Dieting, disordered eating and perfectionism in weight-classified combat sports: a pilot study

Dieta, trastornos de la conducta alimentaria y perfeccionismo en los deportes de combate con categorías de peso: un estudio piloto

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Abstract

Introduction: Weight management through dieting and rapid weight loss (RWL) is central to performance in weight-classified combat sports, but it may increase the risk of disordered eating (DE). Perfectionism, a common trait among athletes, can have both adaptive and maladaptive effects and contribute to DE.
Objective: To examine the relationships between DE, perfectionism, and weight management practices among striking- and grappling-based combat sport athletes.
Methodology: Forty-six active athletes from kickboxing (n = 31; 42% female) and Brazilian jiu-jitsu (BJJ; n = 15; 27% female) completed the Eating Disorder Examination Questionnaire (EDE-Q) 6.0 and the Sport Multidimensional Perfectionism Scale-2 (Sport-MPS-2).
Results: Kickboxers reported competing at 4.8 ± 5.5 kg below their noncompetition weight, whereas BJJ athletes competed at nearly the same weight. No group differences in EDE-Q or Sport-MPS-2 scores were observed. On average, the athletes exhibited few symptoms of DE, but 15% scored above the cut-off of 2.3 on the EDE-Q global score. Both adaptive and maladaptive perfectionism were associated with EDE-Q subscales, with adaptive perfectionism also being associated with training experience and competitive status.
Discussion: These findings suggest that combat sport athletes are influenced by both social and psychological factors in their approach to weight management. The results were consistent with existing research showing mixed effects of perfectionism and the influence of peers and coaches on weight management practices.
Conclusions: Despite generally low levels of disordered eating, combat sport athletes frequently engage in dieting and RWL practices, highlighting the need for coach- and athlete-focused education on safer weight management.

Keywords

Combat sports; dieting; disordered eating; perfectionism; rapid weight loss.

Resumen

Introducción: La gestión del peso mediante dietas y pérdida rápida de peso (RWL) es fundamental en los deportes de combate con categorías de peso, pero puede incrementar el riesgo de conductas alimentarias desordenadas (DE). El perfeccionismo, frecuente entre atletas, puede tener efectos tanto adaptativos como desadaptativos y contribuir a la DE.
Objetivo: Examinar la relación entre DE, perfeccionismo y prácticas de gestión del peso en atletas de deportes de combate de golpeo y agarre.
Metodología: Cuarenta y seis atletas activos de kickboxing (n = 31; 42% mujeres) y jiu-jitsu brasileño (BJJ; n = 15; 27% mujeres) completaron el Eating Disorder Examination Questionnaire (EDE-Q 6.0) y la Sport Multidimensional Perfectionism Scale-2 (Sport-MPS-2).
Resultados: Los kickboxers informaron competir 4.8 ± 5.5 kg por debajo de su peso habitual, mientras que los atletas de BJJ compitieron prácticamente al mismo peso. No se observaron diferencias entre grupos en las puntuaciones del EDE-Q o del Sport-MPS-2. En promedio, los atletas mostraron pocos síntomas de DE, aunque el 15% superó el punto de corte (2.3) del EDE-Q global. Tanto el perfeccionismo adaptativo como el desadaptativo se asociaron con distintas subescalas del EDE-Q, y el perfeccionismo adaptativo también se relacionó con la experiencia de entrenamiento y el nivel competitivo.
Discusión: Estos hallazgos sugieren que los atletas de deportes de combate están influidos por factores sociales y psicológicos en su aproximación a la gestión del peso, en línea con investigaciones previas que muestran efectos mixtos del perfeccionismo y el papel de entrenadores y compañeros.
Conclusiones: A pesar de los bajos niveles generales de DE, los atletas recurren con frecuencia a dietas y RWL, lo que subraya la necesidad de intervenciones educativas dirigidas tanto a entrenadores como a deportistas para promover prácticas de gestión del peso más seguras.

Palabras clave

Deportes de combate; conductas alimentarias desordenadas; pérdida de peso rápida; perfeccionismo.

Introduction

Proper weight management is a key component of performance in weight-classified combat sports. Athletes use both dieting and rapid weight loss (RWL) strategies to achieve a competitive weight, at times substantially lower than their normal weight (Barley et al., 2019; Lakicevic et al., 2021; Lise et al., 2022; Zhong et al., 2024). While dieting typically involves periodized caloric restriction and macronutrient shifts before and during fight preparation, RWL, or "weight cutting", involves more acute practices, such as fluid manipulation through hyper- and hypohydration, use of sauna and hot water immersion, sodium restriction, glycogen depletion and more (Ricci et al., 2025; Umar et al., 2024). The practice of RWL has been described by some as a "vicious circle" that athletes have to take part in because "everybody cuts weight" (Pettersson et al., 2012). Competing in lower weight classes can therefore be as much a strategy to avoid a disadvantage as it is to gain an advantage (Maurício et al., 2025).

Athletes in general (Ghazzawi et al., 2024; Gorrell et al., 2021), and combat sport athletes specifically (Blomqvist Mickelsson et al., 2020; Doherty et al., 2024), are susceptible to disordered eating (DE). Indeed, despite being generally beneficial for psychological well-being (Núñez et al., 2025), engaging in sports where body weight is important, such as combat sports, carries a particular risk of developing DE (Mancine et al., 2020; Sundgot-Borgen & Torstveit, 2010). Additionally, perfectionism is a common trait in athletes that can cause both adaptive and maladaptive behaviors (Madigan et al., 2016; Stoeber, 2011), such as DE (Forsberg & Lock, 2006; Hopkinson & Lock, 2004; Prnjak et al., 2019; St-Cyr et al., 2024). Although some of the evidence on perfectionism in combat sport athletes is equivocal (Ciaccioni et al., 2024; Rouveix et al., 2007), comparative analyses show that these athletes tend to score higher than athletes from other sports on both adaptive and maladaptive perfectionism (Leguizamo et al., 2020). Furthermore, there are indications that adaptive perfectionism may be associated with experience and achievement level in some athletes (Cadenas et al., 2016).

Given the prevalence of DE and perfectionism in combat sports and the central role of dieting and RWL in and outside competition, this study aimed to examine the relationship between these factors in athletes practicing weight-classified combat sports. As weight management strategies are affected by weigh-in regulations, with longer time windows (e.g., 24-36 hours prior to competition) allowing for more time for replenishment and possibly more severe weight cuts compared to shorter windows (e.g., 0-2 hours), we investigated strikers (kickboxers) and grapplers (Brazilian jiu-jitsu [BJJ] practitioners) with long and short weigh-in windows, respectively.

Method

Participants

Participants were recruited by in-person visit to multiple facilities in Western Norway. Currently active athletes with ≥ 1 year of training experience in either kickboxing or BJJ were eligible to participate. The initial study sample comprised 52 athletes, of whom 46 met the inclusion criteria (table 1). Data collection procedures were reviewed by and carried out in accordance with the Norwegian Agency for Shared Services in Education and Research (SIKT). All participants provided written informed consent.

Table 1. Participant characteristics

	Kickboxing (n = 31)		Brazilian jiu-jitsu (n = 15)	
	Men (n = 18)	Women (n = 13)	Men (n = 11)	Women (n = 4)
Age (y)	28.9 ± 6.5	25.3 ± 5.7	27.5 ± 4.6	26.0 ± 5.8
Height (cm)	177.7 ± 5.6	165.2 ± 6.7	183.5 ± 4.9	169.5 ± 6.7
Body mass (kg)	79.5 ± 9.9	62.7 ± 5.9	83.6 ± 9.6	70.3 ± 8.4
BMI (kg/m²)	25.1 ± 2.1	23.0 ± 1.7	24.8 ± 2.6	24.4 ± 2.6
Training experience (y)	10.0 ± 6.4	7.1 ± 4.1	4.9 ± 3.6	7.0 ± 5.0
Active competitor (n [%])				
Currently	7 (39%)	10 (77%)	9 (82%)	2 (50%)
Previously	8 (44%)	2 (15%)	1 (9%)	0 (0%)
Never	3 (17%)	1 (8%)	1 (9%)	2 (50%)
Dieting (%)	44	46	50	58
RWL (%)	71	75	73	58
Age at first RWL (y)	16.0 ± 2.9	20.0 ± 3.7	23 ± 4.1	15.3 ± 1.5

BMI, body mass index; RWL, rapid weight loss

Procedure

Data collections were handled by questionnaires created with nettskjema.no, survey solution developed and hosted by the University of Oslo (nettskjema@usit.uio.no). The questionnaire consisted of both descriptive question items and two standardized questionnaires, the Eating Disorder Examination Questionnaire (EDE-Q) 6.0 (Fairburn & Beglin, 2008) and the Sport Multidimensional Perfectionism Scale-2 (Sport-MPS-2) (Gotwals & Dunn, 2009).

Eating Disorder Examination Questionnaire (EDE-Q) 6.0

The EDE-Q is a self-report version of the Eating Disorder Examination (EDE), which is a widely used measure to assess the psychopathology of eating disorders (Carter et al., 2001). It contains four subscales (Restraint, Eating Concern, Weight Concern, Shape Concern) as well as a global EDE-Q score. We used the Norwegian translation, which has demonstrated good internal consistency and test-retest reliability (Rø et al., 2010). In our survey, items 22-28 were graded on a 4-point scale (0, 2, 4, 6) rather than a 6-point scale (1–6). The scales that used these items appeared to have satisfactory internal consistency (table 2).

Sport Multidimensional Perfectionism Scale-2

The Sport-MPS-2 is a measure of adaptive and maladaptive perfectionism in athletes, containing six subscales (Personal Standards, Concern over Mistakes, Perceived Parental Pressure, Perceived Coach Pressure, Doubts about Actions, Organization), each rated on a 5-point Likert scale. The original questionnaire was translated to Norwegian for the purpose of this study and demonstrated satisfactory internal consistency (table 2).

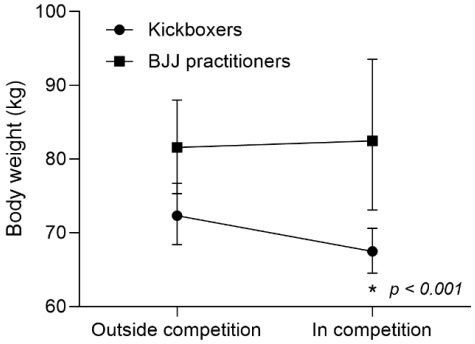
Data analysis

Statistical analyses were performed with IBM SPSS Statistics v. 29 (IBM Corp., Armonk, NY). Figures were made with GraphPad Prism v. 10 (GraphPad Software, San Diego, CA, USA). Data normality was assessed with the Shapiro–Wilk test and quantile-quantile plots. Both parametric and nonparametric hypothesis tests were used, depending on the distribution of the data. The Bonferroni correction was applied to account for the family-wise error rate. Correlations were calculated using Spearman's rank correlation coefficient (r_s). The data were analyzed with an available-case approach and presented as mean ± standard deviation (SD) (Lydersen, 2020) unless otherwise specified. P-values < 0.05 were considered statistically significant.

Results

On average, kickboxers were shorter, lighter, and more experienced in their respective sport compared to BJJ grapplers ($p < 0.05$; table 1). They were also younger during their first RWL ($p < 0.05$), but this was primarily driven by the age of male athletes. For female athletes, this relationship was reversed. 85% of the study sample were either current or former competitors in their combat sport (table 1). On average, kickboxers reported to weigh 4.8 ± 5.5 kg less in competition ($p < 0.001$) whereas BJJ practitioners weighed practically the same in and outside of competition (figure 1).

Figure 1. Weight differences in- and outside of competition



No differences in EDE-Q or Sport-MPS-2 scores between the combat sports were observed (table 2). Consistent with the low overall EDE-Q scores, only 3 men and 4 women scored above the 2.3 EDE-Q global cut-off score, a commonly used threshold, along with other symptoms, to indicate DE (Mond et al., 2004). Interestingly, those who reported adhering to specific diets due to their combat sport practice differed on multiple outcomes. The dieters scored higher on Personal Standards (25.38 ± 7.04 vs. 18.36 ± 6.77; $p < 0.01$) and Concern over Mistakes (23.19 ± 7.60 vs. 16.13 ± 5.14; $p = 0.002$). Notably, the dieters also had nearly twice the training experience (10.02 ± 4.78 years vs. 5.90 ± 5.10 years; $p = 0.003$). Conversely, when stratifying by coaching status (current, previous or never), we found no differences in either EDE-Q or Sport-MPS-2 scores.

Table 2. Comparison of disordered eating and perfectionism among combat sports

	Kickboxing	Range	Brazilian jiu-jitsu	Range	*P* -value
EDE-Q 6.0					
Restraint	1.86 ± 1.62	0.00 – 4.80	1.23 ± 1.42	0.00 – 4.80	0.237
Eating Concern	0.82 ± 0.91	0.00 – 3.00	0.47 ± 0.80	0.00 – 3.00	0.108
Weight Concern	1.32 ± 1.33	0.00 – 5.20	0.99 ± 1.29	0.00 – 5.00	0.288
Shape Concern	1.58 ± 1.09	0.00 – 4.00	1.31 ± 1.49	0.00 – 5.38	0.227
EDE-Q Global	1.42 ± 1.03	0.00 – 3.94	1.02 ± 1.17	0.00 – 4.54	0.107
Sport-MPS-2					
Personal Standards	21.57 ± 7.43	7.00 – 32.00	22.31 ± 8.56	7.00 – 34.00	0.648
Concern over Mistakes	19.74 ± 6.74	8.00 – 35.00	18.92 ± 8.72	8.00 – 33.00	0.689
Perceived Parental Pressure	13.65 ± 4.65	9.00 – 25.00	14.62 ± 9.22	9.00 – 43.00	0.611
Perceived Coach Pressure	12.35 ± 4.14	6.00 – 23.00	13.77 ± 4.94	6.00 – 27.00	0.346
Doubts about Actions	16.06 ± 5.80	7.00 – 29.00	15.15 ± 7.38	6.00 – 28.00	0.606
Organization	18.74 ± 5.54	6.00 – 26.00	19.85 ± 7.43	6.00 – 29.00	0.579

EDE-Q 6.0, Eating Disorder Examination Questionnaire 6.0; Sport-MPS-2, Sport Multidimensional Perfectionism Scale-2.

There were multiple associations within and between the instruments (table 3). No differences were observed for either EDE-Q or Sport-MPS-2 outcomes between combat sports, genders or competition status ($p > 0.05$). However, when comparing scores based on competitive status across combat sports, active competitors scored higher on Personal Standards than non-competitors (24.2 ± 6.3 vs. 14.0 ± 9.5; $p = 0.022$).

Table 3. Associations between the EDE-Q 6.0 and the Sport-MPS-2 scales

	α	1	2	3	4	5	6	7	8	9	10
EDE-Q 6.0											
1. Restraint	0.87										
2. Eating Concern	0.54	0.555**									
3. Weight Concern	0.79	0.645**	0.699**								
4. Shape Concern	0.81	0.473**	0.556**	0.640**							
5. EDE-Q Global	0.85	0.851**	0.810**	0.855**	0.804**						
Sport-MPS-2											
6. Personal Standards	0.92	0.418**	0.339*	0.507**	0.324*	0.490**					
7. Concern over Mistakes	0.89	0.464**	0.545**	0.486**	0.401**	0.576**	0.744**				
8. Perceived Parental Pressure	0.89	0.063	0.229	0.007	0.056	0.130	0.193	0.296**			
9. Perceived Coach Pressure	0.81	0.091	0.295	0.174	0.360*	0.288	0.547**	0.625**	0.465**		
10. Doubts about Actions	0.90	0.381*	0.449**	0.497**	0.352*	0.531**	0.723**	0.785**	0.182	0.580**	
11. Organization	0.90	0.260	0.139	0.308*	0.270	0.302	0.790**	0.510**	-0.021	0.453**	0.536**

α, Cronbach's α; EDE-Q 6.0, Eating Disorder Examination Questionnaire 6.0; Sport-MPS-2, Sport Multidimensional Perfectionism Scale-2. Associations were determined by Spearman's rank correlation coefficients: * $p < 0.05$; ** $p < 0.01$.

The most popular source of information on dieting and RWL was coaches, closely followed by other athletes (figure 2). The athletes reported several different dieting and RWL strategies, but all were consistent with popular methods (table 4). In addition to these strategies, several athletes reported using exercise as a tool for both gradual and rapid reduction in weight.

Figure 2. Reported sources of diet information

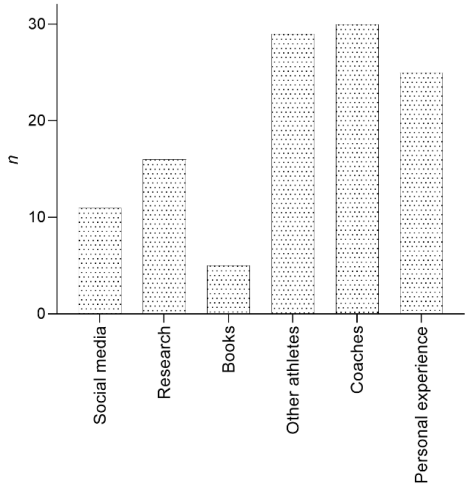


Table 4. Reported strategies for dieting and rapid weight loss.

Dieting strategies	Rapid weight loss strategies
Calorie counting	Water loading
Low-carb diet	Sodium manipulation
Ketogenic diet	Carbohydrate restriction
High protein diet	Sauna
Fasting	Sweat suit
"Less food"	Dry fast

We also found several associations between descriptive variables and EDE-Q or Sport-MPS-2 scores. Age was inversely correlated with Eating Concern (r_s = –0.412; p = 0.004), which coincided with a positive relationship with body mass index (BMI; r_s = 0.485; p < 0.001). Similarly, the age at first RWL experience correlated inversely with Eating Concern (r_s = –0.342; p = 0.048), Global EDE-Q (r_s = –0.380; p = 0.029) and Perceived Parental Pressure (r_s = –0.414; p = 0.016). Lastly, training experience correlated with both Personal Standards (r_s = 0.472; p = 0.001) and Organization (r_s = 0.336; p = 0.026), as well as Restraint (r_s = 0.299; p = 0.046).

Discussion

The present study explored the relationship between DE and perfectionism in weight-classified combat sports. Despite engaging in both dieting and RWL, the athletes exhibited few symptoms of DE. Interestingly, more athletes reported experience with RWL than dieting, which may explain why these athletes tended to express a normal relationship with food. The main reported sources of information on dieting and RWL were coaches and peers. The lack of difference in DE symptoms and perfectionism scores between kickboxing and BJJ, may indicate that regulations have limited impact on these outcomes.

Compared with mixed martial arts (MMA) athletes, participants in the present sample generally scored lower on both the EDE-Q subscales and the global score (Blomqvist Mickelsson et al., 2020). Interestingly, despite no apparent sport-specific differences in the present sample, there was a notable discrepancy between the athletes' noncompetition and competitive weight. While the kickboxers reported competing at 4.8 kg less than their noncompetition weight, the BJJ athletes competed at nearly 1 kg more. The lack of substantial weight differences in and outside competition among BJJ athletes was unsurprising, as weigh-in regulations usually do not allow for much time for replenishment (International Brazilian Jiu-Jitsu Federation, 2024). Athletes who compete in the gi must also weigh in with a gi, which may explain the slight increase in competition weight. This increase may also be in part caused by athletes reporting past competition weights in higher weight classes, as moving between weight classes is not uncommon for BJJ athletes.

It could be argued that engaging in dieting and RWL practices to achieve a competitive weight substantially below their normal body weight is inherently disordered, without necessarily causing DE. However, RWL has a range of physiological and psychological effects that can impact both the performance and well-being of athletes (Blomqvist Mickelsson et al., 2020; Franchini et al., 2012; Maurício et al., 2025). In general, the average EDE-Q scores were low, but 15% (n = 7) of the athletes scored above what can be considered a concerning global EDE-Q threshold. The relative prevalence was notably higher in women (25%) than men (11%) (one missing case from each). This may suggest that female combat sport practitioners are more prone to DE than male practitioners, but the small sample size limits our ability to investigate this further. Generally, the observed prevalence and sex differences appeared consistent with other findings from weight-dependent sports (Blomqvist Mickelsson et al., 2020; Mancine et al., 2020; Sundgot-Borgen & Torstveit, 2010).

Measures of both adaptive and maladaptive perfectionism were associated with all subscales of EDE-Q, including the global score, with maladaptive patterns having a slightly stronger relationship. The apparent link between perfectionism and symptoms of disordered eating is in line with previous research (Forsberg & Lock, 2006; Hopkinson & Lock, 2004; Prnjak et al., 2019; St-Cyr et al., 2024). We also found that training experience correlated with adaptive perfectionism. However, the direction of this relationship cannot be inferred from the study design, e.g., whether combat sports training develops, or selects for, adaptive behaviors. We also found that active competitors scored higher on Personal Standards than non-competitors, suggesting that engaging in combat sports competition is associated with adaptive perfectionism.

The athletes in the present study reported relying mostly on information from coaches and other athletes when it comes to dieting and RWL. This is consistent with the research of others, showing that both peers and coaches are highly influential when it comes to weight management strategies (Barley et al., 2018; Berkovich et al., 2016; Drid et al., 2021). It could also be speculated that dieting culture in combat sports normalizes extreme practices, which may attenuate self-reported DE symptoms, while at the same time possibly causing DE. Although concerns over athlete well-being have caused changes to weigh-in regulations in multiple sports, these practices remain commonplace in weight-classified sports, such as combat sports.

The strengths of this study include the recruitment of both male and female athletes from distinctly different weight-classified combat sports. The use of validated measures for DE and perfectionism, with both instruments demonstrating satisfactory internal consistency in our sample, contributes to the literature on DE, perfectionism and weight management practices in combat sport athletes. By focusing on currently active athletes, these findings capture insights into the practices of and experiences with weight management strategies in both striking- and grappling-based combat sports. The study also has several limitations. The relatively small sample size may have masked meaningful group differences. The direction of associations cannot be inferred from the cross-sectional study design. Although well-established instruments to assess DE and perfectionism were used, our translation of the latter has not been validated in a larger cohort. Furthermore, the participants were recruited from a single city, limiting generalizability to other populations. Finally, while this study provides some important initial data, future research should explore these findings in a larger sample of competitive combat sport athletes and further investigate the prevalence of DE in this population.

Conclusions

This exploratory pilot study found that, despite engaging in both dieting and RWL practices, the participants reported limited symptoms of DE. Training experience and competition status were linked to adaptive perfectionism, and both adaptive and maladaptive perfectionism were associated with DE symptoms. Coaches and peers were reported to be the main sources of information on weight management, and the magnitude of weight loss prior to competition appeared to be influenced by weigh-in regulations, as indicated by the greater difference in body weight in and outside competition in kickboxers.

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