

The investigation of the weight loss methods and effects on the elite U23 wrestlers

Buğrahan Cesur¹, Ahmet Sanioğlu²

¹Muş Alparslan University, School of Physical Education and Sport, Muş, Turkey - E-mail: bugrahancesur@hotmail.com;

²Selçuk University, Faculty of Sports Sciences, Konya, Turkey

Abstract. *Study Objectives:* The weight loss in sports is a method that has been implemented so much in several championships for a long time. It is thought that the athletes will be more successful in a lower weight and are considered to be effective, but it is underestimated that the unconscious weight loss causes health problems and negative effects on organisms. In this study, it was aimed to investigate weight loss methods and effects on elite wrestlers and determining the difference between Free-Style and Greco-Roman style. *Methods:* The research consists of a total of 97 wrestlers, who are in the U23 Turkish National Team category and lose weight before the competition. For determining the weight loss methods and effects on a wrestler, "The athlete's weight loss method and effects scale" was used. Mann-Whitney U test was used for comparison of Free-Style and Greco-Roman style wrestlers' weight loss methods and effects scale scores. *Results:* Although there was no significant difference between Greco-Roman and Free-Style wrestlers in the psychological effect, ergogenic aids, diet, and fluid loss sub-dimensions, physiological effect sub-dimension mean were statistically significant between Free-Style and Greco-Roman wrestlers ($p < 0.05$). *Conclusion:* As a result, it was found that wrestlers in both groups (Greco-Roman and Free-Style) had more muscle spasms, respiratory disorders, heart palpitations, and injuries with weight loss. It was also found that both Free-Style and Greco-Roman wrestlers preferred to reduce fat consumption and run with raincoats, as a weight loss method.

Keywords: Weight loss methods, wrestling, competition

Introduction

Wrestling, boxing, karate, taekwondo, and judo sports are called weight sports (1). Athletes in weight sports, apply various methods in order to lose weight suddenly, adversely affecting their health and success in these methods (2). Weight loss methods, which are common in competitive sports in the competition period, have been observed as a method since the 1924 Paris Olympics (3). The weight loss is actually an application of the athlete with the hope of being more suc-

cessful by losing his/her ideal weight to a lower weight classification. In addition to this, it is thought to reveal several disadvantages (2). It is considered that losing weight is not a precise and correct method of success. In weight sports, the biggest problems of athletes are to adjust their weight to competition weights (4). Athletes who control their weight during the competition period, heavier athletes quickly lose weight since they must be in the competition weight at the time of the competition. It is stated that the athletes should keep the consumed and intake calories equal while

performing weight control as the main factor with the training performed during the competition period (5).

The negative effects of short-term weight loss before the competition on athlete's performances were demonstrated through national and international scientific studies. Today, weight athletes, unconsciously applying weight adjustment methods, adjust their weights by various methods without taking any support from a nutritionist. It is thought that random diet arrangements, the reduction of the taken fluid, and various fluid loss methods are the principal weight loss methods (2). It is stated that one of the most common situations in sports competitions and training is dehydration. Dehydration can cause muscle cramps, weakness, temperature regulation mechanisms, fast fatigue, imbalance in electrolytes, and disturbance of concentration (6). If the lack of fluid in the human body is not adequately replaced, not only sportive performance will decrease but also serious health problems resulted from even death may arise (7). The aim of the study was to determine whether there is a difference between Free-Style and Greco-Roman wrestler's weight loss methods and effects, in the U23 wrestling national team.

Material and Methods

Participants

The research consists of a total of 100 (50 male Free-Style, and 50 male Greco-Roman) wrestlers, who are in the U23 Turkish National Team category and lose weight before the competition. Because of 3 Free-Style wrestlers who participated in the study were not filled the questionnaires validly, these 3 questionnaires were not included in the study.

Data Collection

"The athlete's weight loss method and effects scale" developed by Yazar et al. (2016) (8) was used as a data collection tool. The scale is a 5-point Likert type scale (1=Never, 2=Rarely, 3=Sometimes, 4=Often, and 5=Always) consisting of 19 items divided into five sub-dimensions. The scale consists of two parts; the

first part of the scale, includes demographic questions about the participants, and the second part includes 5 sub-dimensions (19 items) related to weight loss methods and effects. These 5 sub-dimensions are explained below.

Physiological Effect: This sub-dimension is related to the degree of athletes whether they have muscle cramps, heartbeat, breathing difficulties, disability, and body temperature increase and physiological effects while weight losing (Item 10,11,12,13,14).

Psychological Effect: In this sub-dimension, the situation of the athlete about how they feel psychologically about the desire to do sports, irritability, fatigue, stress status, and performance levels while weight losing (Item 15,16,17,18,19).

Ergogenic Support: This sub-dimension measures weight loss methods, and usage of diuretics, diet pills, etc. It measures the degree of use of chemical substances (Item 7,8,9).

Diet: In this sub-dimension, the level of fat consumption, carbohydrates consumption, and food consumption are measured while weight losing (Item 1,2,3).

Dehydration: In this sub-dimension, it is measured how much the athlete tends to weight loss by using the sauna, spitting, and running with a raincoat (Item 4,5,6).

The data was obtained in the U23 Turkish National Team camp in Istanbul Sariyer and Ankara Elmadağ. Before applying the scale, necessary permission was obtained from national team coaches.

Statistical Analysis

Statistical analysis of the obtained data was performed with the SPSS 24 package program. Arithmetic means (X), standard deviations (Sd), percentage (%), and frequency were given as descriptive statistics. The normality distribution of the data was conducted through the Kolmogorov-Smirnov test and it was found that the data did not have a normal distribution. Mann-Whitney U test, which is one of the non-parametric tests, was used to compare the sub-dimension scores of Free-Style and Greco-Roman wrestlers. The significance level was accepted as $p < 0.05$.

Results

It was determined that the wrestlers' first weight loss age was 14. In addition, it was determined that the mean weight loss lost for a competition was 6 kg and they lost a mean of 3-4 times in a season (Table 1).

Table 2 showed that Free-Style and Greco-Roman wrestlers are reported that they started weight loss in

the last 2 weeks before the competition, checked their weights several times a week, had difficulty while losing weight, and were successful in most of the competitions.

Table 3 showed the results of the comparison of sub-dimensions scores according to wrestling styles. According to the wrestling style, a significant difference was found in favor of Free-Style wrestlers in the physiological effect sub-dimension ($p < 0.05$).

Table 1. Mean and prevalence of variables related to a weight loss of Free-Style and Greco-Roman wrestlers.

Questions	Style	N	\bar{X}	Sd	Min.	Max.
How old were you when you first lost weight?	Free-Style	47	14,47	2,19	10	20
	Greco-Roman	50	14,00	1,67	11	18
How many kilos have you loss in a competition during your sports life?	Free-Style	47	5,98	2,15	2	11
	Greco-Roman	50	5,91	2,52	2	12
How many times do you weight loss in a season?	Free-Style	47	3,21	1,55	1	8
	Greco-Roman	50	3,62	3,00	1	20

Table 2. Frequency distribution of Free-Style and Greco-Roman wrestlers related to weight loss

Variables	Group	Free-Style		Greco-Roman	
		f	%	f	%
How many days before the competition do you start to weight lose?	1-2 days ago	1	2,1	2	4
	3-5 days ago	4	8,5	3	6
	In the last week	9	19,1	5	10
	In the last 2 weeks	21	44,7	21	42
	3-4 weeksbefore the match	9	19,1	15	30
	More than 1 month	3	6,4	4	8
	Total	47	100	50	100
How often do you check your weight?	Everyday	15	31,9	20	40
	Several times a week	23	48,9	27	54
	Several times a month	4	8,5	1	2
	Once a month	4	8,5	2	4
	Several times a year	1	2,1	0	0
	Once a year	0	0	0	0
Total	47	100	50	100	
Do you have difficulty while losing weight?	Yes	33	70,2	26	52
	No	14	29,8	24	48
	Total	47	100	50	100
What is your success in competitions when you have lost weight?	I have been successful in none of them.	0	0	1	2
	I have not been successful in many of them	10	21,3	8	16
	I have been successful in many of them	37	78,7	39	78
	I have been successful in all of them.	0	0	2	4
	Total	47	100	50	100

Table 3. Comparison of sub-dimensions according to wrestling styles -Mann Whitney U-

Sub-dimensions	Group	N	Mean Rank	Sum of Ranks	z	p
Physiological Effect	Free-Style	47	56,31	2646,50	-2,491	0,01*
	Greco-Roman	50	42,13	2106,50		
Psychological Effect	Free-Style	47	52,64	2474,00	-1,238	0,22
	Greco-Roman	50	45,58	2279,00		
Ergogenic Aids	Free-Style	47	49,72	2337,00	-0,380	0,70
	Greco-Roman	50	48,32	2416,00		
Diet	Free-Style	47	50,54	2375,50	-0,529	0,60
	Greco-Roman	50	47,55	2377,50		
Fluid lose	Free-Style	47	53,55	2517,00	-1,564	0,12
	Greco-Roman	50	44,72	2236,00		

*p<0,05

According to the findings, Free-Style wrestlers are significantly more physiologically affected than Greco-Roman wrestlers. There is no significant difference in terms of other sub-dimensions ($p>0,05$).

Discussion and Conclusion

The aim of the study was to determine whether there is a difference between Free-Style and Greco-Roman wrestler's weight loss methods and effects, in the U23 Wrestling National Team. In this study, it was found that the mean of first weight loss age were 14.47 ± 2.19 years in Free-Style wrestlers and 14.28 ± 1.67 years in Greco-Roman wrestlers. In the studies in which the first weight loss age of the athletes was determined, it was found the wrestler's first weight loss experience was 14 years old (9). In a similar study, Farhan et al. (2014) determined the first weight loss ages of Free-Style and Greco-Roman wrestlers as 14.03 and 14.53, respectively (10). In another study, Bradley (2006) found the mean first weight loss age of male wrestlers to be 15,5 years and 15,1 years for women (11). Oppliger et al. (2003) determined the mean weight loss age of the wrestlers as 13.7 years (12), while Yarar et al. (2017) determined as 14.37 years (13). The results of the studies mentioned above are similar to the results of this study.

In the study, it was determined that 44.7% of Free-Style wrestlers and 42.0% of Greco-Roman wrestlers

lose weight within the last two weeks before the competition date. In a similar study, Brito et al. (2012) found that the athletes in the judo branch started to lose weight 14.5 days, the athletes in the karate branch started to weight lose 14.8 days before, and the athletes in the taekwondo branch started to weight lose approximately 9.7 days before the competition (14). In the study of Yarar et al. (2017) on wrestlers, most of the wrestlers found that they lost weight within the last two weeks before the competition date (13).

In this study, it was found that Free-Style wrestlers lost a mean of 5.98 ± 2.15 kg of Greco-Roman style and a mean of 5.91 ± 2.52 kg weight. Bradley (2006) determined that the most weight loss was 7,0 kg for male wrestlers and 6,2 kg for female wrestlers (11). Artioli et al. (2010) reported that the most weight loss was 4 kg, the mean weight loss was 1,6 kg in their study on 3 judokas (15). In another study on combat athletes, Andreato et al. (2014) reported that the most weight loss was 7,6 kg and the mean weight loss was 5 kg (16). In a similar study, Farhan et al. (2014) found the most weight loss in wrestlers as 3.58 kg in Free-Style and 3.06 kg in Greco-Roman (10). Yarar et al. (2017) found the most weight loss of 5.72 kg in their study on wrestlers (13). Considering the findings in both the literature and this study, it can be said that the wrestlers change the weights greatly. Yağmur et al. (2019) stated that 47.9% of the wrestlers lost weight, and lost 4.68% of their total body weight (17). In a study by Yağmur et al. (2019) 45% of the wrestlers were exposed

to dehydration while weight loss and those exposed to dehydration lost 4.55% of their body weight (18).

In this study, it has been determined that the majority of both Free-Style and Greco-Roman wrestlers do not use laxative, diet, and diuretic pills, which are considered as ergogenic support that cause rapid weight loss.

The World Anti-Doping Agency (WADA) and the International Olympic Committee (IOC) have set up a list of prohibited substances in sports, and athletes using these substances are punished (19). Therefore, it is thought that the vast majority of wrestlers do not use such items. Similarly, it supports the results of the studies conducted in (8,10,11,14,16,20,21), and it has been observed that athletes do not prefer very much such practices. Yazar et al. (2017) stated that wrestlers generally used weight loss methods such as restricting food intake, running with a raincoat, and reducing fat consumption (13).

In the study, it was found that 14.9% of Free-Style wrestlers had muscle cramps at the end of weight loss, 25.6% Free-Style wrestlers had increasing body temperature. It is stated that 40.5% of Free-Style wrestlers become overly angry, 36.2% of Free-Style wrestlers feel extreme fatigue, 21.3% of Free-Style wrestlers' performance decreased, 27.6% of Free-Style wrestlers get stressed, and 19.2% of Free-Style wrestlers' doing sports desire decreased after weight loss. It is stated that 34% of Greco-Roman wrestlers become overly angry, 22% of Greco-Roman wrestlers feel extreme fatigue, 24% of Greco-Roman wrestlers get stressed, and 16% of Greco-Roman wrestlers' doing sports desire decreased after weight loss.

Considering the physiological and psychological effects of weight loss, Kılıç (1998) stated that wrestlers in the cadet category (15-16 age group) lost weight in a short period (2). Kordi et al. (2001) stated that 77% of the wrestlers had negative effects because of rapid weight loss (5). Alpay et al. (2015) stated in their study on elite wrestlers that they had negative effects as an increase in blood urea nitrogen, sodium, and plasma osmolality levels of wrestlers who lost weight by examining the body composition and some mineral levels of the two groups of wrestlers (21). Isik (2015) stated that wrestlers who lost weight had skeletal muscle damage (22). Isik and Dogan (2017) determined that weight loss for female wrestlers were mildly depressed (23).

Yazar et al. (2017) found that high weight loss caused excessive irritability on wrestlers (13). Considering the studies related to performance after short-term weight loss, they found that there was muscle strength loss (24), shortened performance time (25), and a decrease in VO₂Max, which is the most important of endurance performance indicators (8,26,27,28).

As a result of the study, it was found that both Free-Style and Greco-Roman wrestlers started to lose weight in 2 weeks before the competition, their first weight loss age means approximately 14 years, they lose a maximum of 6 kg and this was a negative factor on the sports performance. It was determined that wrestlers in Free-Style and Greco-Roman style preferred to decrease their fat consumption and running in raincoats as weight loss methods. In addition, it was determined that Free-Style wrestlers were more physiologically affected than Greco-Roman wrestlers. This negative effect is thought to be due to the fact that Free-Style wrestlers participated in different wrestling competitions, such as various traditional or local, throughout the year more than Greco-Roman and could not have sufficient rest.

In order to protect wrestlers from the negative effects of rapid weight loss, they need to do weight loss practices in more a long time and gradually. In addition, they can check whether they are exposed to dehydration in weight loss using simple hydration level determination methods (e.g. urine specific gravity). Finally, it can be suggested that they reduce the negative physiological effects in weight loss by methods such as water, isotonic beverage, and mineral supplements.

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Conflicts of interest: The authors declare that there is no conflict of interest about this manuscript.

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Correspondence:

Buğrahan Cesur

Phone: +90 533 946 51 25

E-mail: bugrahancesur@hotmail.com,