



NORWEGIAN OLYMPIC COMMITTEE AND CONFEDERATION OF SPORTS



Weight loss methods and nutritional routines in athletes participating in European Championship in kick-boxing, Budva 2004



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Introduction

The use of different weight loss methods in weight-class athletes has been an issue and of concern for FIMS and the IOC-medical commission for years. During these days an international working group appointed by The IOC-medical commission will finish the IOC position stand, focusing on the dieting and weight control issue among elite athletes. This work includes developing strategies to prevent negative health and performance effects for the athletes. There has been an increased interest in this area since the death of three collegiate wrestlers in 1997, who all used dehydration as a part of their weight loss strategy. The questionnaire has been given to 81 weight-class athletes in Norway (national team athletes in: Taekwondo, boxing, kickboxing, judo, karate, jujutsu, wrestling and lightweight oars athletes), 300 athletes participating in European Championship in Taekwondo, Lillehammer 2004 and 100 athletes participating in European Championship in boxing (female), Tonsberg 2005 and 272 athletes participating in European Championship in kick-boxing, Budva 2004. The results from kick-boxing will be presented in this report, and the results of the study including all the athletes will be published as a scientific article in a sports medicine journal.

Background

Many athletes in weight-category sports (e.g. wrestling, boxing, kickboxing, judo) loose weight prior to competition, to reach their competitive weight (1, 3, 4). The effect of weight loss on health and performance depends on the athlete's initial percent body fat, the magnitude of the weight loss and the strategy (1, 4, 5). Several studies have demonstrated the negative effects of rapid weight loss (e.g. fasting, dehydration) on performance and health (1, 2). A number of studies focusing on College wrestlers and pathological weight loss methods and strategies to loose weight have been published, but there are few international studies on elite athletes representing other weight-category sports than wrestling (e.g. boxing, judo, kickboxing). A previous study on Norwegian elite athletes representing several weight-event sports showed that most of the athletes practiced extreme weight loss methods prior to competition to obtain their competitive weight.

Purpose

The purpose of this study was to examine weight loss methods and nutritional routines in international level athletes in weight-category sports, as one part of a larger project including coaches and medical stab. The project is approved by the Regional Ethics Committee of Norway.

Methods

All participants (N=272) of the 2004 European Championships in Budva were included in the study. During the head of team meeting the outline and purpose of the project was explained to all team managers and coaches. Anonymity and confidentiality were assured to all teams and participants. The questionnaire was administered to the athletes during their first weigh-in, and they were asked to fill it out and deliver it before they left the weigh-in area. Questions related to frequency and magnitude of weight loss during the season, weigh control methods, the effect on performance and nutritional practices related to weigh in procedures were asked and the questionnaire were translated into seven different languages.

Results

Subjects

All participants in the European Championship in Budva 2004 (n=272) were asked to fill in the questionnaire. The response rate was 86% (n=234). The following countries were represented: Croatia, Iran, Portugal, Macedonia, Slovenia, Hungary, Estonia, Germany, Bosnia and Herzegovina, Finland, Poland, Italy, Norway, Sweden, Bulgaria, Serbia and Montenegro and Russia.

Table 1. Athletes participating in the study

	men mean \pm SD	Women mean \pm SD
Age (yrs)	24,3 \pm 5,0	25,4 \pm 5,4
Body weight (off-season) (kg)	72,2 \pm 12,1	59,4 \pm 9,3
Body weight (in-season) (kg)	70,2 \pm 12,3	58,8 \pm 8,6
Reduced bodyweight before competition (kg)	4,1 \pm 2,1	3,4 \pm 2,0
First weight reduction episode (yrs)	18,4 \pm 2,9	21,1 \pm 4,9
Weight-cutting frequency this season (times)	4,2 \pm 2,1	4,5 \pm 2,1

The first weight reduction

Fifteen percent of the athletes reported that they had their first weight reduction episode in the age between 10 to 15 years (figure 1)

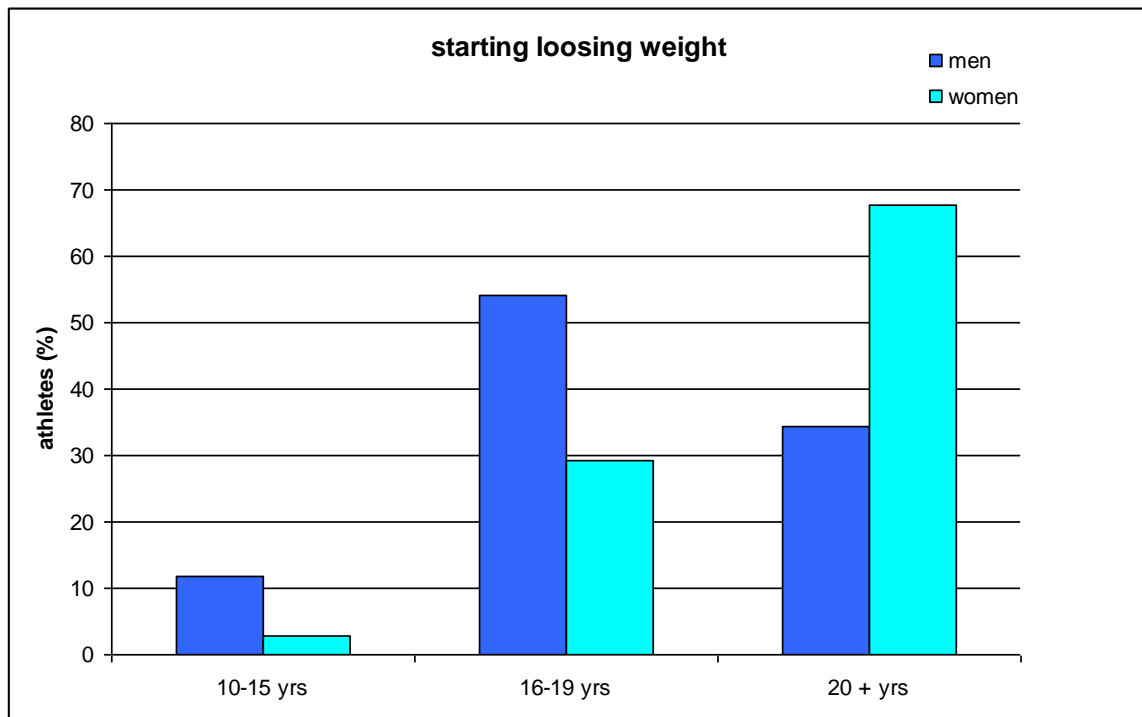


Figure 1. The athletes reported their age when they first reduced their weight prior competition

Weight reduction prior to competition

76% of the male athletes and 60% of the female athletes reduce their bodyweight before competition. The mean weight reduction was $4,1 \pm 2,1$ kg (men) and $3,4 \pm 2,0$ kg (women) (figure 2).

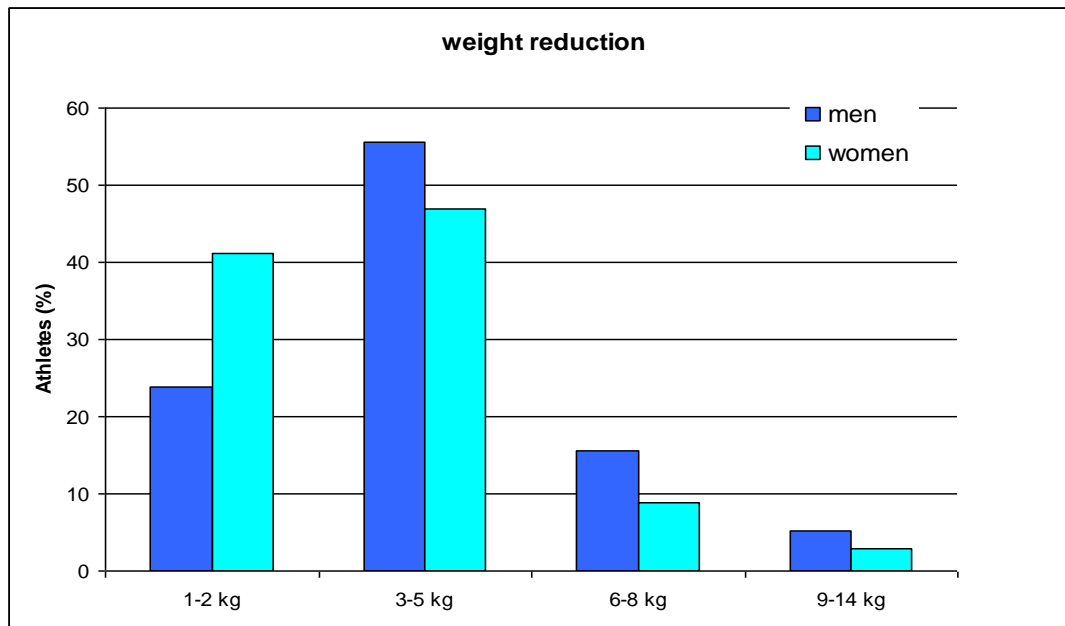


Figure 2. Bodyweight loss in kg

Weight loss methods

Thirty-one percent and 46% of the male and female athletes reported using gradual weight loss methods only, while 23% of the male and 16% of the female athletes reported using rapid weight loss methods. Forty-six percent of the male and 38% of the female athletes reported use of both gradual and rapid weight loss methods prior to competition. They reported using $13,8 \pm 13,1$ and $14 \pm 11,8$ days to reduce their weight.

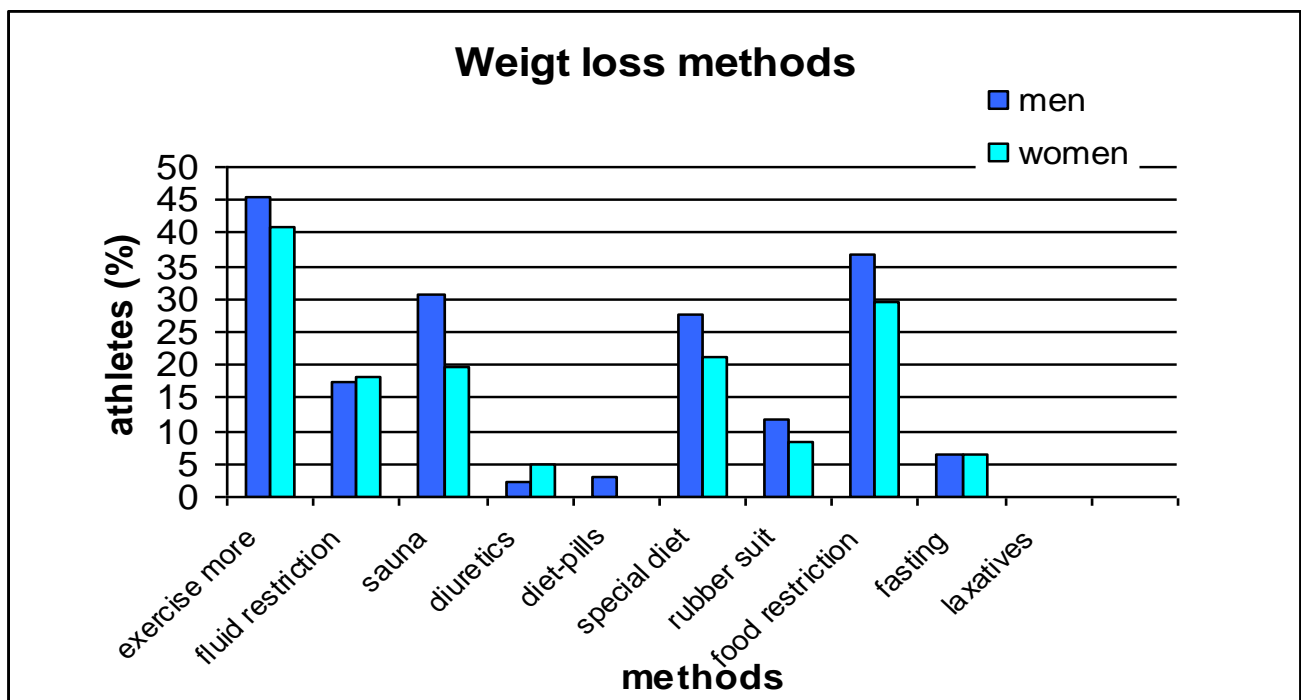


Figure 3. Reported weight loss methods

In addition to the use of increased exercise volume and energy restriction, athletes reported use of sauna, diuretics, diet pills and rubber suits (figure 3).

Effect on performance

39% of the male athletes and 34% of the female athletes reported that weight loss impaired their performance (figure 4).

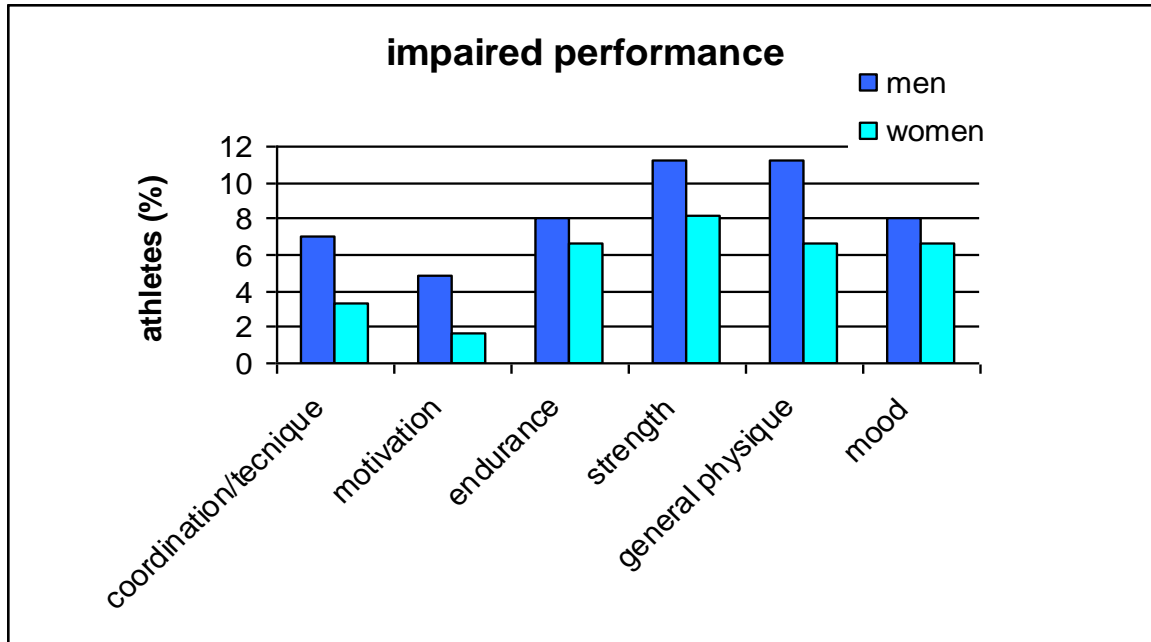


Figure 4. Self-reported impaired performance after weight loss. Presented in percent of the athletes who reported impaired performance.

Both male and female athletes reported that their weight reduction regime affected performance factors such as strength and endurance.

Guiding

58% of the males and 56% of the females reported that they did get help regarding weight loss (figure 5). As seen in figure 5, the coach was the most frequent person who guided the athletes in relation to the weight loss period

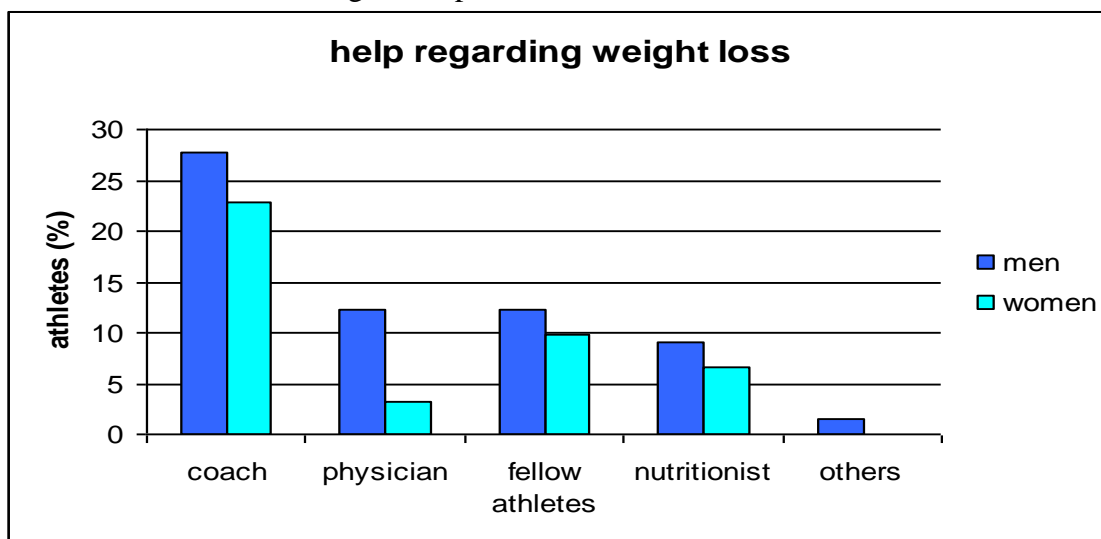


Figure 5. Person's that athletes reported guided them in relation to the weight loss period.

Nutritional routines after weigh-in

When athletes were asked if they had specific routines after weigh-in, the majority reported that they drank water, sports drink and had a light snack (figure 6)

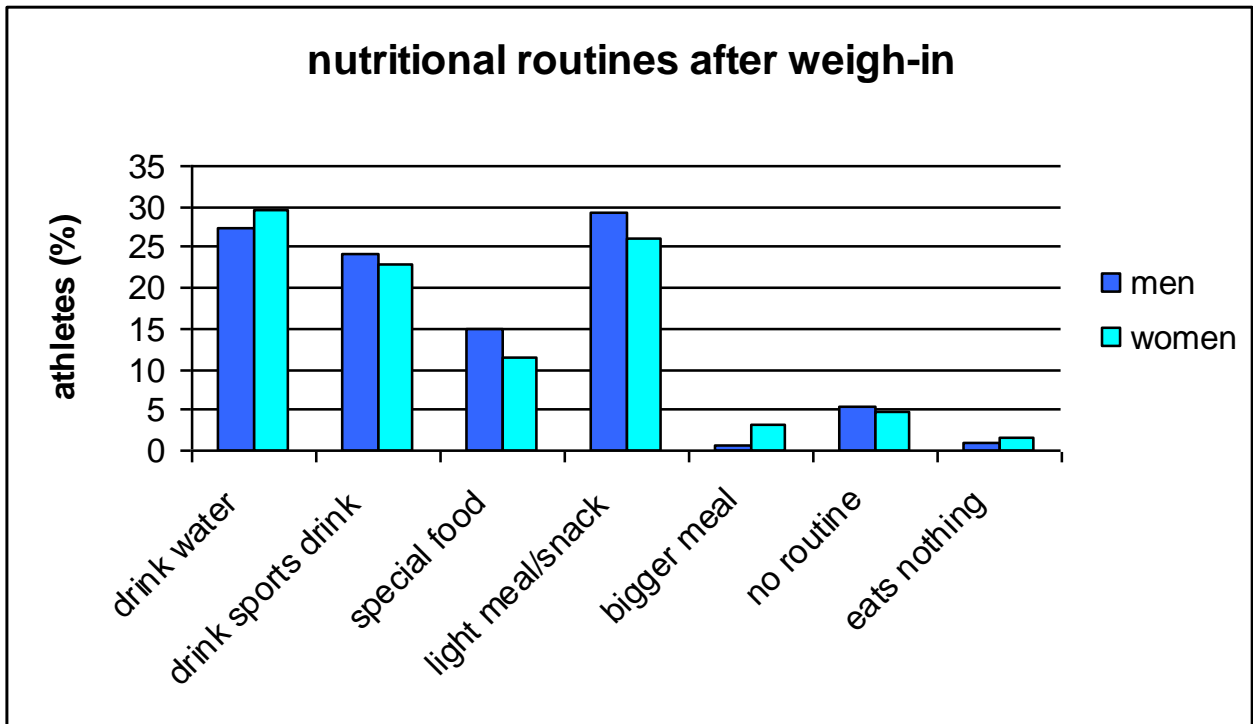


Figure 6. Athlete's routines regarding nutrition after weigh-in

Conclusion

This study shows that the majority of the kick-boxing athletes lose bodyweight prior to competition to obtain their competitive weight. Thus, weight reduction seems to be an important issue among kick-boxing athletes as well as in wrestlers. It is worth noticing that 15% of the athletes (males and females together) started dieting between age 10 to 15, and that rapid weight loss methods are frequently used among the athletes.

Based on the results of this study, we suggest that some strategies and guidelines for weight class athletes and their coaches should be developed to make sure they optimise both their performance and health prior to competitions.

Based on the findings of this study and the international literature, we suggest following recommendations:

- The athlete should compete in the weight-class suited his/her natural weight
- We recommend that there is an evaluation after every season regarding which weight-class the athlete should participate in. This evaluation should include trainer, athlete and medical staff (weight, percent body fat, age, nutritional status and menstrual status should be a part of the evaluation)
- If the athlete wants to lose weight to participate in a lower weight-class, the medical team should make sure that this is optimal for both health and performance
- We recommend that the athlete's body weight is no more than + 3% of his/her competitive weight between competitions to prevent weight cycling
- The recommended strategy is a gradual weight reduction due to moderate energy restriction and/or increased energy output: gradual weight loss reducing the caloric intake with 500 kcal pr. day (loss of 0,5 kg pr. week)
- Weight regulation in athletes should be pursued off-season
- Rapid weight loss methods (based on dehydration) should be no more than 1% of the athlete's total body weight
- We recommend that the athlete should have an intake of fluid containing electrolytes, and light meals including carbohydrate and protein between weigh-in and competition

Literature

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