

Injury by regions seen in greco-roman & freestyle wrestling

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Abstract

The aim of this study is to examine the regional differences of injuries that Greco-Roman and Free Style wrestlers suffer from. The study was carried out on 200 volunteer wrestlers all of whom attended national and international games from Turkey and Kyrgyzstan. Of the 200 wrestlers 100 were Greco-Roman wrestlers and the rest 100 were free style wrestlers and the average age was 21.15 ± 3.54 . By transferring the data obtained to SPSS 15 programme average, frequency and percentage were analyzed. The results indicated that while free style wrestlers suffered from knee, hand, wrist injuries more frequently than the Greco-Roman wrestlers, the Greco - Roman wrestlers got more rib, back, shoulder and elbow injuries than the Freesytlers. At the end of this study, it is concluded that the differences of special techniques and defence styles between the Greco - Roman and Free-Style wrestling has an important role in the injuries.

Key words: Free - Style wrestling, Greco-Roman wrestling, sporter injuries.

INTRODUCTION

The term "sports injuries" involves conditions that develop when the whole or a part of the body faces with strength more than the normal and as a result the endurance limit of tissues is exceeded. Beside exogen injuries that occur during sportive activities caused by external factors, endogen injuries caused by the own strength of the body are described as sports injury (12).

Today, with the growing number of sporters and the frequency of training, the number of sports injuries increase. Besides; lack or inadequacy of infrastructure, equipment, and doing sport unconsciously are among other factors. Sport injuries can be caused by both the sporter himself/herself and his/her rival with or without an agent (4). Another study showed that beginners of a sport are more exposed to injuries than experienced ones (9).

Sports injuries has different characteristics depending the branch of sport. Preventing from injuries is more important than treatment. Informing

sporters about the ways of prevention and help them fight against factors that cause injuries and disablements (13).

An activity needs struggle and intensive physical work to be defined as sport. During intensive sportive work, sporters can have injuries caused by different factors (13).

It shouldn't be ignored that irregular and inevitable trainings and free exercises are potential factors of injuries. Besides; length, weight, percentage of body fat and body mass index values increase the risk of sport injuries (13).

According to studies; most of the injuries are caused by intentional fouls. Inexperience of the rival and not obeying the rules are the second major cause of injuries (15). It is known that one of the causes of injuries is overloading the body. Overloading the body depends on age, training, sex, and the condition of muscles, articulators and ligaments (8).

Today, sport is an activity that has many branches and done either professionally or

unprofessionally. and it is an indispensable activity for today's people. It is accepted that sport is the prior condition of healthy life. Another accepted truth is injuries occur during the sport activity (14).

According to studies, the rate of injuries in all branches of sports is 1.9 % (3). Statistics show that; sport injuries and disablements have an important place among all injuries and disablements with the rate of 10-15 % (2).

Wrestling is a branch that requires cooperation of all body parts besides courage, reflex, ability, durability and strength. So it is a close-struggle sport that must be started at early ages (9). In another definition, wrestling is described as the struggle of two wrestlers who try to beat each other on the mat without any equipments, only by using their techniques, abilities and intelligence in the frame of FILA rules (10). In wrestling, wrestlers try to push, draw and run down each other. In this context; wrestlers are quite prone to be injured.

Olympic wrestling has two different styles. One of these is free style wrestling, which includes using all parts of the body (16). The second is Greco-Roman wrestling, which includes only the upper part of the body. The most important characteristic of this style is that wrestlers are not allowed to hold the other's feet and legs. The nature and techniques of each style differ from the other.

In the light of this knowledge; the aim of our study is to examine the differences and the causes of the injuries seen in Greco-Roman and Free Style wrestlers.

MATERIAL & METHOD

Subjects

Two-hundred active and elite wrestlers from Turkish and Kirgiz national teams took part in this study. 100 of them were Greco-Roman wrestlers, 100 were freestylers.

While freestyle wrestlers' average age was 21.89 ± 3.55 , average length was 173.52 ± 6.97 , average weight was 74.82 ± 16.77 , average wrestling background was 7.12 ± 2.99 years, average training frequency was 5.70 ± 1.43 times a week, Greco-Roman wrestlers' average age was 20.41 ± 3.54 , average length was 172.64 ± 6.74 , average weight was 71.24 ± 11.19 , average wrestling background was 5.72 ± 2.82 years, average training frequency was 5.48 ± 1.08 times a week.

Measures

In this study, the data was collected by taking a survey consisting of 13 questions. The 200 wrestlers were asked to answer the questions about their demographic attributes, history of their injuries, whether they had any injuries during their sport lives or not, the part of the body they had the injury, the activity in which he was injured (training or wrestling match), the duration of their injuries and the period they didn't do any training. The questions were in Turkish, Kirgiz and Russian.

The data collected was evaluated by the statistic programme (SPSS 15) and the results were interpreted.

RESULTS

Table 1 reflects the demographic attributes of the wrestlers who took part in the study.

When the causes of injuries the free style wrestlers had were studied, it was seen that 42% were injured because of inadequate free exercise, 16% were injured because of inadequate concentration, 19% were injured because of anomalous recovery, 14% were injured because of incorrect technique and 1% was injured because of losing weight.

Table 1. The average range of demographic attributes of the wrestlers who took part in the study.

Variations	Free Style n=100	Greco-Roman n=100
Age (Year)	21.89	20.41
Height (cm)	173.52	172.64
Weight (kg)	74.82	71.24
Sports age (year)	7.12	5.72
Weekly training frequency	5.70	5.48

Table 2. Percentage range of injury regions and the causes.

Variations	Free style (%) n=100	Greco-Roman (%) n=100
No injuries	8	12
Inadequate free exercise	42	28
Inadequate concentration	16	7
Anomalous recovery	19	10
Losing weight	1	4
Incorrect technique	14	39

On the other hand; 28% of the Greco-Roman wrestlers were injured because of inadequate concentration 7% were injured because of inadequate concentration 10% were injured because of anomalous recovery, 4% were injured because of

losing weight and 39% were injured because of incorrect technique.

It was seen that; of the free style wrestlers who took part in the study, 12% had injuries in their neck regions. 91.7% of these injuries occurred during trainings and 8.3% occurred during matches. While 75% of the free stylers could start training in a time shorter than one month and 25 % could do this in a time longer than one month after neck injuries.

It was also seen that 11% of the Greco-Roman wrestlers 100 % of whom were injured during trainings had injuries in their neck regions And none were injured during matches While 63.6 % of them could start training in a time shorter than one month , 36.4 % of them needed treatments longer

than one month.

It was seen that 21% of the Free Style wrestlers had shoulder injuries and of these injuries 76.2 % occurred during trainings and 23.8 % occurred during matches. 66.7% of these wrestlers could start training in a time shorter than one month, but 33.3 % of them could start training in a time longer than one month after a shoulder injury.

26% of the Greco-Roman wrestlers told that they had injuries on their shoulders. It was seen that 84.6 % of them were injured during trainings and 15.4% were injured during matches. 73% of these wrestlers could start training in a time shorter than one month, but 27% of them could start training in a time longer than one month.

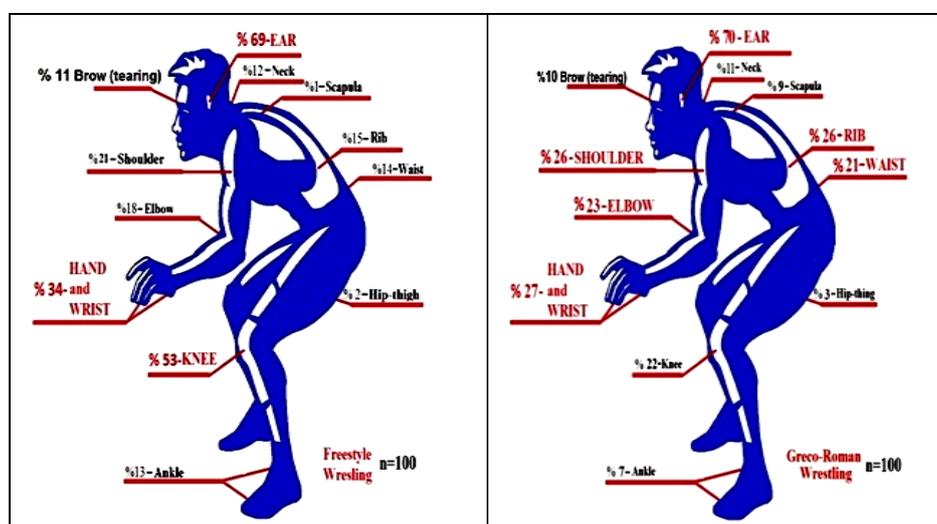


Figure 1. The percentage range of injury zones seen in Free style wrestlers and Greco-Roman wrestlers who took part in this study.

Table 3. The percentage range of Neck injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style		Greco-Roman	
Those who had injuries	Those who didn't have injuries	Those who had injuries	Those who didn't have injuries
12%		11%	
During Training	During match	During training	During match
91.7%	8.3%	100%	0%
Shorter than 1 month	More than 1 month	Shorter than 1 month	More than 1 month
75%	25%	63.6%	36.4%

Table 4. The percentage range of shoulder injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style		Greco-Roman	
Those who had injuries	Those who didn't have injuries	Those who had injuries	Those who didn't have injuries
21%		26%	
During Training	During match	During training	During match
76.2%	23.8%	84.6%	15.4%
Shorter than 1 month	More than 1 month	Shorter than 1 month	More than 1 month
66.7%	33.3%	73%	27%

Table 5. The percentage range of shoulder injuries free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
% 18			% 23		
During Training	During match		During tarining	During match	
% 88.9	% 11.1	% 82	% 82.6	% 17.4	% 77
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
% 88.9	% 11.1		% 73.9	% 26.1	

Table 6. The percentage range of hand and wrist injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
% 34			27%		
During Training	During match		During training	During match	
97.1%	2.9%	66%	85.2%	14.8%	73%
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
91.2%	8.8%		88.9%	11.1%	

Table 7. The percentage range of upper part of the back injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
2%			9%		
During Training	During match		During tarining	During match	
100%	0%	98%	66.7%	33.3%	91%
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
50%	50%		77.8%	22.2%	

According to the Table 5, it was seen that 18% of the Free Style wrestlers had elbow injuries and of these injuries 88.9 % occurred during trainings and 11.1 % occurred during matches. 88.9 % of these wrestlers could start training in a time shorter than one month , but 11.1 % of them could start training in a time longer than one month after a shoulder injury.

23 % of the Greco-Roman wrestlers had injuries on their elbows. It was seen that 82.6 % of them were injured during trainings and 17.4 % were injured during matches. 73.9 % of these wrestlers could start training in a time shorter than one month , but 26.1 % of them could start training in a time longer than one month.

According to the Table 6, it was seen that 34 % of the Free Style wrestlers had hand and wrist injuries and of these injuries 97.1% occurred during trainings and 2.9% occurred during matches. 91.2 % of these wrestlers could start training in a time shorter than one month , but 8.8 % of them could

start training in a time longer than one month after a shoulder injury

27 % of the Greco-Roman wrestlers had injuries on their elbows. It was seen that 85.2 % of them were injured during trainings and 14,8 % were injured during matches. 88.9 % of these wrestlers could start training in a time shorter than one month , but 11.1% of them could start training in a time longer than one month.

According to the Table 7, 2% of the free style wrestlers had injuries on the upper parts of their backs. All of the injuries occurred during trainings. 50% of those who had injuries could start training earlier than one month, and the other 50 % could do this in a period longer than one month.

The figures of injuries on the upper part of the back for the Greco-Roman wrestlers are as follows; 66.7% occurred during trainings while 33.3 % occurred during matches. 77.8 % of the Greco-

Roman wrestlers who had injuries could start training earlier than on month. The rest 22.2 % could start training in a period longer than one month.

According to the Table 8, it was seen that 14 % of the Free Style wrestlers back injuries and of these injuries 12% 85.7% occurred during trainings and 2% 14.3% of the injuries occurred during matches. 10 % 71.4 % of these wrestlers could start training in a time shorter than one month, and 4%, 28.6 % of them could start training in a time longer than one month after a shoulder injury

21 % of the Greco-Roman wrestlers had injuries on their back. It was seen that 90.5 % of them were injured during trainings and 9,5% were injured during matches. 76.2% of these wrestlers could start

training in a time shorter than one month, but 23.8 % of them could start training in a time longer than one month.

According to the Table 9, it was seen that 2 % of the Free Style wrestlers had hip / thigh injuries and of these injuries 100% occurred during trainings no injuries occurred during matches. All of these wrestlers could start training in a time shorter than one month

3 % of the Greco-Roman wrestlers had injuries on their hips / thighs It was seen that 100% of them were injured during trainings and no one injured during matches. All of these wrestlers could start training in a time shorter than one month .

Table 8. The percentage range of back injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
14%			21%		
During Training	During match		During training	During match	
85.7%	14.3%	86%	90.5%	9.5%	79%
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
71.4%	28.6%		76.2%	23.8%	

Table 9. The percentage range of hip/thigh injuries free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
% 2			%3		
During Training	During match		During training	During match	
%100	% 0	% 98	%100	%0	% 97
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
%100	% 0		%100	% 0	

Table 10. The percentage range of knee injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
% 53			%22		
During Training	During match		During training	During match	
%77,4	% 22,6	% 47	% 95,5	% 4,5	% 78
Shorter than 1 month	More than 1 month		Shorter than 1 month	More than 1 month	
% 73,6	% 26,4		% 81,8	% 18,2	

According to the Table 10, it was seen that 53 % of the Free Style wrestlers had knee injuries and of these injuries 77.4% occurred during trainings and 22.6 % of the injuries occurred during matches. 73.6 % of these wrestlers could start training in a time shorter than one month, and 26.4 % of them

could start training in a time longer than one month after a shoulder injury

22 % of the Greco-Roman wrestlers had injuries on their knees. It was seen that 95.5 % of them were injured during trainings and 4.5% were injured during matches. 81.8 % of these wrestlers could

start training in a time shorter than one month, but 18.2% of them could start training in a time longer than one month.

According to the Table 11, it was seen that 13% of the Free Style wrestlers had ankle injuries and of these injuries 53.8% occurred during trainings and 46.2% of the injuries occurred during matches. 76.9% of these wrestlers could start training in a time shorter than one month, and

23.1% of them could start training in a time longer than one month after a shoulder injury

7 % of the Greco-Roman wrestlers had injuries on their ankles. It was seen that 85.7 % of them were injured during trainings and 14.3% were injured during matches. 85.7% of these wrestlers could start training in a time shorter than one month , but 14.3 % of them could start training in a time longer than one month.

Table 11. The percentage range of ankle injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style		Greco-Roman	
Those who had injuries		Those who didn't have injuries	
% 13		%7	
During Training	During match	During training	During match
% 53,8	% 46,2	% 85,7	% 14,3
Shorter than 1 month	More than 1 month	Shorter than 1 month	More than 1 month
% 76,9	% 23,1	% 85,7	% 14,3

Table 12. The percentage range of rib injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style		Greco-Roman	
Those who had injuries		Those who didn't have injuries	
% 15		% 26	
During Training	During match	During training	During match
% 80	% 20	% 73,1	% 26,9
Shorter than 1 month	More than 1 month	Shorter than 1 month	More than 1 month
% 46,7	% 53,3	% 69,2	% 30,1

Table 13. The percentage range of ear (fracture) injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style		Greco-Roman	
Those who had injuries		Those who didn't have injuries	
% 69		% 71	
During Training	During match	During training	During match
% 91,3	% 8,7	% 91,5	% 8,5
Shorter than 1 month	More than 1 month	Shorter than 1 month	More than 1 month
% 97,1	% 2,9	% 97,2	% 2,8

According to the Table 12, it was seen that 15 % of the Free Style wrestlers had rib injuries and of these injuries 80% occurred during trainings and 20 % of the injuries occurred during matches. 46.7% of these wrestlers could start training in a time shorter than one month , and 53,3% of them could start training in a time longer than one month after a shoulder injury

26 % of the Greco-Roman wrestlers had injuries on their ribs. It was seen that 73.1% of them were injured during trainings and 26.9% were injured during matches. 69.2 % of these wrestlers could

start training in a time shorter than one month , but 30.1% of them could start training in a time longer than one month.

According to the Table 13, it was seen that 15 % of the Free Style wrestlers had ear fractures and of these injuries 91.3% occurred during trainings and 8.7% of the injuries occurred during matches. 97.1% of these wrestlers could start training in a time shorter than one month , and 2,9% of them could start training in a time longer than one month after a shoulder injury.

Table 14. The percentage range of brow (tearing) injuries Free stylers and Greco-Roman wrestlers who took part in this study had.

Free Style			Greco-Roman		
Those who had injuries		Those who didn't have injuries	Those who had injuries		Those who didn't have injuries
% 11		% 89	% 10		% 90
During Training % 27,3	During match % 72,7		During tarining % 50	During match % 50	
Shorter than 1 month % 81,8	More than 1 month % 18,2		Shorter than 1 month % 100	More than 1 month % 0	

71 % of the Greco-Roman wrestlers had ear fractures. It was seen that 91.5% of them were injured during trainings and 8.5% were injured during matches. 97.2% of these wrestlers could start training in a time shorter than one month , but 2.8% of them could start training in a time longer than one month.

According to the Table 14, it was seen that 11 % of the Free Style wrestlers had ear fractures and of these injuries 27.3% occurred during trainings and 72.7% of the injuries occurred during matches. 81.8% of these wrestlers could start training in a time shorter than one month, and 18.2% of them could start training in a time longer than one month after a shoulder injury

10 % of the Greco-Roman wrestlers had ear fractures. It was seen that 50% of them were injured during trainings and 50% were injured during matches. All of these wrestlers could start training in a time shorter than one month.

DISCUSSION

Sports injuries are called as conditions that develop when the whole or a part of the body faces with strength more than the normal and as a result the endurance limit of tissues is exceeded (12). Sporters who suffer from injuries have to stop training for while depending on the level of their injuries. And this can effect their seasonal success badly.

The aim of our study was to examine the differences of injury regions of 200 elite wrestlers all of whom attended national and international games from Turkey and Kyrgyzstan.

According to the examination of the findings; ear fractures are the most common injuries. The rate is 69 % among the free style wrestlers and 71% among the Greco-Roman wrestlers. Ear fractures are commonly seen in wrestling and it is accepted as the nature of this sport. Moreover; it is known that ear fractures do not keep the wrestlers

away from training for a long time.

Knee injuries seen among the free style wrestlers in our study reflects a quite high rate by 53 %. The rate of knee injuries is 22% for Greco-Roman wrestlers This rate is similar to the results of some studies. Hence, Can (5) determined in his study in which he examined the injury regions of wrestlers that the rate of knee injuries was 22,05. In their study on the prospective evaluation of wrestlers' injury regions, Charles et al. (6) reported that knee was the most injured part of the body. In another study, Yard & Comstock (17) reported that with the rate of 23.2 % knee was the most injured parts of the Greco-Roman and Free style wrestlers who joined the American national wrestling tournament.

This research findings show similarity with those of the other researchers. Moreover, our findings showing that free stylers have more knee injuries than Greco-Roman wrestlers resembles the findings of Yard & Comstock (17) It is assumed that the high rate of knee injuries are because of incorrect techniques, Overloading lower extremities during the match, falling on mat severely, and sometimes the weights of both wrestlers burden only one knee.

The reason why the rate of knee injuries seen among Greco-Roman wrestlers is lower is that it is forbidden for them to use lower extremities in the game. But freestylers use their lower extremities actively to win the game ,so their knees are more prone to be injured.

It is ascertained by our study that one of the most injured part of the bodies of wrestlers is shoulder with the rate of 22.5 %. Charles et al. (6) reported that shoulder was the second mostly injured part of the body with the rate of 24%. This shows similarity with our findings.

While the rate of shoulder injuries among Greco-Roman wrestlers is 26 % ,the is 21 for the free style wrestlers. Our findings show similarity with those of Yard et al. (18). It is thought that the main

cause of frequency of shoulder injuries seen among wrestlers is that shoulder has the key role in defence. Thus, it has to carry a heavy load.

It was ascertained that one of the most frequently injured parts of the wrestlers is their rib regions. The rate of rib injuries among Greco-Roman wrestlers is 26% while it is 15 % among free style wrestlers. Yard & Comstock (17) findings support our findings. Charles et al. (6) reported that rib injuries rate was 17 %. In another study in which Dergach & Ryabinin (7) analyzed the factors of injuries, rib injuries were one of the most commonly injured parts of the wrestlers' bodies. This shows resemblance with our findings. Greco – Roman wrestlers have more rib injuries and It is thought, because the rib is the major part where defence and other techniques applied on the mat and in standing position.

When the rate of hand and wrist injuries the wrestlers who took part in our study had was examined according to the style of wrestling, the rate was 27 % for Greco-Roman wrestlers and 34 % for free style wrestlers. It clear that free style wretslers have more hand and wrist injuries than Greco-Roman wretslers. These results are supported by the findings of Yard & Comstock (17).

The rate of elbow injuries the Greco-Roman wrestlers who took part in our study had was 21 % .The rate was 18 % for free style wrestlers. Yard & Comstock (17) reported that free stylers who joined the national tournament in America had more elbow injuries than the Greco-Roman wrestlers This shows resemblance with our findings.

When the rate of brow injuries the wrestlers who took part in our study had was examined, the rate was 11 % for Greco-Roman wrestlers and 10 % for free style wrestlers. In another study, Dergach and Ryabinin (7) reported that wretslers had injuries in their near- eye regions (brow) with the rate of 18.4 % .The findings of other resarchers Charles et al. (6) supports our fiindings with the rate of 8 %.

The rate of neck injuries the Greco-Roman wrestlers who took part in our study had was 12 % .The rate was 12 % for free style wrestlers. Charles et al. (6) supports our fiindings with the rate of 11 %.

When the rate of back injuries the wrestlers who took part in our study had was examined, the rate was 21 % for Greco-Roman wrestlers and 14 % for free style wrestlers. Yard & Comstock (17) reported that 9.8 % of the free stylers who joined the

national tournament in America had back injuries and the rate was 9.3 % for the Greco-Roman wrestlers. Nearly all of other researcher's findings support our study. While other researchers' findings reflect the statistics of a tournament, our findings reflect the statistics of back injuries of the wrestlers during their sport lives.

On of the questions we asked the wrestlers was the reasons of injuries. According to the answers received the highest rate was for inadequate free exercise with 35 %. Another reason was incorrect techniques with the rate of 26.5 % It was seen that 39% of the Greco-Roman wrestlers and 14 % of the free style wrestlers had injuries because of incoreect techniques.

Anomalous recovery or inadequate time of resting was one of the reason for injuries with the rate of 24.5 %. The rate was 19 % for the free style wrestler while it was 10 % for the Greco-Roman wrestlers.

It is concluded that the injuries shows regional differences depending on the style of wrestling (Greco - Roman or free style) and the techniques.

It is recommended that wrestlers should take trainings seriously as they do in matches, they should try to strenghten the parts they do not use actively in their techniques and they should do enough free exercise before the trainings and matches.

REFERENCES

1. Aak M. Greş ğreniyorum, Malatya, Kubbealti Yayıncılık, 2001.
2. Atik Ő, Ayas İ, GzeliŐ A. Spor yaralanmaları ve menisks lezyonları. Spor Hekimliđi Dergisi,1986; 21(3): 97-99.
3. BaŐaran M. Serbest ve Greko-Romen Greş. Ankara, Genlik ve Spor Genel Mdrlđ Uzman Matbaacılık, 1989; 1-75.
4. Bayraktar S, Grsu H, Grsu . Spor yaralanmaları. Spor Hekimliđi Dergisi, 1977; 12(1): 57.
5. Can S. Spor BranŐlarında Sakatlık OluŐumuna; Boy, Kilo Vct Kilo İndeksi, cinsiyet ve el Tercihini Gibi Faktrlerin Etkisi. Atatrk niversitesi Sađlık Bilimleri Enstits, Yksek Lisans Tezi, Erzurum, 1997.
6. Charles B, Pasque MD, Timothy EH. A prospective study of high school wrestling injuries. The American Journal of Sport Medicine, 2000; 28(4): 509-515.
7. Dergach EA, Ryabinin SK. PhD Sibirya Federal niversitesi. Spor Hayatını Bırakma: nedenleri ve zellikleri. Monografi, 2012.
8. Durbin F, Gerlach JH. Kadınlarda spor sakatlıkları ve temel sorunları. Spor Hekimliđi Dergisi 1981; 16(3): 95-97.
9. Eren M. Erzurum blgesinin greş sporunda son 50 yıl iindeki baŐarıları, bubaŐarıların Trk greşine etkileri. İstanbul:

- Marmara Üniversitesi Sağlık Bilimleri Enstitüsü, Yüksek Lisans Tezi, 1994.
10. Groh H, Groh P. Sportver letzun genund spor schaden, Luitpold-Werk, Çev: Ergün Başer. 1. Ed 1975: 12-20.
 11. Güven A. Ansiklopedik spor dünyası, Serhat Yayıncılık, İstanbul: 1982.
 12. <http://meduniver.com/Medical/Xirurgia/1629.html> MedUniver (Date accessed: 12.01.15).
 13. Kalyon TA. Spor hekimliği-sporcu sağlığı ve spor sakatlıkları. Ankara: Gata Basımevi, 3. Baskı, 1995: 177-260.
 14. Kaplan TA, Digel SL, Seavo VA, Arellana SB. Effect of obesity on injury risk in high school football players. Clinical J of Sport Medicine Raven Press Ltd New York, 1995; 5: 43-47.
 15. Önçağ H, Kızılay C, Taşkiran E. Spor yaralanmaları ve istatistiki değerlendirilmesi. Spor Hekimliği Dergisi, 1988; 23(4): 121-126.
 16. Özşahin F, Kestelloğlu M, Akpınar N. Spor travmalarında etio-patogenez. Spor Hekimliği Dergisi, 1978; 3(4): 93-95.
 17. TGF Uluslar Arası Amatör Güreş Federasyonu, Uluslar Arası Güreş Kaideleri, Serbest, Grekoromen ve Bayanlar Güreşi. Ankara, 1990.
 18. Yard EE, Comstock RD. Comparison of pediatric freestyle and Greco-Roman wrestling injuries sustained during a 2006 US National Tournament. Scandinavian Journal of Medicine, 2007: 1-7.