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SEASONAL CHANGES IN THE REGIONAL STRENGTH AND WEIGHTS OF GRECO-ROMAN STYLE WRESTLERS

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СЕЗОННЫЕ ИЗМЕНЕНИЯ СИЛЫ И ВЕСА БОРЦОВ ГРЕКО-РИМСКОГО СТИЛЯ

УДК: 546.187

This study was conducted to analyze the seasonal changes in the regional strength and weights of Greco-roman style wrestlers who had an average age of 22,39 years. 18 competitor wrestlers who trained regularly in Kyrgyzstan participated in the study voluntarily. Within a season, right-left hand grip strength, back strength, leg strength and weight parameters of the research group were measured and recorded three times as first preparation period (1st measurement), second preparation period (2nd measurement), and competition period (3rd measurement). The data obtained were assessed with SPSS 15.00 program and differences between measurements were considered as significant at the level of (0,05).

According to the results of the study, wrestlers' right and left hand (grip), leg and back strength averages were similar in the second and third measurements ($p > 0,05$), while they were found to be significantly higher when compared with the first measurement ($p < 0,05$). In terms of weight averages, first and second measurements were found to be statistically significant ($p > 0,05$) and they were found to be significantly higher when compared with the third measurement.

As a conclusion, it was observed that wrestlers completed their strength gains at the end of the second preparation period before competitions; during the competition period, when compared with the second measurement, strength averages which were found to be low- although not significantly, were associated with the lost weight and decreases were found in weight at the level of dehydration during the competition period.

Key Words: Seasonal change, Greco-roman wrestling, Strength, Weight

Это исследование было проведено для анализа сезонных изменений в силе и весе борцов греко-римского стиля, средний возраст испытуемых составляет 22,39 лет. В исследование принимали участие 18 спортсмен-борцов, которые регулярно обучались в Кыргызстане. В течение сезона были проведены три измерения во время первого периода подготовки (1-е измерение), второго периода подготовки (2-е измерение) и во время 1-го этапа соревнований (3-е измерение). Полученные данные были обработаны программой SPSS 15.00, а различия между измерениями оказались значимыми на уровне (0,05).

Согласно результатам исследования, показатели силы правой и левой рук борцов (сцепление), средние показатели силы мышц спины были одинаковыми во втором и третьем измерениях ($p > 0,05$), в то время как они оказались значительно выше по сравнению со значениями первого измерения ($p < 0,05$). По средним значениям было обнаружено, что первое и второе измерения статистически значимы ($p > 0,05$), и они оказались значительно выше по сравнению с третьим измерением.

В заключении было отмечено, что борец находился в лучшей кондиции в конце второго периода подготовки до соревнований. В течение периода соревнований по сравне-

нию со вторым измерением средние значения, которые были признаны низкими, хотя и не значительно, что было связано с потерей веса спортсмена, а потери были обнаружены в весе на уровне обезвоживания в течение периода соревнований.

Ключевые слова: сезонные изменения, греко-римская борьба, сила, вес.

As known, wrestling is the leading sport branch which the strength feature is most needed. Strength is one of the physical characteristics required for wrestlers to win competitions and alongside it is quite necessary during the training sessions for competitions. The wrestlers work hard and long during the season in order to maximize the strength characteristics to be parallel with the technical specifications. Even knowing that the strength must be at the highest level in order to be able to practice the technique leads the wrestlers to take more time for strength development during training.

The wrestling continues to be a sporting event which is exciting to the audience at every moment of watching due to be defense and offense systems together, applying of games in a very short time, the short time of the encounter, the close contact with the tactics and the constantly renewing rules make the wrestlers more active. Wrestling is also defined as a sports branch where factors such as speed, strength, quickness, flexibility, balance, muscular and cardiovascular endurance, coordination, etc., are used predominantly by wrestling anaerobic energy system (1,2,3). In addition, the strength is briefly expressed as the ability to apply strength (4).

It is also stated that wrestling is the heaviest sport in which weight loss is experienced and wrestlers sometimes lose weight in harmful way to health (5). Weight loss is often done in hope of wrestling at a lower weight to be advantageous (6.7). Sportsmen weight loss by reduction of water and food intake and doing excessive exercise and losing water by sweating (dehydration) (5) is known as a method of weight loss.

On the light of this information in our study, the changes of wrestlers have been investigated by measuring the regional strengths and body weights three times in total at periodic intervals starting from the beginning of the season to the day before the competition.

METHOD

This study was carried out on 18 contest wrestlers with an average age of 22.39±0.16 years and a height average of 179.61±0.91 cm. Regional strengths and body weights of wrestlers have been measured and recorded totally three times in the same season, at the beginning

of the first preparation period (1st measurement), at the beginning of the second preparation period (2nd measurement) and one day before the competition scales (3rd measurement).

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.

Statistical Evaluation

Analyzes of the obtained data have been made in SPSS 15 packet program. Among the groups Veryans anova and for the comparison of the groups Tukey test have been used. The difference in the 0.05 level between the measurements has been considered significant.

RESULTS

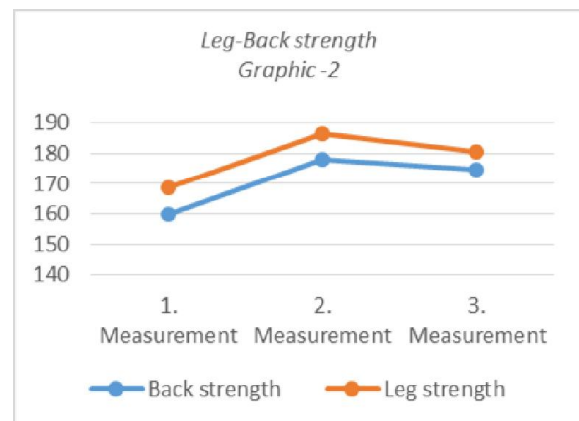
The results of body weight and regional strength changes of the wrestlers who were prepared for competitions during a season have been analyzed and the results are presented as below.

Table 1. Wrestlers' seasonal variations of regional strength and body weights

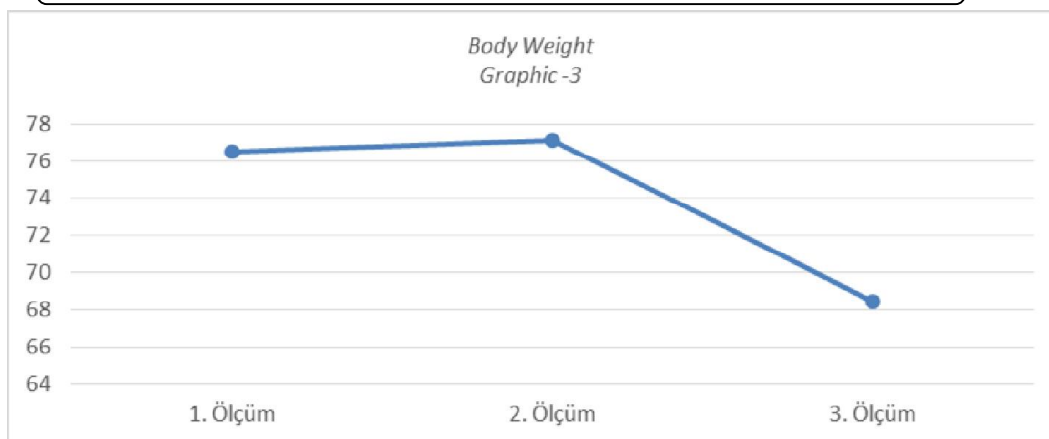
variables (N=18)	1. measurement Mean± SE	2. measurement Mean± SE	3. measurement Mean± SE	P
Body weight (kg)	76,48±1,70 ^A	77,15±1,68 ^A	68,42±4,07 ^B	0,049
Right claw strength (kg)	56,73±1,08 ^B	61,20±0,96 ^A	59,74±1,08 ^A	0,012
Left claw strength (kg)	52,8±0,87 ^B	57,4±0,90 ^A	56,6±0,94 ^A	0,001
Back strength (kg)	159,81±2,99 ^B	177,83±2,50 ^A	174,56±2,28 ^A	0,001
Leg strength (kg)	168,61±3,43 ^B	186,44±2,96 ^A	180,39±3,21 ^A	0,001

A,B,C: different letters in the same line indicates important differences between the means (p < 0.05)

Wrestlers' right and left hand (claw), leg and back strength averages have showed similarity in the 2nd and 3rd measurements (p>0,05) and were significantly higher than the 1st measurement ratio (p<0,05). Wrestlers' body weight averages were found as statistically similar (p>0,05) and significantly higher than the third measurement (p<0,05). (table 1- graphic 1,2,3)



Graphic 1-2. Wrestlers' seasonal variations of regional strength



Graphic 3. *Wrestlers' seasonal variations of body weights*

When the data obtained from the research group are examined, the results of the three measurements made during the season the right and left claw (grip) and back strength averages in the 2nd and 3rd measurements ($p > 0,05$) showed a similarity and have been found significantly higher than the 1st measurement ($p < 0,05$). The body weights of the wrestlers in the first and second measurements were statistically similar ($p > 0,05$) and significantly higher than the third measurement ($p < 0,05$).

DISCUSSION AND CONCLUSION

In this study the examining of changes in body weights and regional muscle strengths of Greco-Roman style wrestlers with mean age of $22,39 \pm 0,16$ years during the same season, has been aimed.

When the data obtained from the research group are examined as the results of the three measurements made during the season, the average of right and left claw grip and back strength have been found as similar ($P > 0.05$) in second and third measurement and were found significantly higher than the 1st measurement rate ($p < 0.05$). Body weight averages of the wrestlers have been found statistically similar in the first and second measurements reflecting a significantly higher average than the third measurement. In a study Aydos (1996) investigated the effect of short-term weight loss on strength and endurance on 17 wrestlers and found that 5% fast weight loss affects general endurance, basis strength, quick strength and aerobic capacity negatively in different levels (8). In another study Torranin et al. (1979) have investigated the duration of muscular endurance after 4% weight loss in wrestlers and reported that 31% of isometric exercise and 29% of isotonic exercise were shorter in all muscle groups (9). In another study, Bosco et al. (1968) found similar findings as other researchers and concluded that about 5% of weight loss decreases the basis strength feature (10). Rich et al. (2003) have investigated the effect of fast weight loss on general strength and concluded that fast weight loss before competition has a negative effect on relative strength of the athletes (11). Hence, Güneş (1998) has been specified that if the athlete combines nutrition and fluid restriction together with the aim of losing weight, alongside the drawbacks of dehydration decrease in liver

glycogen stores, loss of fluid and electrolytes (sodium, potassium, etc. minerals), decrease in oxygen consumption and decrease in muscle strength will be occurred (12).

In our study, the third measurement of wrestlers' body weight was made on the day before the competition scale. These measurements were significantly lower than the first measurements made at the beginning of the season and the second measurements taken during the second preparation period.

The third measurement of wrestlers' body weights in our study which was made one day before the competition was significantly lower than the first measurements measured at the beginning of the season and second measurement made during preparation period.

The regional strength of the wrestlers increased in the second and third measurements according to the first measure. However, although the third measurement strength levels were not found significant, they were low in the second measurement ratio and as specified by Güneş (1988) it is due to excessive decrease in body weight.

As a result, it was concluded that the wrestlers completed their pre-competitive strength gains at the end of the second preparation period but despite the strength averages scantiness immediately prior to the competition scale were not significant, the scantiness of strength averages in comparison with the second preparation period can be caused by consciously reduced body weight.

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