

Research Article

Study on the Dietary Plan of Boxing Athletes during the Period of Weight Loss

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Abstract: The study combined with the principle of reasonable weight loss for the boxing athletes by stating the overview of the boxing athlete's weight loss, as well as its influence on the function index of boxing athletes as the weight loss of boxing athletes can directly affect sports performance. It discusses the nutritional supplement measures of boxing athletes during the period of the slow and rapid weight loss stage.

Keywords: Boxing athletes, dietary plan, nutritional supplement

INTRODUCTION

Boxing is one of the sports items according to the different weight classes, compared with the items of weightlifting, wrestling, judo, the athletes with too much weight have to lose weight and control weight before the match, in addition, they have to control their weight in the entire match (Fogelholm *et al.*, 1993). In order to ensure the fitness and athletic state and get good grades or have good performance, it is very necessary and important for athletes to take measures to lose weight with reasonable nutrition supplement.

MATERIALS AND METHODS

The overview of boxing athletes' weigh loss: The study found that when the male boxing athletes lost 5% of the original weight, the basic condition of the body had no discomfort phenomenon, they completed the competition normally with idea achievements; when they lost weight up to 6-8%, the body will appear symptoms with different degree that the athletes cannot adapt themselves to them, such as mouth parched and tongue scorched, strength decreased slightly, when they had the movement the speed of action became slower, the mood and the tactical play is not very good, the result of the competition is not ideal; when they lost the body weight reached 9%, players will appear muscle weakness, tremor or cramps, palpitation, tachycardia, feeling dizzy, the tactics and the performance of the competition cannot be performed very well. During the period of usual training, the drop of the weight should not be exceeded 7% of the competition entry level. If the level of competition and the usual body weight had no big difference, it can slow weight loss for a week and control weight for a week, or make a wave of reducing weight in a week (Table 1), which purpose is to maintain physical fitness (Tarnopolsky *et al.*, 1996).

Table 1: The percentage of athletes' body fat

	Body fat	The deltoid	Scapula	Abdomen
Thin	<7.5	<7.5	<8.5	<10.5
Moderate	7.5-15.5	7.5-13.5	8.5-14.5	18.5-20.5
Over fat	>15.5	>18.5	>15.5	>20.5

As for the boxers, when the maximum weight loss for weekly is 1 kg, it does not affect the body's reserves of glycogen and humoral. The minimum content of athlete's body fat is t not less than 5-6% at least; otherwise it will affect the health (Table 1).

Effect of weight loss on boxing athlete's function index:

At present, the adopted method to lose weight is to divide the weight loss control training period before the competition into slow weight control period and fast weight reduction period (Table 2). The rapid weight loss method is mainly restricted to drinking water, supplemented by a steam bath or wearing a control body clothes to sweat, keep diet sharply, increase the amount of exercise training and so on; slow reduction method is to keep a low energy diet with balance for a period of time, after the training class, athletes should increase low intensity exercise, such as jumping rope, jogging, etc. so as to reduce body fat. According to the statistics, if after the interval of weighing time and playing time is less than 5 h, the rapid weight loss should not be exceeded 4% of the original weight; if the interval is more than 5 h, the rapid weight loss is less than 8% of the original weight may not affect the ability of movement during competition. The transpiration method of fast weight loss is only temporary, it can only reduce the content of water but not the fat, which is not desirable (Oppliger *et al.*, 1996). The athletes with two months of slow weight reduction combined with dietary control, their blood biochemical indexes can maintain good, the level of body stress and dehydration degree is low, the declination of cardiovascular function is not obvious, in turn, the condition of the athletes who had fast weight loss,

Table 2: The arrangement of weight loss before competition

	Slow control period	Slow decrease period	Speed reduction period
Control time	Two months before the game	Two months before the competition	Start five days before the competition
The target weight	Within 55 kg	Control weight within 50 kg	Reducing weight to 47 kg
The amount of weight loss	-	5 kg	2.5 kg

Table 3: Effect of weight loss on blood glucose, urine ketone body, the hemoglobin (K±S)

	Hemoglobin (g/L)	Blood (mmol/L)	Urine ketone body positive (%)
Before weight loss	158±15	4.6±0.5	0
After weight loss	153±11	3.2±0.6	17.7

before 3 weeks of the competition is poor. Recently using the combination of the fast weight loss and the slow weight loss has achieved good effect, namely, having 3 weeks slow weight loss as a period, then having fast weight loss for a week as another period.

A large number of reports have showed us that the fast weight loss can make the body lose water, make muscle's protein catabolized, moreover, the faster the weight loss is, the more the loss of body water is, the more amount of the muscle's protein is lost, therefore, it will bring great influence on the athlete's physiological function, athletic abilities and psychological stress which is not conducive to the level of the performance in the competition, or even bring physical harm for athletes.

Weight loss will have a certain impact on the body, which may gradually have adverse physiological reaction, therefore, we should carefully analyze the physiological and biochemical indexes of athlete's. Weight loss before the competition will result in greater impact on serum immunoglobulin, IgM, IgA, IgG, as well as C3, C4, which will have great effect, reduce the immunity of human body's, cause the symptoms of cold more serious.

The glucose metabolic disorders can also cause weight loss in the suppression of immune function. After losing weight fast, short time rehydration (1~3 h) cannot make muscle's endurance restored to the normal hydration state before losing weight. After rehydration of 5 to 24 h, the strength of muscle and the ability of vertical jumping can be not affected (Table 3). Therefore, during the process of losing weight, researchers need to do the job of index test analysis, once athletes feel fatigued, they should timely reflect it to the coach, so as to have quantity adjusting arrangement.

The principle of reasonable weight loss of boxing athletes: The boxing athletes with simple loss weight control should be based on the negative balance of energy slowly, the reduced component should be fat as much as possible. The energy shortfalls should be within 1000~1500 kcal/h, the weight can be reduced 1~1.5 kg a week, which can have small effect on the physical strength relatively; as for the athletes who had weight level requirements of boxing, depending on how much the content of athlete's body water, usually the

weight control can be heavier than the target weight about 3~6 kg, by using the combination method of controlling diet and transpiration before 3~6 days of the competition, they can lose the rest of the weight (Fogelholm, 1994). During the period of the boxing athletes lose weight, they should have proper supplement with protein, vitamin and inorganic salt through a little food and nutrition fortifier; during the period of the boxing athletes lose weight, they cannot be restricted with water intake excessively; meanwhile transpiration method is only used as a combination method in the last 1~2 days, so as to lose the rest of the weight and achieve the goal of weight loss; during the period of the interval of competition and weighing period as well as the whole competition period, the boxing athletes should be given the corresponding nutritional supplements, the comprehensive measures of weight loss may have little influence on body's health and physical strength; during the period of fast weight loss, the individual differences of boxing athletes are very big, who must make detailed plan for each person's weight reduction rate and using the series food to lose weight (Webster *et al.*, 1990).

RESULTS AND DISCUSSION

The nutritional supplement measures for boxing athletes during the slow weight loss period: The intake of calories should be less than the requirement, generally, it is believed to lose 0.15~1.10 kg a week, which mainly the body's adipose tissue. In order to reduce 1 kg fat, it must consume about 3349414 kJ. Therefore, the daily caloric requirement should be 209314~418618 kJ less than the required amount.

The arrangement of weight reduction measures should be according to the specific weight of the athletes weight and decide the detailed plan, generally, it can be started in about 115 months, when they reach the appropriate weight, the intake of calories should keep balance with the needed amount.

Moreover, the supply of protein, vitamin and inorganic salt should be adequate. To reduce the heat is achieved by reducing the sugar and fat in the food. But the supply of protein, vitamin and inorganic salt should be adequate, which should not be laced because of the weight loss. Such as, it should appropriately increase the nutrition with protein, which should reach 18% of

the total energy; it also should pay attention to the selection of high quality protein. It should reduce the amount of staple food and non-staple food containing fat in the dietary measures, such as reducing fat in the diet, replacing butter or fried foods and foods containing high fat. It should increase vegetable, fruit and non-staple food with rich protein (fish, shrimp, eggs). It should get rid of the habit of eating snacks, when it is necessary, it can add some vitamin and inorganic salt.

Diet adjustment is the basic measure of losing weight. As for the diet adjustment, generally, it does not control diet in morning or at noon, it should appropriately control the amount of evening diet. The intake of sugar, fat and protein should be balanced. During the restricted diet period, the athletes' resistance may be declined, we can give the athletes some of vitamin C and vitamin B, so as to increase the immunity. It should not be restricted with drinking water, long-term restriction with drinking water can be adverse to the body, moreover, the effect is temporary and unsteady through the restriction of drinking water to reduce weight.

The nutrition supplementary measures of boxing athletes during the period of fast weight loss: If the weight control is improperly arranged before the competition, which did not achieve the desired effect or the competition is ahead of time, it can use fast weight loss method to lose weight before the competition. Generally, it can go on with this method before 7~10 days. In order to reduce caloric intake, the daily intake should be about 418618 KJ, the weight loss should be less than 2 kg.

The supply of protein, vitamin and inorganic salt should be adequate. This requirement is similar to the slow weight loss, as the amount of food is decreased, therefore, protein, inorganic salt and vitamin is more prone to be lacked, which should pay more attention to the supplement of them, daily protein, should not be less than 2 g/kg of the body weight, taking vitamin preparations and composite salt tablets, when it is necessary to take the special strengthening foods. Dietary measures. It is similar to slow weight loss, athletes may have hungry feeling, which is more obvious before going to sleep at night, therefore, small amount of interval meals or fruit can be supplied. The following foods are suggested to eat but with a small amount: cooked peanuts (high protein and gastric mucosal protection); kelp, konjac food (without or low energy, capable of filling the stomach). Supplying foods especially containing high potassium, minerals,

or oligosaccharide beverage with small amount but in multiple times.

It should control the amount of drinking water properly. It can control the amount of water within a few days when the competition is coming, it can reduce the body's water reserves, but not too much. The amount of urine each day at night should be more than 500 mL, if athletes feel thirsty, the way of drinking water can be changed into a small amount in multiple times.

CONCLUSION

Boxing athletes should be in accordance with their own desired requirement to plan the most reasonable weight loss scheme, at the same time, it should constantly change and improve the weight loss scheme according to the individual differences and individual characteristics. Young players should mainly reduce fat, then control the diet supplement, so as to improve the aerobic capacity; the old players should be mainly based on the control diet, then take fat loss training as a supplement, avoiding excessive consumption of physical strength. In a word, only combining the exercise training, diet and nutrition, medical supervision and psychological adjustment well, can it make boxing athletes control weight and lose weight safely, so as to obtain the best competitive states with best performance.

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