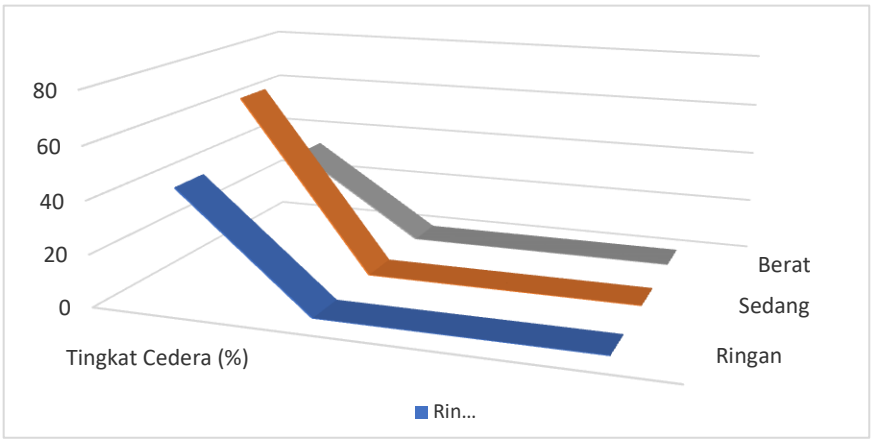

Figure 1. Level of Injuries

The cause of injury to the tendon muscle is due to lack of warm-up, poor facilities, and infrastructure, and it does not cool down when finished playing badminton. Tendon muscle injury can also occur due to excessive activity, so the body is tired and can cause injury. Severe injuries were also identified, with a percentage result of 33.33%. Severe injuries are dislocation injuries to the thumb of the hand. Dislocation injury, thumb ligament damage. As a result, ligaments will be challenging to move away from the hand area. The dislocation of the thumb occurs due to a lack of heating and falling with the position of the thumb treading the floor. Damage Cartilage damage causes degenerative changes that coincide with arthritis (Tompkins et al., 2018). Special care is needed to overcome dislocation injury in the thumb so the finger can be in its original function and position. In addition, there is a dislocation injury in the shoulder joint.

Factors that increase the risk of dislocation are saggy ligaments due to injury, decreased muscle strength, or external factors in the form of energy pressure from outside that exceeds the natural resistance of tissues in the body. Dislocation in the shoulder joint occurs due to lack of warm-up, incorrect movement when hitting the shuttlecock, and falls while playing badminton. The shoulder is a joint often dislocated in games (Luokkala et al., 2019). In light shoulder dislocation, athletes can handle it independently at home to relieve pain and speed up the recovery process of shoulder dislocation. Self-care is compressing the shoulder with ice wrapped in a towel for 15-20 minutes, as much as 3-4 times a day, resting the shoulder, and repositioning the shoulder (closed reduction). Another significant injury is the dislocation of the knee joint. Lateral patella dislocation (LPD) is the most common knee injury in children with traumatic knee hemarthrosis

(Askenberger et al., 2018). Dislocation injuries to the knee joint occur due to lack of warm-up, wrong movement after a jumping smash, and falling while playing badminton.

Table 1 Factor Injury from 30 athlete

No.	Causative Factors of Injury	Answer (%)	
		Yes	No
1.	Joking with friends at training	57	43
2.	The body is in an unhealthy state	40	60
3.	The field is uneven or slippery	50	50
4.	Not serious when warming up	60	40
5.	Anxious and tense while playing badminton	27	73
6.	Lack of heating	50	50
7.	Lack of concentration	47	53
8.	Not cooling down after practice	40	60
9.	Shoes are not up to standard	30	70
10.	Cooling off is not seriously	37	63

Discussion

Scratches on the toes usually occur due to shoes that are too narrow and can also be a shoe that is already thin. Bruises to the knee usually occur from falling while chasing the shuttlecock. In addition to blisters on the toes and knees, blisters on the arms usually occur on the elbows. The causes of hand-arm abrasions on the elbow are usually due to falling while chasing the shuttlecock and getting hit by the racket when hitting the shuttlecock. Handling minor injuries, especially bruises, is done by compressing using ice to prevent excessive bruising. While handling minor injuries, especially abrasions, provide first aid and first aid such as being given red medicine and then bandaged so that the blisters are not exposed to dirt or sweat. Cramp injuries occur because athletes' warm-ups are not serious, and they can also be too tired when playing badminton, so athletes experience cramps in the hamstrings. The hamstring injury experienced by badminton athletes aged 10-11 years is minor. In previous studies, 18 cases were found from the 21 sample data examined (Ihsan, 2017). Gender affects risk and recovery, with the primary factor being differences in the level of flexibility (Apriantono et al., 2021).

The hamstring function is vital in sports activities (Green et al., 2020). The cause of a hamstring injury is overstretching of the hamstring muscles, especially during sudden and explosive movements. Mild hamstring injuries in athletes aged 10-11 years with less severe symptoms can generally be managed independently. Self-care for minor hamstring injuries can include rest and inactivity, applying ice for 20 minutes every 2-3 hours for several days, and applying an elastic bandage to the injured area to reduce swelling. Minor injuries also need special resing. Treatment of moderate injuries, especially injuries to tendons, is to stop activity, rest the injured limb, apply ice to the injured area for 15 minutes every two hours, and most importantly, avoid sports activities, alcohol consumption, and massage or massage areas. injury because it can reduce swelling. In addition,

you should rest between training days, warm up longer, and use good and correct badminton equipment. Sprains on the feet are injuries that are often experienced by players, especially in badminton (Jefri, Candrawati, & Adi W., 2018).

Ligament injuries (sprains) often occur in the knees, heels, wrists, and thumbs. ACL injury exposes psychological disorders in athletes (Paterno et al., 2018). Ligament injuries in the knee can cause ligament injuries such as improper body shape, poor facilities and infrastructure, not warming up, and a tired body. Ligament injuries occur due to falling while chasing a shuttlecock with improper knee support, joking with friends during physical exercise such as sprints that cause falls, and when the body is tired. Handling ligament injuries can be done by protecting the ligament muscles, resting the muscles or ligaments, cooling the muscles or ligaments, pressing the muscles or ligaments, and finally raising or elevating the position of the injury. this action is called PRICE (Protect, Rest, Ice, Compression, and Elevation). This action is effective in treating sprains (Nurholilah, 2021).

Dislocations in badminton athletes, especially athletes aged 10-11 years, are usually mild dislocation injuries and can still be healed independently. Handling dislocation injury to the knee is to restore the bone or shift to its original position and prevent damage to nerves or blood vessels around the joint. After that, you can also perform self-care by compressing the joint with ice or warm water for 15-20 minutes, resting the sprained joints, and avoiding movements that cause pain. The latter trains the joints with light exercises and is done slowly. Factors that increase the risk of dislocation are loose ligaments due to a history of injury, decreased muscle strength, or external factors that exceed the power and natural resistance of tissues in the body.

CONCLUSION

Based on the results of the data analysis and discussions outlined, it can be concluded that minor injuries that have occurred in badminton clubs included in the criteria are rare, with a percentage of 43.3%. Intermediate damages that have happened in the requirements are rare, with a rate of 66.67%. The cause of injury to male junior athletes aged 10-11 years included in the criteria has occurred because of many causal factors whose percentage is included in the requirements. Like, for joking with friends at the time of training, the body is in an unhealthy state, the field is uneven or slippery, not serious at the time of warming up, lack of warm-up, lack of concentration when playing badminton, not cooling off after training, and cooling off not seriously. Severe injuries have occurred with a percentage of 33.33%. Of the several factors that cause damage, all share as the cause of minor, medium, and severe injuries. The identification of injuries and the cause of injury can be used to increase the supervision of the coach to the athlete and make it knowledge for the coach or athlete to improve everything that can prevent the occurrence of injury. In addition, the results of

this study can be used as a consideration to increase alertness further and improve things related to the injury. Athletes can make these results more serious and careful in doing exercises or activities outside of training.

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