

WEIGHT LOSS IN WRESTLING: CURRENT STATE OF THE SCIENCE

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The development of a safe, standardized approach to determining an athlete's most appropriate weight class in wrestling was critically important. In the 16 years since the National Collegiate Athletic Association (NCAA) rules were put into effect, no collegiate wrestler has died as a result of unsafe weight cutting practices. Much has been learned and improved since these rules were introduced, but more work remains to be done. Little research exists at the collegiate level evaluating the effectiveness of the current protocol and there are still several areas of concern regarding which equipment, formulas, and techniques are best for assessing body composition.¹

The sport of wrestling has taken some hits, with the loss of nearly 350 collegiate programs over the past several years and the near removal of wrestling from the 2020 Olympics. These losses provide yet another opportunity for wrestling to make a comeback and set the stage for not just safer, but also more equitable and thrilling competition. Two things need to happen next: First, the weight certification process must continue to improve. Second, athletes and coaches need to embrace what science can teach them about optimizing performance.

Effects of Losing Weight and Making Weight on Weight Management and Performance

Although the health and safety risks associated with extreme weight cutting cannot be disputed, research in the past 15 years has yielded mixed findings regarding the impact of weight loss and modest weight cutting on performance. What has been revealed is that distinguishing pre-season weight loss from cutting weight prior to a weigh-in is critical to moving forward and may help coaches, athletes, and sports medicine and sports science professionals find common ground.

Weight Management

The complexities of weight loss and weight maintenance are too extensive for this article but fundamentally, weight stability is a function of caloric or energy balance. Consuming too many calories results in weight gain; consuming too few calories results in weight loss. However, energy balance is an over-simplified concept that fails to address the hormonal and metabolic changes that occur in states of overweight, underweight, and during weight loss. Energy availability on the other hand is defined as the energy remaining for normal physiologic functioning (e.g., growth, healing, temperature regulation, reproduction, maintaining bone) after accounting for the energy used during training or exercise.² Inadequate energy availability results in negative physiologic effects ranging from metabolic changes and

abnormal hormone profiles to greater risk for eating disorders and impaired bone health, as documented in the literature. For athletes seeking to build and maintain lean muscle mass and those who are training at high intensities, a state of low energy availability at a minimum represents an under-fueled athlete and therefore an athlete performing suboptimally.

Additionally, the hormonal and metabolic adaptations that occur in response to energy reductions that are too drastic actually make it harder to lose and keep weight off.³ This is true for athletes as well as overweight or obese people struggling to lose weight. For wrestlers, the cost of chronic dieting and attempts to maintain a weight lower than normal or usual for one's body size may be a permanently reduced metabolic rate, increased hunger, and difficulty maintaining lean muscle mass over time.

In one study, investigators followed 1838 male athletes who weight cycled and observed greater obesity rates for middle-aged athletes compared with non-weight cycling athletes.⁴ This could be the result of the metabolic adaptations that occur as a result of excessive and frequent hypo-caloric diets, and may indicate that the effects last well into adulthood. More research is needed in this area, but this work points to the potential for lasting effects.

A preponderance of evidence finds that consistent weight cycling over the course of a season results in diminished strength and endurance, increases in body fat levels, and suboptimal hydration status; all of which contribute to poor performance. Reductions in strength and muscle mass during a season and their impact on competitive bouts have been described.⁵ Dieting is not conducive to intense training. One requires ample energy to sustain hard work and repair muscle, whereas the other requires an energy restriction.

For all of these reasons, it is highly recommended that athletes compete in weight classes that match their body's natural weight, which most often means going up a class. This gives an athlete the opportunity to gain weight in the form of lean muscle mass, resulting in a stronger, more powerful athlete. A well-fueled athlete is also a mentally sharper athlete who makes faster and better decisions on the mat and in the classroom.

Cutting Weight

While weight loss and weight maintenance require year-round attention and must be approached in manner that avoids the negative impacts described, weight cutting is confined to the days leading up to a competition for the purpose of "making weight" for a given weight class. Unlike dieting for weight loss and unsafe rapid weight loss, small reductions in weight during the 48 hours pre-competition do not appear to negatively affect metabolic rate, lean muscle mass, or strength when the weight reduction is due to fluid losses limited to 5% of body weight.⁶ Adhering to this standard would allow athletes to maintain a hydrated weight (i.e., their target weight) 5% above their weight class, which supports athletes in meeting their nutrition and hydration needs and optimizing intense training during the week.

Weight Certification Protocol

To accurately identify an athlete's target weight and determine safe allowances for weight cutting as described above, the current weight management protocol requires further refinement. Having supported the weight certification process for our team at Princeton University, I am aware of how critical this process is for individual athletes and can appreciate the demands coaches face in filling a line-up. I am also acutely aware of the need for those responsible for the weight certification protocol to be better trained in body composition measurement techniques. For that to happen, sports dietitians and athletic trainers must demonstrate a measurable level of expertise.⁷ Since skinfolds are the most affordable and accessible field method for determining body composition, adhering to the standards set by the International Society for the Advancement of Kinanthropometry (ISAK) is highly recommended.⁸ Certification as an anthropometrist is the best way to demonstrate expertise and will create a standard of practice throughout high school and collegiate wrestling, resulting in reduced measurement error and therefore more reliable and precise results from which to base decisions. This also ensures equity across programs. Many states require annual training for high school athletic trainers who work in wrestling, and becoming certified as an anthropometrist can easily meet that requirement and can be combined with any weight assessor workshops.

The Future

Lastly, if all wrestlers started their year within 2% to 5% of their target weight, there would be no need for descent plans and assuredly, the most well-prepared, well-fueled, and strongest competitors would meet on the mat. More time would be spent fueling in a manner that sustains rigorous training programs, and less time and mental energy would be spent on weight management. Applying sound and consistent sports nutrition strategies to training programs would result in optimal body compositions, greater power and strength, and likely fewer illnesses and injuries over the course of an entire season. This is a complete paradigm shift for the sport of wrestling. By trusting the sports science and working with their support staff who are often their biggest supporters, programs will thrive, safety will never be in doubt, and athletes will excel.

Author

Written by SCAN/CPSDA Registered Dietitians (RDs). For advice on customizing an eating plan to meet your nutrition goals, consult an RD who specializes in sports, particularly a Board Certified Specialist in Sports Dietetics (CSSD). Find a qualified RD at www.scandpq.org or www.sportsrd.org.

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