

Sports Injuries Seen in Korfball Players: Assessment of Injuries' Areas and Types

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Abstract

The aim of this study is to investigate sports injuries seen in korfball players according to injuries' areas and types. A total of 118 (55 female, 63 male) Korfball players participated in the study voluntarily. The mean age of the athletes was 21.26±1.90 years, the mean height was 176.73±10.16 cm and the mean body weight was 69.75±12.87 kg. The Scandinavian Musculoskeletal Questionnaire (NMQ) was used to assess the disability of athletes. The body was divided into nine sections: neck, shoulder, elbow, wrist, back, waist, hip-thigh, knee, foot-ankle. Statistical package program was used to evaluate the data. The results were evaluated using frequency distribution and percentage distribution. When the highest frequency of injury was seen in 33.9% (n=40) of the foot-ankle, 19.5% (n=23) of the knee and 10.2% (n=12) of the back. The frequency of injury types by region is seen in the foot-ankle with 34.7% (n=41), knee with 19.5% (n=23), and in the back with 9.9% (n=12). According to the total frequency of injuries, it is seen that the biggest ratio is strain with 33% (n=39), sprain with 28% (n=33) and muscle pain with 14.3% (n=17). It has been found that a large proportion of injuries occur during training. The most common injuries were observed in the foot-ankle, knee and back regions. It is seen that 31.2% (n=37) of the athletes are treated in health institutions. Foot-ankle and knee injuries are the most common causes of injuries. As a result, it was determined that most of the korfball players were injured from foot-ankle, knee, back regions and the majority of these injuries occurred during trainings. It can be said that Sports Scientists can organize training programs according to the anatomical structures and physical characteristics of the athletes by taking care of good warm-up exercises before starting the trainings and competitions and in this case they can minimize disability.

Key Words: Korfball, Sports Disabilities, Injuries.

INTRODUCTION

Korfball was invented in 20th century, then designed and inspired from a basketball-like game played by women during a summer course in Sweden. The inventor introduced the game under the name of "Korfball" which became a Dutch word meaning "basket" (1). In 1970, the International Korfball Federation was a popular sport played in 69 countries on 5 continents, while there were 4 members in Europe (2). It is the only team sport where high speed movements, sudden changes of direction and motor skills are used at the highest level and men and women play at the same time. The arrival of Korfball to our country was in the last

of 20th century. As of now, more than 30 clubs and school teams are struggling as super league and first league in our country (3).

In general, sports injuries are a common name given to any kind of damage that occurs as a result of encountering resistance that cannot be met by tissues in whole or in part of the body (4,5). These damages can occur during daily sports activities as well as during training or competition (6). It is possible to divide sports disability into two groups as individual factors and environmental factors (7). These individual factors such as age, gender, joint restriction, anatomical problems, previous injuries, inadequate training and lack of flexibility, inequality

of force distribution, overload and malnutrition, inadequate body preparation, inaccurate branch-specific technique, psychological (concentration) 40% of sports injuries (8). Environmental factors include sports ground and areas, equipment, heat, seasons, humidity, wind, climate management, competition management, wrong training technique, misdirection of trainers (9, 10). The type and regions of injury vary according to the physical structure and age of the athlete. For this condition, which affects the lives of athletes negatively, physicians and sports health professionals should know the type of disability and appropriate treatment method and apply a treatment plan accordingly (11).

In line with this information, the aim of our study is to investigate the injury regions and types of korfball players.

MATERIALS AND METHODS

118 (55 female, 63 male) Korfball players participated to the study voluntarily who play in University Teams. The mean age of players was 21.26±1.90 years, the mean height was 176.73±10.16 cm and the mean body weight was 69.75±12.87 kg. The Nordic Musculoskeletal Questionnaire (NMQ) was used for assessing the injuries of players which had been proven reliability and validity before. In the survey, nine body parts were divided into neck, shoulder, elbow, wrist, back, waist, hip, thigh, knee, foot and ankle. The questionnaire was filled in by

personal interview method. The questionnaire questions the injuries experienced by the athlete in the last year.

Statistical Analysis

Statistical package program was used to evaluate the data. Results were evaluated with frequency and percentage distribution values.

FINDINGS

Table 1. Evaluation of the Frequency of Injuries in Body Parts

Body Parts	n	%
Neck	3	2.5
Right Shoulder	9	7.6
Left Shoulder	1	.8
Both Shoulders	1	.8
Elbow	2	1.7
Right Hand-Wrist	2	1.8
Left Hand-Wrist	1	.8
Back	12	10.2
Waist	8	6.8
Hip-Thigh	-	-
Knee	23	19.5
Foot-Ankle	40	33.9

When the Table 1 is examined, it is respectively seen that the most frequent injuries are in the foot-ankle, 33.9% (n=40), knee, 19.5% (n=23), and 10.2% (n=12).

Table 2. Frequency of Injury Types According to Regions and Rates According to Total Injury Frequency

	Bruise-Beanie		Strain		Injury		Muscle Pain		Muscle Tear		Sprain		Others		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Neck	-	-	-	-	-	-	2	1.7	-	-	-	-	-	-	2	1.7
Shoulder	-	-	6	5.1	-	-	4	3.4	-	-	-	-	1	.8	11	9.3
Elbow	-	-	2	1.7	-	-	-	-	-	-	-	-	-	-	2	1.7
Hand-Wrist	-	-	3	2.5	-	-	-	-	-	-	-	-	-	-	3	2.5
Back	1	.8	3	2.5	-	-	7	5.9	-	-	-	-	1	.7	12	9.9
Waist	-	-	5	4.2	-	-	3	2.5	-	-	-	-	-	-	8	6.7
Hip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Knee	-	-	16	13.6	-	-	-	-	-	-	2	1.7	5	4.2	23	19.5
Foot-Ankle	4	3.4	4	3.4	-	-	1	.8	1	.8	31	26.3	-	-	41	34.7
Total	5	4.2	39	33	-	-	17	14.3	1	.8	33	28	7	5.7		

In Table 2, it is seen that the frequency of injury types according to regions occurred in the foot-ankle with a total of 34.7% (n=41), knee with 19.5% (n=23), and in the back with 9.9% (n=12). According to the total frequency of injuries, it is seen that the biggest ratio is strain with 33% (n=39), sprain with 28% (n=33) and muscle pain with 14.3% (n=17).

Table 3. Frequency and Time of Injury Occurrence

Body Parts	In Trainings		In Competition		Others	
	n	%	n	%	n	%
Neck	1	.8	-	-	1	.8
Shoulder	8	6.8	2	1.7	1	.8
Elbow	2	1.7	-	-	-	-
Hand-Wrist	2	1.7	1	.8	-	-
Back	10	8.5	2	1.7	-	-
Waist	6	5.1	-	-	2	1.7
Hip	-	-	-	-	-	-
Knee	11	9.3	7	5.9	5	4.2
Foot-Ankle	25	21.2	16	13.6	-	-
Total	65	55.1	28	23.7	9	7.5

When Table 3 was examined, it was found that a large proportion of injuries occurred during trainings. The most common injuries were observed in the foot-ankle, knee and back regions.

Table 4. Frequency and Rates of Application to Health Care Units Due to Injury

Body Parts	True	%
Neck	1	.8
Shoulder	2	1.7
Elbow	-	-
Hand-Wrist	3	2.5
Back	1	.8
Waist	-	-
Hip	-	-
Knee	10	8.5
Foot-Ankle	20	16.9
Total	37	31.2

When Table 4 is evaluated, it is seen that 31.2% (n=37) of the injuries suffered by players were treated in health institutions. Injuries occurring in the foot-ankle and knee regions are the most common types of injuries applied to the health institution.

DISCUSSION

As the characteristics and likelihood of disability are not the same for all sports, it is true for all sports to know how the disability occurs, to prevent disability and to encourage other athletes to play fair.

In general, too many injuries occur in the lower extremity in sports branches, respectively in the knee, ankle and hip. The causes of these injuries are generally reported as muscle bruises, muscle tears, tendon and ligament tears, fractures and dislocations in the bones (12).

In our study, when the injury parts of the players were evaluated, the most injuries were 33.9% (n=40) ankle-foot, 19.5% (n=23) knee and 10.2% (n=12) back parts. It is seen that the frequency of injury types according to regions occurs in foot-ankle with 34.7% (n=41), knee with 19.5% (n=23),

and back with 9.9% (n=12). According to the total frequency of injuries, it is seen that the biggest ratio is strain with 33% (n=39), sprain with 28% (n=33) and muscle pain with 14.3% (n=17). Injuries occurred in Korfball were found during training with a great rate of 55.1 (n=65). The most common injuries in the trainings are seen in the foot-ankle, knee and back regions. It is seen that 31.2% (n=37) of the players' injuries were treated in health institutions. Foot-ankle and knee injuries are the most common causes of injuries.

When similar studies in the literature are examined; Alp et al. stated that the frequency of injury types according to regions occurs in foot-ankle with 27.2% and knee region with 26.7%. According to the total frequency of injuries, it was seen that the biggest ratio was bruise-bereft with 69.9%, strain with 53.9% and muscle pain with 28.3%. In the present study, it was found that most of the injuries were during the trainings (13). Goh.SI et al. recorded 63 injuries, then the most common damage was found in 64% of soft tissues and sprains(14). One third of the injuries were seen in the lower extremity, especially in the knee and back. McKay et al. they found that ankle sprain is the most common injury and this injury is due to lack of sports shoes or strength (15). Kocaman et al. in thir study that one the most injured areas of the athletes was the back as 16.1% (n=35) (16). In a study by Ergün et al. (17), while the majority of the injuries (79.5%) were seen in the lower extremities, thigh (31.8%), hip/groin (25%), waist (11.4%) injuries were the most common localizations of injuries and the regions followed respectively as ankle (9.1%), knee (6.8%), calf and neck (6.8%), lower leg (4.6%), chest (2.3%) and foot (2.3%). In another study, it was found that 31.2% of the foot/ nkle and 15.1% of

knees were the most common body regions where disability occurred (18). Hawkins and Fuller (19) found that 391 injuries during the competition were 37% injury, 21% sprains, 4% fractures and 2% tissue ruptures. These injuries were determined to be in regions of 23% thigh, 15% knee, 12% leg, 7% foot, 6% trunk, 3% head, 2% upper extremity, 3% hip.

Acak et al. (20) stated that the most injuries occur U-19 athletes had 55% in technical-tactical studies and 38.7% in condition exercises; U-21 athletes 53.4% in technical-tactical studies and 38.4% in fitness exercises. Taking necessary measures to reduce this ratio, they suggested that the training plans should be revised according to the existing athletes, field and material opportunities. In this study, the upper extremity injury rate of the athletes is 28.6%. The ratio of lower extremity injury regions was 71.4%. Accordingly, when the lower extremity regions are examined, ankle injuries, 16% lower legs, 15.15% upper legs and 15.2% knee injuries are prominent. As the main reason for the occurrence of these injuries; collision, loss of balance, air ball struggle and uncontrolled intervention. In the study of Bayraktar et al. (21) these were reported to have been injured as 78.8% of the athletes during the competition in the lower extremity, 21.2% other regions; 82.1% of the lower extremities during training 19.9% of the other region injuries. Şeker (22) reported that 56.97% of the injuries occurred in training and 43.03% of the injuries occurred in matches. Similar to these studies, Hägglund (23) reported that the injuries were 46% in the competition and 54% in training. Junge and Dvorak (24) reported that the frequency of injuries of athletes mostly occurred in lower extremity with 70%, followed by head and neck with 13% and upper extremity with 10%. They reported that the most common areas of disability occur in the leg with 11%, ankle sprain with 10%, and inguinal pain with 8%. Hoff and Martin (25) found that 24.3% of athletes should receive medical assistance after injury and in general 66.6% of injuries were caused by physical contact between players. In another study, it was found that ankle was the most intensely injured area due to intense one-to-one contact with the competing athlete in the game (26). When all these studies are examined, it is seen that although the athletes are in different branches, it is similar to our study in terms of the high incidence of injury during training.

In many studies, ankle is the most common type of injury. Fong et al. The study examined 227 sports injuries. 70 different sports from 38 countries were examined and it was found that ankle was the most easily injured area. Studies have shown that the ankle is referred to be the most frequently injured place after the knee and sprains are the most common in the wrist (27). Kauzlaric (28) reported 26% of athletes foot pain. In Maehlum's (29) study, it was found that 24% of ankle sprains were the most common injuries. In another study, it was found that a large proportion of the injuries occurred in the lower extremities and occurred in the ankle region with a maximum rate of 35% (30). Tenvergert et al. (31) reported that lower extremity injuries occur mostly in the ankle and foot region. In many countries; found that the majority of sports injuries occur in the fingers (50%) and the ankle (15%) (32). In order to determine the causes of injuries, 543 male and 436 female students were found to have the most knee and ankle regions in which they encountered injury (33). Chomiak et al. (34) reported that 29% of the injuries were in the knee region. It has been reported in their study that the highest probability of injury for the athletes were in the ankle and knee regions. Researches show that the type of sport involved (contact-contactless), the duration of sporting activity, the role of the opponent and his teammates affect the injuries. In this study, it was observed that the number of athletes applying to health centers was higher in branches where contact with competing athletes was higher (35). In this respect, we think that there is a similarity between the literature and our study.

CONCLUSION

As a result, it was found that most of the Korfball players were injured from foot-ankle, knee and back regions, the majority of these injuries and injuries occurred during training and they applied to health institutions about these issues. Sports Scientists are advised to organize their training programs according to the anatomical structure and physical characteristics of athletes by taking care of good warm-up exercises before starting the training and competitions, and it can be said that they can minimize disability. Strength training to strengthen the muscle structure to be performed in the regions where the most disability occurs in the Korfball should take place as a separate part of the training. Trainers and players had better pay attention to the

level of load during training, especially overloading these areas should be avoided.

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