

AMERICAN CHIROPRACTIC BOARD OF SPORTS PHYSICIANS™

WEIGHT LOSS IN WRESTLING POSITION PAPER

Summary

The ACBSP™'s primary goal is to ensure that wrestling is safe, healthy and enjoyable for the participating athletes. Rapid weight reduction is still prevalent in wrestling despite large bodies of evidence establishing this as a risky and even dangerous procedure. To enhance the education and reduce the health risks for the participants, the ACBSP™ recommends: a multidisciplinary approach to educate coaches and wrestlers through cooperative efforts of physicians, exercise scientists, dieticians, athletic trainers, athletic administrators, coaches and parents with regards to nutrition and weight control; close monitoring of the athletes body composition throughout the season; and the institution of rules and guidelines which limit weight loss.

Introduction

Health related problems associated with rapid weight loss (weight cutting) among wrestlers have been a growing concern for clinicians and other associated health professionals (12,26,58,66). Studies have shown that high school and collegiate wrestlers who practice rapid weight loss average 2 kg per week and 20% of the wrestlers may exceed 2.7 kg (43,60,64). During a season, this process has been shown to be repeated more than 10 times by 1/3 of high school wrestlers (44,58). The health risks associated with these procedures far outweigh the benefits derived from the outcome.

Discussion

During the season, the average body fat of a wrestler is 6-7% with some as low as 3% (13,18,25,26,38,41,42,45,61). Studies have shown that the body fat percentage for off-season high school wrestlers is 8-11%, which is still well below their peers who average 15% (6,19,63). The primary methods utilized for weight loss in wrestling include exercise, fasting and various dehydration methods. These methods produce minimal fat loss while effecting body water, glycogen content and lean body mass (18,55,59,60,69,71). A small percentage of wrestlers have also used diuretics, stimulants and laxatives to reduce weight (30,43,59).

Weight loss techniques are practiced by wrestlers with the belief that competitive success will increase. However, food restriction combined with fluid deprivation has shown to drastically decrease an athlete's competitive ability (4,13,18,27). Loss of more than 2% of an athletes body weight in less than 24-48 hours will result in a decrease in aerobic performance and endurance (13,17,18,25,27,46,47). Losing more than 5% of an athlete's body weight in less than 72-96 hours will negatively effect power, muscle endurance, aerobic performance, muscle strength (especially in the large muscle groups of the legs) and mental concentration (17,25,27,46,54,64,68). Such weight loss can also decrease the body's thermoregulatory ability (4,33,53,59,67). Fluid reduction or restriction has been shown to be the most detrimental aspect to an athlete's health and performance (4,9,24). It has been shown that adaptation to dehydration is impossible (4,9,67). The greater degree of dehydration the poorer one's performance and the greater risk of health and medical problems (4,9). Research indicates that it is impossible to completely rehydrate the body in less than 24-48 hours (9). The longer the body has been dehydrated, the longer the rehydration process will take (9,21). Also of note is that water loss due to the taking of diuretics or laxatives takes much longer to replace than water loss due to exercise (4,9). In addition, after the use of diuretics and laxatives, the body retains more fluid upon rehydration thus causing a greater weight gain (4,9).

The effects of rapid weight cutting for wrestlers have been shown to:

- \$ Reduce muscle strength (18,51,68)
- \$ Decrease anaerobic capacity (34,68)
- \$ Lower plasma and blood volume (3,61)
- \$ Increase resting and submaximal heart rate (1,3)
- \$ Decrease cardiac stroke volume (3)
- \$ Reduce endurance capacity (49)

- \$ Lower oxygen consumption (35,59)
- \$ Impair thermoregulatory processes thus increasing the risk of heat illness (1,2,3,13)
- \$ Decrease renal blood flow and kidney filtration of the blood (73,74)
- \$ Deplete muscle (18) and possibly liver glycogen which has been shown to reduce endurance (17,27), the body's ability to maintain blood glucose levels, and accelerate the breakdown of protein (3)
- \$ Deplete electrolytes which can result in impaired muscle function (3,4), coordination and possibly cardiac arrhythmia

In addition, scientific data has suggested that the same weight cutting practices may also alter hormonal status (63); diminish protein nutritional status (16); impede normal growth and development (14); effect psychological state (17,30,36,45,59); impair academic performance (8,11,67) and have severe consequences such as pulmonary emboli (10), pancreatitis (33) and reduced immune function (28).

Conclusions and Recommendations

Because weight cutting by wrestlers has been shown to increase potential health risks and be of little benefit with regards to overall athletic performance, the ACBSP™ makes the following recommendations:

1. Preseason body composition measurements of each wrestler should be performed. Males aged 16 and under with less than 7% body fat with a 3% standard error allowance and males who are sexually mature (Tanner stage 5) with less than 5% body fat should not be allowed to compete without physician clearance . Boys in Tanner stage 2 to 4 should be in the 7% to 8% range. 12-14% body fat is recommended as the minimum safe percentage for female wrestlers (50).
2. Encourage new state associations to work with National Governing Bodies in developing and implementing rules that include an effective monitoring and weight control program.
3. Strongly discourage the use of sweat boxes; whirlpools; rubber, vinyl or plastic type suits or other artificial heating devices; diuretics or other methods of quick weight reduction.
4. Educate parents, wrestlers, and coaches regarding proper nutrition and the effects of fasting and dehydration on physical performance and health.
5. Schedule and chart weigh-ins of all competing athletes 24 hours prior to, and, immediately before each match to yield an athletes true weight.
6. Preseason assessment of an athlete's nutritional demands be determined with education including intake of a balanced diet of carbohydrates, proteins and fats.
7. The ACBSP™ supports requiring wrestlers to weigh in a maximum of one hour and a minimum of one half hour before the time a dual meet is scheduled to begin and a maximum of two hours and a minimum of one half hour before the first session each day of a tournament.

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