



The comparison methods and effect of rapid weight loss between elite teen freestyle and Greco-Roman wrestlers

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ABSTRACT

The purpose of this study was to investigate and compare the prevalence and effects of rapid weight loss among elite teen wrestlers. The wrestler comprised of 130 adolescents (71 Greco-Roman and 59 freestyle wrestlers) with a mean age of 16.49 ± 0.9 and 16.1 ± 1.1 years and weighing 63.1 ± 19.6 and 62.56 ± 15.24 kg who participated in the International Children's Day tournament. Methods of rapid weight loss and weight loss effects of these wrestlers were assessed using a standard Oppliger questionnaire. T tests was applied to check the differences between the athletes at level $p < 0.05$. The results showed that the most used methods for weight loss in both groups were increased physical activity and dieting. Dizziness, irritability and poor concentration were the most common problems in both freestyle and Greco-Roman wrestlers followed by rapid weight loss. The largest weight change for freestyle and Greco-Roman wrestlers in the tournament was respectively, 1.81 and 1.38 kg. No significant difference ($P < 0.05$) was observed between the two groups in this age bracket.

Keyword: wrestling, methods of weight loss, elite teenager

INTRODUCTION

Rapid weight loss is a dangerous procedure that is commonly used by wrestlers. This method caused stress in the population of the sport in the early 1930s (4). Three wrestlers who were preparing themselves for tournaments have lost their lives from November 7th to December 9th, 1997(12). The incentive to participate in contests encourages wrestlers to lose weight. Rapid weight loss, in individuals before puberty, if not done with health considerations, can provide an even greater concern. Limiting caloric intake and poor nutrition during growth can affect the growth and have devastating effects on the health of height in adolescence (11). The best competition weight for athletes is their normal weight. Research has shown that body fat content between 7% to 9% in men and 12% to 15% in women, has the greatest effect on metabolism (15). Weight loss becomes a problem when the nutrition needs are not met or the body is not properly kept hydrated (29). Common methods of rapid weight loss are weight for racing, dehydration and lack of use or loss of liquids (18, 19, 20). In the body, many chemical reactions are carried out in liquid medium. All reactions in the body are noticeably affected by water scarcity. When an athlete enters dehydration conditions, the dehydration activity in the body is worse. The physiological response of the body is damaged and athletic performance is decreased (17,25,26). Studies show that in short-term weight loss cases biochemical and hormonal activity, body composition and resting metabolic rate changes which delays growth in youths (6,13,14,21,22,24,28).

Bradley (2006) investigated the prevalence and effects of rapid weight loss among freestyle and Greco-Roman wrestlers. The maximum amount of weight loss was 7 kg. The maximum number of weight losses was seven times during the seasons. A weight fluctuation of up to ¼ pound throughout the week was also reported for men. The results showed that saunas, plastic clothing, dieting, eliminating a meal, starvation and diuretics were employed to reduce weight. Within this group no enemas, laxatives and vomiting were used. Wrestlers were experiencing dizziness, muscle cramps, headaches and fever followed by rapid weight loss (2).

Oppliger et al (2006) examined the methods of weight loss for 712 wrestlers from 36 high schools. With the exception of 29 heavyweight wrestlers, the methods used for weight loss included increased exercise, diet and the elimination of a meal. Starvation and not drinking liquids were risk behaviors for weight loss. Wrestlers attempted weight loss with practice in hot rooms, 9% with plastic clothing and 4/8% using the sauna (16).

In addition to the above effects, unprincipled weight loss causes negative impacts on the performance of young wrestlers. The methods of weight loss were not investigated comprehensively in young Iranian elite wrestlers and were not comparable in free and Greco-Roman style wrestlers. Since the national team's young adults are our main assets, the present study sought to examine and compare the prevalence and effects of rapid weight loss in freestyle and Greco-Roman elite wrestlers in Iran.

METHODS

This study was conducted as a descriptive survey. The population of the study were freestyle and Greco-Roman elite wrestlers aged 14 to 18 years across the country which competed with wrestlers from Georgia, Armenia, Turkey, Azerbaijan, Iraq etc. an international competition on Children's Day representing Iran. 130 adolescent elite wrestlers participated in this study. In the present study, information on rapid weight loss were obtained using an Oppliger (2003) standardized 31-item questionnaire (8). The validity of the questionnaire was confirmed by the University of Northern Michigan. The validity of the translation of the questionnaire was determined in Iran by Mirzaei et al (30).

Oppliger's 31-item questionnaire is set in four parts. The first part consists of 7 questions which investigate the wrestlers' personal information such as age, normal weight, competitive weight, age category, courses (freestyle or Greco-Roman) and a history of participation in competitions. The second section includes 17 questions which investigate history and assess dietary patterns among wrestlers. This section begins with questions such as starting age of wrestling, weight loss and gain status in the current year, the maximum amount of weight loss, the numbers of weight fluctuations during the season and weekly weight fluctuations. The third section includes 3 questions which investigate the methods and the effects of rapid weight loss. This section contains two tables, one of them evaluates the 15 methods used for weight loss at different times by the wrestlers. Another table specifies the influences of different people on the weight loss of wrestlers. The wrestlers were asked the side effects following rapid weight loss. The terminal consists of four questions that measured the level and nutritional information as well as the weight loss of the wrestlers. In this section, attention to nutrition and weight control among wrestlers, influence from different people, body composition measurements and the application of different methods to determine weight loss have been assessed (8).

First, the necessary coordination were carried out with the wrestling federation, fitness and nutrition director of the wrestling teams, coaches and others involved in the squad in order to distribute the questionnaires in the competition. Then, the questionnaire was fully explained to the wrestlers and they answered with perfect knowledge. Researchers used descriptive statistics (mean and SD) in the tables and graphs, then the Kalmograv-Smirnov test was used for a natural explanation of the data. The t test (to check for differences between the freestyle and Greco-Roman wrestlers) at a significant level ($p < 0.05$) was used for statistical analysis of data. Excel was used to draw the charts and the analysis was performed using SPSS version 16.

Results

The wrestlers' profile are presented in the following table (Table 1).

Table 1: Profile wrestlers

	Greco-Roman	Freestyle
Age of wrestlers	16.46	16.07
Weight before competition	64.60	65.49
Onset of wrestling	11.62	11.74
Onset of weight loss	14.53	14.03
Most weight lost	3.06	3.58
Weight after competition	63.07	62.56
fluctuation of weight in a week	1.40	1.80*
Competition weight during last year	59.02	59.34

Weekly fluctuation of weight is 1.40 and 1.80 kg in the Greco-Roman and freestyle wrestlers, respectively, and no significant difference was observed between the two groups ($p = 0.01$). The most commonly used methods for weight reduction by Iranian elite wrestlers, were increased physical activity, dieting, and eliminating a meal. Using purgatives showed the lowest incidence. Used level of weight loss methods was not significantly different in Greco-Roman and freestyle young elite wrestlers during the competition season in Iran (chart 1).

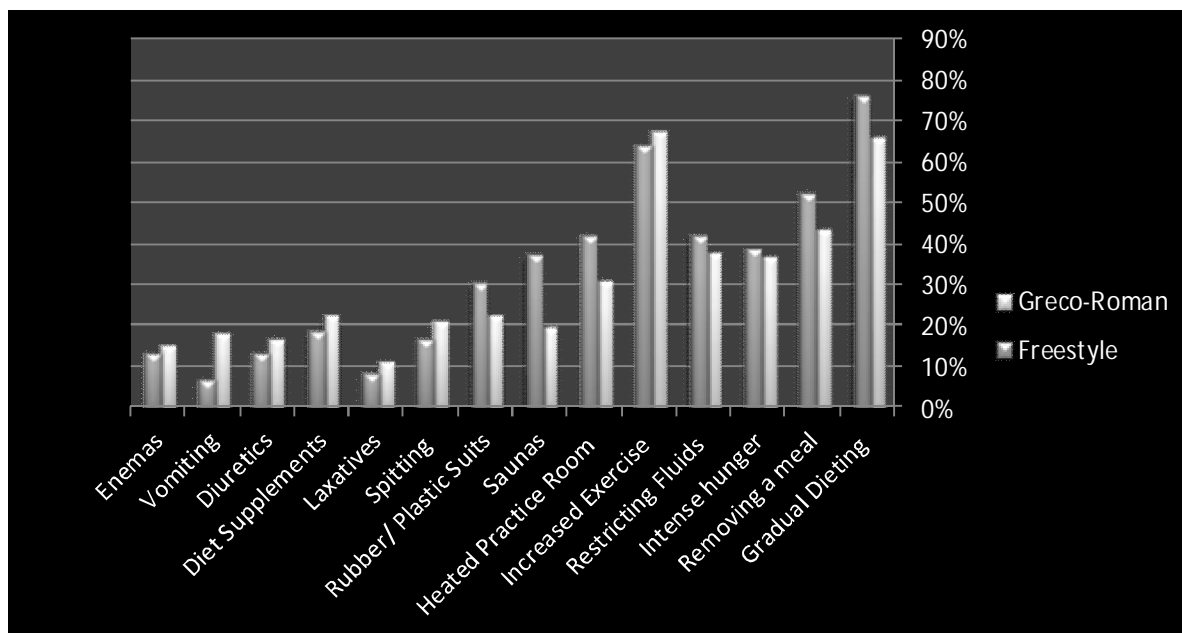


Chart 1: Methods of Weight Loss Among Wrestlers

The most common side effects of rapid weight loss among young Iranian elite wrestlers were dizziness, irritability and poor concentration. Nosebleeds were the least common observed side effect. Side effects of weight loss in young elite freestyle and Greco-Roman wrestlers of Iran were not significantly different during the competition season (chart 2).

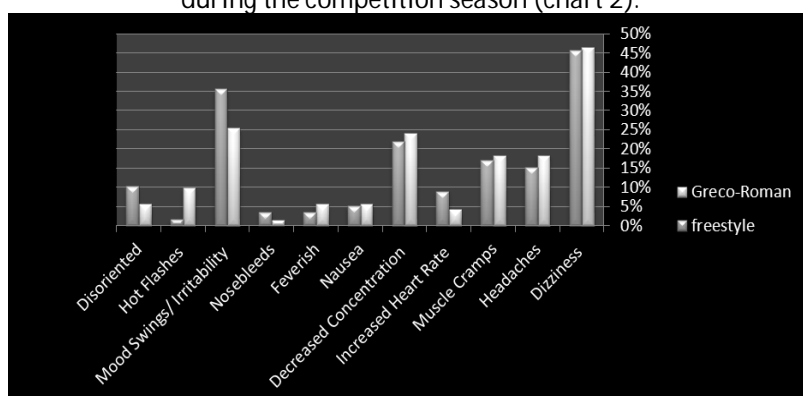


chart2: Negative Side Effects Experienced as a Result of Weight Loss

The results showed that coaches and experienced wrestlers have had the greatest impact on the methods of rapid weight loss on the young Iranian elite wrestlers followed by exercise physiologists, dietitians, medical assistants and parents have. The wrestlers' age have had the least impact. According to the results, the effects of weight loss did not show a significant difference in young elite wrestlers. The results showed that coaches were the main source of information about nutrition and weight loss (3.55%). Other sources (friends, brother, media and internet) (7.13%), medical assistant (8.11%), doctors (3.11%) and parents (3.7%) are next in the rankings. The source of information about nutrition and weight loss did not shown a significant differences between freestyle and Greco-Roman wrestlers.

Result and discussion

The results of the present study showed that the greatest amount of weight loss among young Iranian elite wrestlers was 29.3 kg that was greater than the results of Kiningham et al (2001) and lower than results reported by Oppliger et al (2003), Ldrman et al (2004) and Bradley (2006). Perhaps the difference is due to the age difference among the wrestlers. Wrestlers participated with a mean age of 20 years in the Oppliger study (2003) and 20.8 years in the Bradley (2006) study. According to the research, teenagers have more weight loss than younger athletes (1, 30). In the present study, the mean number of weight loss was 1.67 times among young Iranian elite wrestlers in the match which was lower than Oppliger's results (1998, 1993 and 2003). One reason for this difference can be the frequency of the matches. The research subjects participated in a long and regular league, so wrestlers had to attempt to lose weight more frequently (30). The present study found that the most common methods used for rapid weight loss

among the Iranian elite wrestlers were increased physical activity, dieting, and eliminating a meal. Starvation techniques, exercise in a warm room, sauna, removing fluids, wearing plastics, the use of dietary supplements, diet pills, removal of water from the mouth, diuretics, enemas and vomiting were also used for weight loss and the use of purgatives showed the lowest prevalence. These results were consistent with those obtained by Oppliger (1993, 1998 and 2003) and Bradley (2006) but inconsistent with the results of Alderman et al (2004). This difference can be attributed to the form of the questionnaire. Different activities (running, cycling, and swimming) were used for weight loss in Alderman research (10,30). In the present study, the most common ways were diet and increased exercise up to 3 to 4 times per week that was consistent with Oppliger (1993, 1998 and 2003) and Kyngham (2001) yet inconsistent with Bradley. The difference between the two subjects in Bradley's study can be caused by the sex of the wrestlers. As mentioned in the research literature, Bradley examined both male and female wrestlers together (2). In the present study, the use of enemas was observed in 2.14% of adolescent wrestlers which had been reported in Oppliger's research (1993, 1998 and 2003). This shows that the use of enemas has become more popular among the Iranian adolescent wrestlers nowadays which deserves reflection. In the present study, dizziness, irritability and lower focus were most common side effects of rapid weight loss among young Iranian elite wrestlers. After that headaches, muscle cramps, lack of awareness and confusion, heatstroke, increased heart rate, nausea and fever were ranked as common side effects and nosebleeds were the least common. Wrestlers also reported suffering from headaches, dizziness, nausea, nosebleeds, muscle cramps, fever and increased heart rate in Alderman et al (2004) and Bradley (2006) (1,2). As already mentioned, female wrestlers in Bradley's research and the various ages in different researches can be highly influential in the difference. The most commonly used methods for weight loss were increased exercise, dieting, and eliminating a meal which can cause the loss of glucose in the liver, muscles, blood and eventually the brain. These are reasons for dizziness, loss of concentration, headaches and irritability. Dehydration may take several days, when athletes are wasting water and liquids are not sufficiently replaced. Body water is further decreased because of hypohydration by about 2 to 3% in one day. This process leads to progressive dehydration which causes a water loss of about 5 to 8%. Thus more water is needed to replace the liquids in the body. Dehydration of about 4 to 6% lower focus and causes headaches, insomnia and impatience where dehydration of more than 8% leads to heat cramps, heat exhaustion and heatstroke (1,2,30). In the present study, team coaches were the primary source of weight loss and nutrition information. In both groups, parents have little role in informing and influencing weight loss in wrestlers. But parents have greater role in the study of Marco et al and Oppliger et al (1993) which is inconsistent with this work. In summary, there is no difference between the weight loss patterns of wrestlers in Iran and other countries. Differences in the methods used to lose weight don't have much impact due to the similarities in methods of weight loss in both freestyle and Greco-Roman wrestlers. According to the research, social background, diet and increased exercise were important methods for weight loss in wrestlers. The results of this study can help trainers and nutritionists with more precise control of these procedures which can help to prevent the incidence of inappropriate methods of weight loss, especially enemas and possible complications arising. Age category as the basis for identifying athletes at later ages influences learning the basics of dieting, exercise methods and weight control. Therefore, suitable training methods for weight loss and more precise advice to the coaches and wrestlers across the country can be implemented. Without this, the future of wrestling in Iran is in danger despite the progress of science related to athletic performance.

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