



**AMERICAN COLLEGE
of SPORTS MEDICINE™**

POSITION STAND

Weight Loss in Wrestlers

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SUMMARY

ACSM Position Stand on Weight Loss in Wrestlers. *Med. Sci. Sports Exerc.*, Vol. 28, No. 2, pp. ix–xii, 1996. Despite a growing body of evidence admonishing the behavior, weight cutting (rapid weight reduction) remains prevalent among wrestlers. Weight cutting has significant adverse consequences that may affect competitive performance, physical health, and normal growth and development. To enhance the education experience and reduce the health risks for the participants, the ACSM recommends measures to educate coaches and wrestlers toward sound nutrition and weight control behaviors, to curtail “weight cutting,” and to enact rules that limit weight loss.

INTRODUCTION

For more than half a century, rapid weight loss, “weight cutting” as practiced by wrestlers, has remained a concern among educators, health professionals, exercise scientists, and parents (14,28,55,63). Since the American College of Sports Medicine first published the position statement *Weight Loss in Wrestlers* (3) in 1976, a plethora of research articles has been published on this topic. On a weekly basis, rapid weight loss in high school and collegiate wrestlers has been shown to average 2 kg and may exceed 2.7 kg among 20% of the wrestlers (41,55,61). One-third of high school wrestlers have reported repeating this process more than 10 times in a season (41,61). These practices have been documented over the past 25 years (61,62), and during that time their prevalence appears to have changed little (41,55,61).

WEIGHT LOSS IN WRESTLERS

While wrestlers may believe they have excess fat, studies show that in the off-season high school wrestlers have 8%–11% body fat, well below their high school peers who average 15% (6,21,24,60). Estimates made during the season have found body fat to be as low as 3% and average 6%–7% (17,23,27,38,42,43,58). Consequently, loss of fat contributes minimally to weight reduction while the primary methods for weight loss (e.g., exercise, food restriction, fasting, and various dehydration methods) affect body water, glycogen content, and lean body mass (23,51,56,67,69). These weight loss techniques are used by 25%–67% of wrestlers (32,41,61,69). Use of pharmacological agents, including diuretics, stimulants, and laxatives to reduce weight has been reported among a few of these athletes (32,41,55). The weight loss

techniques have been passed down from wrestler to wrestler, or coach to wrestler, and have changed little over the past 25 yr. Seldom do parents and health professionals provide input on how to lose weight appropriately (32,41,61). Recently, a small but growing number of females have begun to participate in wrestling. No data exist on the weight control behaviors of this select group of wrestlers. If these females also practice “weight cutting,” the same health and performance concerns apply to them as to their male counterparts.

Wrestlers practice these weight loss techniques believing their chances of competitive success will increase. Ironically, “weight cutting” may impair performance and endanger the wrestler’s health. Weight loss in wrestlers can be attributed to reductions in body water, glycogen, lean tissue, and only a small amount of fat. The combination of food restriction and fluid deprivation creates a synergistic, adverse physiologic effect on the body leaving the wrestler ill-prepared to compete. In addition, most forms of dehydration, e.g., sweating and catharsis, contribute to the loss of electrolytes as well as water (5,9). Wrestlers hope to replenish body fluids, electrolytes, and glycogen in the brief period (30 min–20 h) between the weigh-in and competition. However, reestablishing fluid homeostasis may take 24–48 h (10); replenishing muscle glycogen may take as long as 72 h (11,25), and replacing lean tissue might take even longer. In short, weight cutting appears to adversely influence the wrestler’s energy reserves and fluid and electrolyte balances.

The singular or combined effects of “weight cutting” on physiological function and performance are presented in Table 1. These functions are indicators of performance on the mat; however, no research to date has investigated the relationship between wrestling performance and weight loss. Although the scientific data are not conclusive, these “weight cutting” practices may also alter hormonal status (59), diminish protein nutritional status (20), impede normal growth and development (18), affect psychological state (19,32,37,41,55), impair academic performance (8,13,64), and have severe consequences such as pulmonary emboli (12), pancreatitis (34), and reduce immune function (30). Use of diuretics may result in more profound effects on the cardiovascular systems and electrolyte balance than other forms of weight loss (5,7).

For these reasons, the National Federation of State High School Associations supports the opinion that each state implement rules that include an effective weight

TABLE 1. Effects of "weight cutting" on physiological performance.

a,c	Little or no increase (1,17,50,53,63,68) and possible reduction in muscle strength (23,46,66)
a,c	Little or no increase (26,44,46) and possible decrease in anaerobic power capacity (35,66)
b,c	Lower plasma and blood volume (2,31,49,65), increased resting and submaximal heart rate (2,49), decreased cardiac stroke volume (2), resulting in decreased ability to sustain work at a constant rate, i.e., reduced endurance capacity (45,47)
a	Lower oxygen consumption (36,57)
c,d	Impaired thermoregulatory processes, which could decrease endurance capacity and increase the risk of heat illness during practice (7,48,49)
c	Decreased renal blood flow and kidney filtration of blood (70-72)
a,b	Depletion of muscle (23) and possibly liver glycogen (25), which will reduce muscle endurance capacity (19,29), the body's ability to maintain blood glucose levels, and accelerate the breakdown of the body's protein (4,15)
a,c,d	Depletion of electrolytes resulting in impaired muscle function (5), coordination (29), and possibly cardiac arrhythmias

Superscript identifies methods that contribute to this physiological effect: a = food restriction or fasting; b = exercise; c = dehydration; d = catharsis (diuretic or laxatives).

control program (39). Several states have successfully instituted programs that require body composition assessment and nutrition education (personal communications, 40), and more states appear poised to follow. Scientists, physicians, dietitians, coaches, athletic administrators, trainers, and other health professionals should work towards implementation of these recommended changes nationwide.

CONCLUSIONS AND RECOMMENDATIONS

Because of the equivocal benefits and the potential health risks created by the procedures used for "weight cutting" by wrestlers (particularly adolescents), the

ACSM makes the following recommendations:

1. Educate coaches and wrestlers about the adverse consequences of prolonged fasting and dehydration on physical performance and physical health.

2. Discourage the use of rubber suits, steam rooms, hot boxes, saunas, laxatives, and diuretics for "making weight."

3. Adopt new state or national governing body legislation that schedules weigh-ins immediately prior to competition.

4. Schedule daily weigh-ins before and after practice to monitor weight loss and dehydration. Weight lost during practice should be regained through adequate food and fluid intake.

5. Assess the body composition of each wrestler prior to the season using valid methods for this population (42,60). Males 16 yr and younger with a body fat below 7% or those over 16 yr with a body fat below 5% need medical clearance before being allowed to compete. Fe-

male wrestlers need a minimal body fat of 12%–14% (33).

6. Emphasize the need for daily caloric intake obtained from a balanced diet high in carbohydrates (>55% of calories), low in fat (<30% of calories) with adequate protein (15%–20% of calories, 1.0–1.5 g·kg⁻¹ body weight) determined on the basis of RDA guidelines and physical activity levels (16,22,54). The minimal caloric intake for wrestlers of high school and college age should range from 1700 to 2500 kcal·d⁻¹, and rigorous training may increase the requirement up to an additional 1000 calories per day (16). Wrestlers should be discouraged by coaches, parents, school officials, and physicians from consuming less than their minimal daily needs. Combined with exercise, this minimal caloric intake will allow for gradual weight loss. After the minimal weight has been attained, caloric intake should be increased sufficiently to support the normal developmental needs of the young wrestler (16).

The ACSM encourages:

Permitting more participants per team to compete by adding weight classes between 119 lbs. and 151 lbs. or by allowing more than one representative at a given weight class just as swimming and track teams do in competition.

Standardization of regulations concerning the eligibility rules at championship tournaments so that severe and rapid weight loss is discouraged at the end of the season (e.g., a wrestler dropping one or more weight classes).

Cooperative efforts between coaches, exercise scientists, physicians, dietitians, and wrestlers to systematically collect data on the body composition, hydration state, energy and nutritional demands, growth, maturation, and psychological development of wrestlers.

Through this position statement, the ACSM hopes to further the sport of wrestling by providing a positive educational environment for the primary, secondary, or collegiate wrestler. The ACSM believes these recommendations will enable the athlete to better focus on skill acquisition, fitness enhancement, psychological preparation, and the social interactions offered by the sport.

ACKNOWLEDGMENT

This position stand replaces the 1976 ACSM position paper, "Weight Loss in Wrestlers."

This pronouncement was reviewed for the American College of Sports Medicine by members-at-large, the Pronouncements Committee, and by: Jack Harvey, M.D., FACSM, Michael Sharratt, Ph.D., FACSM, Suzanne Steen, Ph.D., and Charles Tipton, Ph.D., FACSM.

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