

Athlete Health in Elite Sport – Weight Category Sports

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Olympic weightlifting, powerlifting, horseracing, lightweight rowing and combat sports are all examples of weight category events, whereby the ideology of weight categorisation is to promote competition between individuals of equal proportion. Within these disciplines, athletes across both sexes and a variety of ages are required to compete within a mandated weight category, with the intent of creating an even playing field and therefore limiting unfair or even dangerous anatomical advantages between opponents. However, the very premise of categorisation within these sports has created unique cultures, with individual athletes often aiming to achieve the lowest category limit possible through a process known as 'weight making' (*an umbrella term used to describe deliberate reductions in body mass*), with the goal to gain psycho-physiological advantages over other competitors.

Depending on the timescale leading into an event, weight making can be broadly classified into either chronic (i.e., months and weeks) and acute (i.e., days and hours) phases. Furthermore, the time period between an official weigh in and the beginning of a sporting event can be up to 30 hours or even immediately, as in the case of professional boxing/mixed martial arts and horseracing. These unique circumstances dictate the weight making behaviours and practices within these events, which often include restricting energy and fluid intake, increasing exercise energy expenditure and passive, active and pharmacological means of dehydration. Given deliberate alterations in energy intake and expenditure can lead to transient periods of low energy availability when making weight for competition, this has been widely postulated as manifesting in potential sequelae of Athlete Triad and Relative Energy Deficiency in Sports (REDs). Furthermore, extreme states of hypohydration can cause severe injury or death due to increased cardiovascular and thermoregulatory demands.

To this end, there are numerous considerations for sport nutrition and body mass management approaches across both male and female weight categorised athletes. This includes examination of the most current research informed practices for both chronic and acute weight making strategies, whilst considering potential issues induced via deliberately targeted states of low energy availability, namely the potential for Athlete Triad and REDs consequences. Additionally, the current science and practice of effective rehydration and refuelling strategies must also be evaluated post official weigh in for each event specific context. Finally, emerging data has also began to highlight the negative implications of post competition rebound hyperphagia in weight category athletes, therefore leading to the subsequent potential for post retirement obesity and cardiometabolic diseases.