INVESTIGATION OF REGIONAL STRENGTH OF KIRGIZ GRECO-ROMAN AND FREESTYLE NATIONAL TEAM WRESTLERS

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ABSRTACT

The aim of this study is to determine body fat ratio (BFR), body mass indexes (BMI) and regional strength differences of Greco-Roman and freestyle wrestlers in Kyrgyzstan national team. 20 Greco-roman wrestlers participated in the study with mean age of 25,00 ± 5,83 (years), height length of 175,45 ± 6,80 (cm) and body weights of 73,15 ± 17,21 (kg), while 20 freestyle wrestlers participated in the study with mean age of21.50 ± 3.05 (years) height length of 175.20±8.34 (cm) and body weight of 79.50 ± 19.65 (kg).The measurements of the claw strength of the subjects were made by using a Takkei brand hand dynamometer and their back and leg strength made by using a Takkei brand back and leg dynamometer. The body fat ratios have been determined in accordance with the HOLTAIN brand skinfold caliper and according to LANGE formula. Expressions such as SPSS 15.00 package program, mean, standard deviation, percentage and t test have been used in the analysis of the data. Significance level has been determined as ($p<0.05$) in statistical calculations. As a result, it has been found that the average of Greco-Roman style wrestlers2 back strength was significantly higher than that of Freestyle wrestlers' ($P<0.05$). According to wrestling style difference, there was no statistically difference between paw strengths and body fat ratios and body mass indexes ($P> 0,05$). The values of Greco-roman style wrestlers' leg strength were higher than Freestyle wrestlers', but this difference was not statistically significant ($P> 0.05$).

Key Words: Greco-Roman Wrestling, Freestyle Wrestling, Strength

KIRGIZ GREKO-ROMEN VE SERBEST MİLLİ GÜREŞÇİLERİN BÖLGESEL KUVVETLERİNİN İNCELENMESİ

ÖZ

Bu araştırmanın amacı, Kırgızistan Milli Takımında yer alan greko-romen ve serbest stil güreşçilerin bölgesel kuvvet farklılıkları, vücut yağ oranları (VYO) ve beden kitle indekslerinin (BKİ) belirlenmesidir. Çalışmaya katılan 20 Greko-Romen güreşçinin yaşları 25,00±5,83 (yıl), boy uzunlukları175,45±6,80 (cm), Vücut ağırlıkları 73,15±17,21 (kg) ortalamalarında tespit edilirken, 20 serbest stil güreşçinin yaşları 21,50±3,05 (yıl) boy uzunlukları 175,20±8,34 (cm), vücut ağırlıkları 79,50±19,65 (kg) ortalamalarında belirlenmiştir. Deneklerin pence kuvveti ölçümleri takkei marka el dinamometresi ile, Sırt ve bacak kuvvetleri Takkei marka sırt ve bacak dinamometresi kullanılarak yapıldı. Vücut yağ oranları HOLTAİN marka skinfold kaliperle, LANGE formülüne gore belirlendi. Verilerin analizinde SPSS 15.00 paket programı, ortalama, standart sapma, yüzde ifadeler ve t testi kullanıldı. İstatistiksel hesaplamalarda anlamlılık düzeyi ($p<0.05$) olarakbelirlendi. Sonuç olarak Greko-Romen stil güreşçilerin sırt kuvveti ortalamaları, serbest stil güreşçilerden önemli düzeyde yüksek olduğu tespit edilmiştir ($P<0,05$). Güreş stilif arklılığına gore pence kuvvetleri, Vücut Yağ Oranları ve Beden Kitle İndeksleri arasında istatistiksel olarak farklılık bulunmamıştır ($P>0,05$). Gerko-romen stil güreşçilerin bacak kuvveti değerleri serbest stil güreşçilerden yüksek bulunmuş, ancak bu fark istatistiksel olarak önem yansıtmamıştır ($P>0,05$).
AnahtarKelimeler: Greko-Romen güreş, Serbest güreş, Kuvvet

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INTRODUCTION

The bodily structure or in other words the physical characteristics is one of the factors that affects performance. Because bodily structure or physical properties affect the performance of physiological capacities. It is not possible to attain the desired performance level unless the possessed physical structure is suitable for the performed sport. The physical structure has a high impact on the performance of the athletes. Physical structure affects the athlete's performance positively by combining with other performance indicators such as strength, power, flexibility, speed, durability, and quickness[1]. The fact that athletes' body fat ratios and body mass indexes are within normal limits is one of the most important physical characteristics that affects performance positively.

Wrestling is a kind of sport that needs to be initiated at early ages for preparation, as it is an activity in which courage, reflexes, skills, endurance and strength have been required[9]. In another definition, wrestling has been expressed as struggle oftwo persons to defeat each other by using their skills and intelligence on the mattresses with certain dimensions, within the scope of FILE rules, without using anydevice[11].

Wrestling is a branch of sport which contains a combination of physical, mental, psychological, biomotorical, technical and tactical features of wrestler. Wrestling, which is dominantly used by the anaerobic energy system, has also been identified as a branch of sport that affects the factors such as strength, speed, quickness, flexibility, balance, muscular and cardiovascular endurance and coordination[2,5,6,14].

Wrestling is not only a struggle to defeat competitors but also is a sport that requires sporty performance such as high endurance (aerobic, anaerobic, respiratory functions), strength, flexibility, speed, quickness, balance, reaction and strategy and control[24]. In addition, wrestling, in itself, includes different categories like freestyle and Greco-roman[22]. It is also known that wrestlers' physical capacities and biomotor properties are extremely important[26].

In terms of performance, the strength comes from biomaterials features is the most important characteristic[15]. Another writer described muscle strength as being resistant against external environment and defeating ability against it[7]. The effect of strength on success has been acknowledged by everyone in all sport branches. In particular, the quality and quantity of strength is becoming more important in weight sports[18,23]. In order to perform various wrestling techniques both physical activity and muscle strength and isometric strength are required[13]. In wrestlers, it is the key to success with strength, quickness and explosive power[16]. In this context, the wrestlers exhibit a high level of performance during the competitions and training sessions. At the end of the competition or training, ensuring that the fall of the muscular strength is returned to normal in the shortest time will always give a plus feature and advantage to the wrestlers.

This research was planned to examine the differences in back strength, leg strength and claw strength of Greco-roman and freestyle wrestlers, which are very important

in terms of applying various techniques belonging to the wrestling and defending against the techniques applied by the rival.

METHODS

A total of 40 wrestlers participated in the stuıdy voluntarily, including 20 Freestyle and 20 Greco-Roman styles participating in the National Team competences on behalf of Kyrgyzstan. Demographic characteristics of the athletes involved in the study are given in Table 1.

Table 1. Characteristic Characteristics of Wrestlers Participating in The Study

Variables	Greko-Romen Style (20)	Freestyle (20)	Total (n=40)
	(Mean ± Sd)	(Mean ± Sd)	(Mean ± Sd)
Age (Year)	25.00±5.83	21.50±3.05	23.25±4.92
Length (cm)	175.45±6.80	175.20±8.34	175.33±7.51
Body Weight (kg)	73.15±17.21	79.50±19.65	76.32±18.51

The research was conducted on free and Greco-Roman style wrestlers who compete in Kyrgyzstan national and international competitions. The mean age, height and body weight of 20 Greco-Roman wrestlers, who participated in the study, have been determined as mean age 25.00 ± 5.83 (years), height length was 175.45 ± 6.80 (cm).body weights 73.15 ± 17.21 (kg) and the 20 freestyle wrestlers2 have been determined as mean age of 21.50 ± 3.05 (years), height length 175.20 ± 8.34 (cm), and body weight 79.50 ± 19.65 (kg).

Claw strength measurement:

This measurement was carried out by Takkei brand hand dynamometer and measurements were taken after the athlete warmed up for 5 minutes, standing up as upright position and legs open as much as shoulder width and the arm at an angle of 45 ° to the body without bending. The measurement was repeated three times and the best value was recorded in kilograms.

Back strength measurement:

This measurement was carried out by using Takkei brand back and leg dynamometer. After 5 minutes warming, the subjects' feet have been placed on dynamometer stand, knees, legs and arms stretched, backup right position and body leaned slightly forward and hands caught on the dynamometer bar and pulled it up vertically. This application was repeated 3 times and the best value of each subject was recorded in kilograms.

Leg strength measurement:

Leg strength measurement was carried out by using Takkei brand back and leg dynamometer. After 5 minutes warming, the subjects' feet have been placed on

dynamometer stand while their knees were twisted. The arms were stretched, the knees were twisted, the back straight, and the body leaned slightly forward and the dynamometer bar gripped by the hands and pulled up vertically using the maximum strength of the legs. This traction was repeated 3 times and the best value for each subject was recorded in kilograms.

The Measurements of Body Fat Percentage and Body Mass Index

In order to determine the body fat percentage of participants in the study group, skin fold thicknesses have been measured by HOLTAIN brand skinfold calipers (1 mm precision) and body fat percentages have been determined according to the LANGE formula.

Total Body Fat Percentage: The sum of measurements taken from 6 regions (biceps, triceps, scapula, suprailiac, chest, thigh) was * 0.097 + 3.64[17]. Body mass index (BMI) values have been calculated by Body Weight (kg) / (Length (m) 2 formula[27].

Data Analysis

Statistical analysis was performed using the SPSS statistical program. Normal distribution of the data was determined using Shapiro Wilk Normality test. Values were expressed as mean ± Standard Deviation (SD). Independent t test was used to compare the parameters between the groups. Significant level was set at P<0,05. in addition, some figures used in statistics are shown in percentages.

RESULTS

The comparison of regional strength measures, body fat percentages (BFPs) and body mass indexes (BMI) of the Greco-roman and freestyle Kyrgyz wrestlers who participated in the study are presented in the following tables and graphs

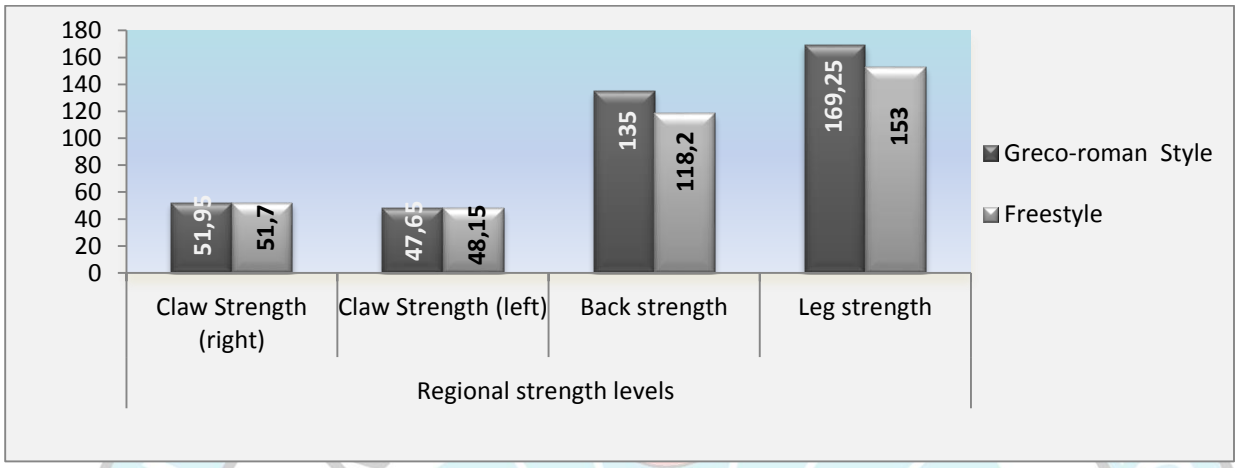
Table 2: Regional strength levels of Greco-Roman and Freestyle wrestlers

	Type of Wrestling	n	mean	Sd	t	p
Claw Strength(right)	Greco-Roman Style	20	51.95	7.28	0.104	0.92
	Freestyle	20	51.70	7.90		
Claw Strength (left)	Greco-Roman Style	20	47.65	8.28	-0.192	0.85
	Freestyle	20	48.15	8.19		
Back strength	Greco-Roman Style	20	135.00	26.00	2.38	0.02*
	Freestyle	20	118.20	17.87		
Leg strength	Greco-Roman Style	20	169.25	36.53	1.717	0.09
	Freestyle	20	153.00	21.36		

(P<0.05)

When Table 2is examined, it is found that the back strength averages of Greco-Roman style wrestlers participating in the study, statistically, are significantly higher than freestyle wrestlers (P <0.05). According to the wrestling style difference, there was no significant difference between the paw strengths (P> 0.05). The values of

Greco-Roman style wrestlers' leg strength were higher than free style wrestlers', but this difference was no statistically significant (P>0.05).



Graphic1.Graphical distribution of regional strength averages of wrestlers

Table 3. BFRsand BMI Levels of WrestlersIncluded in theStudy

Variables	Wrestling type	n	(Mean ± Sd)	t	p
Body Fat Rate BFR (%)	Greco-Romen Style	20	10.02±0.57	-0.934	0.35
	Freestyle	20	10.21±0.70		
Body Mass Index BMI (kg/m2)	Greco-Romen Style	20	23.55±3.48	-1.152	0.13
	Freestyle	20	25.65±4.90		

(P<0.05)

As shown in Table 3, there was no statistically significant difference between wrestling styles when body fat rate and body mass index averages of Greco-Roman and freestyle wrestlers participating in the study were examined (p> 0,05)

Graph 2. Body Mass Index and Body Fat Ratios of Wrestlers

DISCUSSION

It is known that in wrestling alongside fast reaction time. High aerobic and anaerobic capacity, tactical and intelligence and the techniques applied on the competitor to defeat him/her while competition, the muscular strength is an obligation for the success. The muscular strengthis also one of the most important features required to be protected from the techniques applied by competitor.

In the study we have carried out on Kyrgyzstan free and Greco-Roman style wrestlers who compete in national and international competitions, all athletes have used their right hand as dominant. The right claw strength of Greco-roman style wrestlers has been found as 51.95 ± 7.28 kg and the left claw strength has been found as 47.65 ± 8.28, while the right claw strength of freestyle wrestlers has been specified as 51.70 ± 7.90 kg and their left claw strength has been specified as 48.15 ± 8.19 kg. There are studies that support the claw strength values in our study. As a matter of fact, Ziyagil[25] in his study which carried out on 32 freestyle wrestlers, has found the right claw strength of the athletes as 48.7 kg and their left claw strength has 47.2 kg. In another study, Baykus[6], has recorded the right claw strength of18 freestyle wrestlers as 43.7 kg and left claw strength as 39.5 kg and in the same study the right claw strength of 18 Greco-roman wrestlers has been recorded as 40.7 kg and their left claw strength as 38.2 kg. Gökdemir et al.,[10] have determined the values of 16-17 age group wrestlers as a result of 8-week fast-strength training such that the study group's pre-training right hand grip strength values were 47.80 kg and left hand grip strength values were 46.76 kg. Hazar et al.[12] have reported the right hand grip strength of the wrestlers as 52.29 kg and left hand grip strength as 48.59 kg. The findings were found somewhat lower than our results. The reason for this difference can be interpreted as the fact that the wrestlers who make up our subject groups consisted of high-spindle national team athletes and could have stronger claw strength. In our study, there was no statistically significant difference between the claw strength of Greco-roman and freestyle wrestlers (P> 0.05). The reason for this can be attributed to the fact that hand grip strength correlates with upper extremity muscle strength, as well as with general body strength[20].

According to the results of the research, the back strength of Greco-roman wrestlers have been found as 135.00 ± 26.00 kg and the leg strength as 169.25 ± 36.53 kg. The back strength of the free wrestlers has been determined as 118.20 ± 17.87 kg and their leg strength as 153.00 ± 21.36. In the study conducted by Aydos et al.,[5] the back strength of the wrestlers has been reported as 155.8 kg and their leg strength as 161 kg. In another study Şenel et al.[21], carried out on a group of 31 wrestlers with mean age of 21, have found back strength as 163.7 kg and leg strength as 136.9 kg. Schmidt et al.,[19] have determined the back strength levels as 157.9 ± 25.2 kg. The leg and back strength values reported by the researchers reflect values that support our study findings.

Even if the leg strength of Greco-roman style wrestlers was higher than freestyle wrestlers' when examined in our study, this difference was not statistically significant (P> 0.05). A significant difference was found in the average of back strength of wrestlers in favor of Greco-roman wrestlers (P<0.05).

This difference can be interpreted as the fact that back muscles of Greco-roman wrestler may be stronger than freestyle wrestlers due to nature of Greco-roman which includes the techniques such as pulling, pushing and throwing and needs special trainings.

In investigation of Body Fat Percentage (BFPs) and Body Mass Index (BMI) levels of the wrestlers included in the study, the Body Fat Percentage level of Greco-roman style wrestlers have been found as 10.02 ± 0.57 and their BMI values have been found as 23.55 ± 3.48 kg / while Body Fat Percentage level of freestyle wrestlers have been found as 10.21 ± 0.70 and their BMI levels have been found as 25.65 ± 4.90 kg / m2. In the evaluation of the data, no statistical difference was found in terms of both parameters. Akyüz and at al.[3] have found wrestlers' body mass index as (25.04 ± 3.35 kg / m2) and body fat percentages as (9.82 ± 3.05) in their study. In another study, they reported 10% of the fat percentage of the wrestlers, ranging from 54 to 130 kg, which is generally included in national teams by Yoon[24]. In a similar research, Alpay and at al.[4] studying the effect of weight loss of wrestlers on body composition, we found body mass indices of the athletes who did not lose weight at 25.09 ± 3.02 kg / m2 and body fat ratios at the level of 10.61 ± 4.34. The results reported by the researchers paralleled our study findings.

According to the findings of the study, free and Greco-romen wrestlers have similar body fat percentages and body mass indexes. It has been observed that Greco-Roman style wrestlers, whose claw and leg strengths are similar in terms of regional forces, have a higher level of back strength than free style wrestlers.

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