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REVIEW ARTICLE

Rapid weight loss in combative sports: Systematic literature review

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ABSTRACT

Rapid Weight Loss (RWL) is a widely practiced strategy among combat sports athletes aiming to qualify weight classes within a short timeframe. While perceived as a competitive advantage, RWL poses significant risks to athletes' physiological and psychological well-being. Severe weight-cutting methods can lead to dehydration, impaired cognitive function, decrease muscle strength, and long-term complications. This systematic review evaluates existing literature on RWL, focusing on its methods, physiological and psychological effects, and potential safer alternatives. The researches' findings suggest that moderate RWL, defines as losing less than 5% of body mass, is unlikely to impair athlete's short-term performance. However, excessive RWL significantly increase the risk of dehydration, electrolyte imbalances, renal dysfunction, and metabolic disturbances, all of which may compromise both health and athletic performance. Additionally, RWL can negatively impact mood, mental clarity, and decision-making abilities, further affecting competitive outcomes. To mitigate these risks, stricter regulation on weight management, enhanced education for athletes and coaches, and further research into safe and effective weight control strategies are recommended. By promoting evidence-based approaches to weight management, combat sports organizations can prioritize athlete well-being while maintaining fair competition. A more sustainable approach to weight regulation s crucial for both short-term performance and long-term health.

Keywords: Sport medicine, Psychological effect, Physical activity psychology, Athletes, RWL.

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INTRODUCTION

Combat sport players regularly use RWL to participate in lower body weights and enjoy a competitive edge as it has been stated by Barley et al., 2019. Dehydration, excessive physical training, calorie dieting, and sauna treatment are common approaches. Although a few athletes effectively rehydrate and return to baseline values before the match, the study of Trivic et al., 2023 showed evidence has shown that extreme RWL detrimentally influences endurance, power, cognition, and long-term well-being. The objective of this review is to amalgamate current knowledge, examine RWL's efficiency and hazards, and make proposals for safer body weight control approaches.

METHODS

This review analysed several peer-reviewed publications on Rapid Weight Loss in combat sports using systematic sampling method. Studies were chosen from systematic reviews, meta-analyses, and experiments that investigated the hydration status, kidney function, metabolic health, and competitive performance of athletes. Studies were compared based on methodology, sample population, results, and applicability to weight-cutting in combative sports.

RESULTS

Studies on prevalence of rapid weight loss indicate that 60-97% of combat athletes engage in RWL (Connor & Egan, 2019; Ranisavljev et al., 2022). Common techniques include dehydration, excessive sweating, and severe calorie restriction. Grapplers, MMA fighters, and wrestlers show the highest prevalence of weight-cutting. A systematic review by Mauricio et al. (2022) found that RWL up to 5% does not significantly impair short-term strength and power. However, studies of Fernández-Elías et al., 2014 on endurance sports suggest that dehydration reduces aerobic performance. As for health risks, specifically kidney function, Trivic et al. (2023) found significant increases in kidney stress markers among wrestlers using RWL, raising concerns about acute kidney injury since it increases creatinine, blood urea nitrogen, and urine specific gravity, indicating kidney stress and dehydration while Maksimovic et al. (2024) linked RWL to a higher prevalence of metabolic syndrome in retired combat athletes. When it comes to psychological impact, many athletes experience increased anxiety, mood swings, and cognitive impairments due to RWL which was found by Janiszewska & Przybyłowicz, (2020). Additionally, coaches and teammates are the strongest influences on Rapid Weight Loss strategies, while dietitians and medical professionals play a minimal role (Connor & Egan, 2019; Ranisavljev et al., 2022). This highlights the need for better education and policy changes.

DISCUSSION

The study emphasizes both the occurrence and risks of RWL, but numerous athletes remain involved in such practices despite known risks. Part of the issue is that short-term competitive benefits might be considered greater than the long-term consequences for health in the minds of coaches and athletes. This approach is questionable as research (Maksimovic et al., 2024; Trivic et al., 2023) unequivocally shows repeated bouts of Rapid Weight Loss to be associated with metabolic and renal disturbances.

Physiologically, drastic rapid weight loss techniques like severe dehydration and caloric deprivation can be highly damaging. The weight can be regained by athletes after weigh-in, but physiological indicators such as kidney stress markers (Trivic et al., 2023) indicate that these activities are harmful even though external performance may not be impacted. In addition, although Mauricio et al. (2022) discovered that RWL up to

5% of body mass does not have a major impact on strength and power, there is no data regarding the cumulative impact of repeated cycles of RWL throughout an athlete's career.

Psychological aspects also contribute to the continuation of RWL behaviour. Several players relate RWL to discipline and mental toughness (Janiszewska & Przybyłowicz, 2020), further promoting undesirable habits. Such a cultural standard must be reversed by education and regulation.

Policy reforms need to address minimizing the use of extreme weight-cutting practices. The use of hydration-based weigh-ins, practiced in some combat sports organizations, can deter extreme dehydration practices. Coaches and athletic personnel also need improved training in nutrition and weight management techniques (Ranisavljev et al., 2022). Tighter regulations, accompanied by focused education, can direct attention toward safer weight management while ensuring equitable competition.

CONCLUSION

For stronger regulations, combat sports organizations should implement stricter monitoring of weight-cutting practices, including hydration testing before weigh-ins. Combat sports athletes should avoid dehydration-based RWL. More than 3% dehydration affects performance. Nutritionists and medical professionals should be integrated into training programs to provide safer weight management guidance. Adding education to athletes and coaches about rapid weight loss strategies. Gradual weight loss and periodized nutrition plans should replace extreme RWL methods to preserve performance and health as an alternative. Longitudinal studies on the long-term effects of RWL on metabolic and kidney health are needed. Short-term RWL may not always impair performance, but long-term risks exist. Athletes should focus on in-season weight management.

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