

## Growth in Young Wrestlers

Wrestling is a popular and growing interscholastic sport. A key element to this popularity is that wrestling offers an opportunity for large numbers of young men, and increasingly more young women, to compete in a vigorous, aggressive physical activity wherein competition is, in theory, equalized by the formation of numerous weight classes. Thus, young people have an opportunity to participate in an athletic activity not limited by the size of the individual. Historically however, wrestling has been jeopardized because of excessive weight loss practices by many wrestlers. Wrestlers traditionally lose weight for two basic reasons: (1) to gain an alleged advantage over a smaller opponent and/or (2) to make the team by changing to another weight class so as not to compete with a superior team member in a higher weight class. Parents, athletic officials and health professionals have long been concerned about the methods used for rapid weight loss including severe dehydration, caloric restriction, diuretics, diet pills, laxatives, rubber exercise suits, vomiting, and other methods. The American College of Sports Medicine (ACSM) and the American Medical Association have expressed great concern regarding the effects of repeated bouts of excessive weight loss or weight cycling, particularly in athletes who are still growing.

The ACSM position stand "Weight Loss in Wrestlers" indicates that the methods typically used by wrestlers to lose weight could adversely affect health and performance. Specifically among the possible negative effects of severe weight cycling are a transient depletion of electrolytes, decreased glycogen stores, altered hormonal status, diminished protein nutritional status, impaired psychological and academic performance, development of pulmonary emboli and pancreatitis, and reduced immune function. In addition, the long-term effects of weight cycling in wrestlers may be reflected in their anthropometric growth and development patterns. That is, weight cycling may affect the rate of change across age in various body dimensions. Recent studies have examined age-related changes in height and body weight, as well as selected circumferences and diameters in high school wrestlers and compared them to non-athletes of similar ages from a national sample.

Across the high school years, the average yearly rate of increases in height (approximately 2.0-3.0 cm.yr<sup>-1</sup>), body weight (2.5-4.0 kg.yr<sup>-1</sup>), and body weight per unit of height (1.2-1.3 kg.cm<sup>-1</sup>) are similar between the groups. Furthermore, there are few differences between wrestlers and non-athletes in yearly changes for circumferences or diameters. Between approximately 14 and 18 years of age, there is little change in diameter measurements of the extremities. For example, knee, ankle, elbow, and wrist diameters differ across this age group by an average of < 0.2 cm in wrestlers as well as non-athletes. This is not the case, however, for trunk diameters or extremity and trunk circumferences such as the chest, waist, hip, calf, forearm, and upper arm measurements, which tend to increase with age during high school in both groups. The increases across age in these measurements reflect not only skeletal changes, but to a large degree, increases in muscle mass. Thus, the similarities between wrestlers and non-athletes suggest that participation in high school wrestling, which normally involves weight cycling, does not adversely affect normal anthropometric growth patterns.

A possible explanation for the apparent inconsistency between the prevalence of potentially dangerous diet and exercise behaviors during weight cycling and the lack of long-term effects on anthropometric growth may be the fact that the behavior is temporary. In most cases, for junior high and high school wrestlers, "at-risk" weight loss behaviors and weight concerns do not continue beyond the wrestling season. This does not mean such behavior is normal or ought to be accepted. Although in most cases, those wrestlers who exhibit risky behavior only during the wrestling season do not develop long term adverse effects, the risk for continued disordered eating does exist, and therefore such risky weight loss behaviors should be discouraged.



Although typical weight cycling practices may not adversely affect normal anthropometric growth and development, young wrestlers should be discouraged from excessive weight loss involving potentially pathogenic behaviors because the long-term effects on developing organs is unknown. Body composition should be determined prior to the competitive season (and possibly during the season) to establish a safe minimal wrestling weight. Weight loss in young wrestlers should be accomplished through healthy dietary habits and appropriate exercise training.

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