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RESEARCH ARTICLE / Araştırma Makalesi Open Access/Açık Erişim

Results of a survey of highly qualified powerlifters and coaches regarding approaches to pre-competition body weight regulation

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Abstract

The article analyzes the features of pre-competition body weight regulation in female powerlifters based on the results of an online survey of female athletes (n=29) and powerlifting coaches (n=16). The frequency, duration, methods, and volumes of body weight loss, as well as their impact on female athletes' strength indicators, were identified. It was found that highly qualified female athletes more often use rapid weight loss methods (1–3 days before the competition), lose more than 5 kg and mainly use starvation. Simultaneously, qualified female athletes demonstrate greater variability of approaches and are more often negatively affected by strength abilities. The data obtained from coaches generally confirm the trends identified among female athletes. The results of the study can be used to optimize strategies for pre-competition body weight regulation in female athletes in power sports in general and in powerlifting in particular, taking into account individual characteristics and level of qualification.

Keywords: powerlifting, weight loss, pre-competition training, strength sports.

Öz

Bu çalışma, kadın powerlifting sporcuları arasında gerçekleştirilen çevrim içi bir anketin sonuçlarına dayanarak yarışma öncesi vücut ağırlığı düzenleme stratejilerinin özelliklerini incelemektedir (sporcu n=29; antrenör n=16). Araştırmada ağırlık kaybının sıklığı, süresi, kullanılan yöntemler ve miktarları ile bu uygulamaların sporcuların kuvvet performansı üzerindeki etkileri değerlendirilmiştir. Bulgular, üst düzey kadın sporcuların yarışmadan 1–3 gün önce uygulanan hızlı ağırlık kaybı yöntemlerini daha yaygın şekilde tercih ettiklerini, 5 kg'dan fazla ağırlık kaybı gerçekleştirdiklerini ve çoğunlukla açlık temelli yöntemleri kullandıklarını göstermektedir. Buna karşın, daha düşük seviyedeki sporcuların ağırlık yönetimi yaklaşımlarında daha fazla çeşitlilik olduğu ve bu süreçten kuvvet performanslarının daha olumsuz etkilendiği belirlenmiştir. Antrenörlerden elde edilen veriler, sporcular arasında gözlenen eğilimleri büyük ölçüde doğrulamaktadır. Elde edilen sonuçlar, güç sporlarında ve özellikle powerlifting branşında, sporcuların bireysel özellikleri ve yeterlilik düzeyleri dikkate alınarak yarışma öncesi ağırlık düzenleme stratejilerinin geliştirilmesi ve optimize edilmesi için önem taşımaktadır.

Anahtar Kelimeler Powerlifting, ağırlık kaybı, yarışma öncesi hazırlık, güç sporları.

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Introduction

Soccer In modern elite sport, weightlifting competitions require athletes to achieve an optimal combination of strength, technique, and precisely controlled body weight. One sport where this balance is critical is powerlifting, where placing within a given weight class is often the result of weight regulation during the competition preparation period. While this practice allows athletes to compete in a lighter weight class and potentially gain a competitive advantage, rapid weight loss is associated with physiological, metabolic, and psychological risks that can negatively impact athletic performance, recovery, and overall health (Mendes et al., 2013; Reale et al., 2017; Martínez-Aranda et al., 2023).

Currently, the scientific literature is increasingly focused on the study of methods for pre-competition body weight regulation in mixed martial arts, wrestling, and weightlifting (Mata et al., 2019; Reale et al., 2017). However, the specifics of powerlifting, characterized by maximum, short-term efforts, remain insufficiently studied in the context of body weight loss. The problem is especially acute for female powerlifters, in whom body weight regulation may be accompanied by additional difficulties associated with hormonal background and psycho-emotional stability (Chernozub et al., 2025; Tykhorskyi et al., 2021).

Currently, there is no systematic data on common weight management strategies among female powerlifters and the specifics of their implementation depending on the qualification level and coaching support. The available recommendations are often fragmentary.

The purpose of the study is to identify the features of pre-competition body weight regulation in women involved in powerlifting by surveying leading experts in the industry.

Materials and Methods

To study the features of pre-competition body weight regulation in female powerlifters, an online survey was conducted among athletes and coaches working in the field of power sports. 45 respondents participated in the survey, including 29 current athletes and 16 powerlifting coaches. The survey was conducted in Ukrainian using the Google Forms platform during January–February 2021 at the Kharkiv State Academy of Physical Culture. The questionnaire included questions about practices for reducing body weight before competitions, the frequency and duration of use of certain methods, expected and actual results, as well as subjective attitudes towards the effectiveness and safety of the approaches used.

As shown in Figure 1, among highly skilled female athletes, only 1 athlete (9%) resorted to weight loss once a year, while 2 athletes (18%) did so twice a year. The largest proportion of athletes in this group (27%) used weight loss methods three to four times a year, while 6 athletes (54%) reduced their weight more than four times, indicating a significant frequency of this practice among the highest category of female athletes.

Among qualified female athletes and weightlifters, a more even distribution is observed: 5 individuals (28%) lose weight once or twice a year, 4 athletes (22%) lose weight three to four times a year, and another 4 (22%) use weight loss methods more than four times. This distribution may indicate different levels of training and the need to adjust weight according to competitive goals.

Coaches who train female athletes of various levels, indicating approaches to reducing the weight of their athletes (on average), demonstrate the following trends: 4

people (25%) reduce weight once a year, 2 (13%) - twice a year, and the largest group of coaches (31%) uses weight reduction three to four times a year or more than four times.

Results

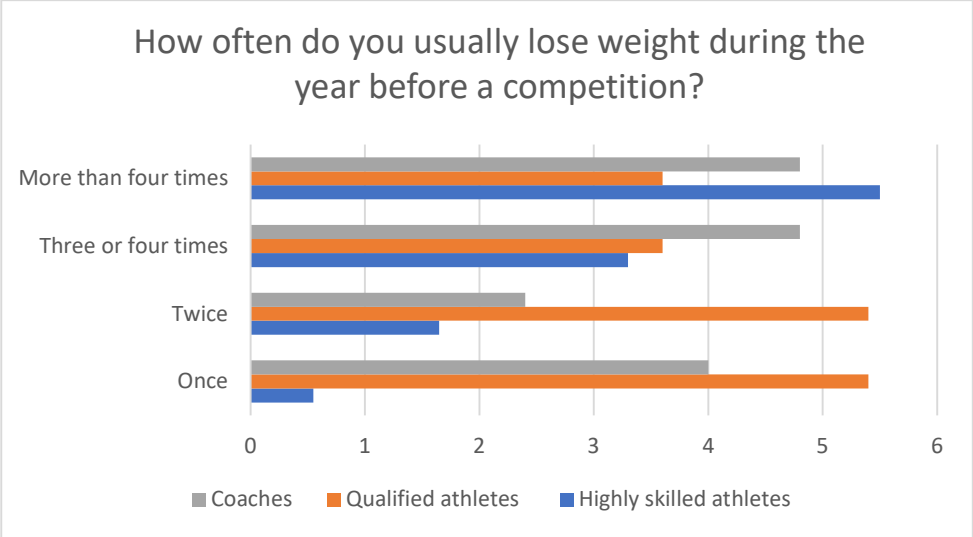

Fig. 1. Distribution of respondents' answers to the question "How often do you usually lose weight during the year before a competition?"

To the question “How many days before the competition does body weight loss begin?” the answers of the surveyed athletes and coaches were distributed as follows (Fig. 2).

Among highly qualified female athletes, the majority, namely 7 people (64%), start the weight loss process 1–3 days before the competition. This indicates their experience and ability to use methods of rapid weight regulation before performances. Another 2 female athletes (18%) start this process 4–7 days, and the same number (18%) – 8–9 days. Only 1 female athlete (9%) uses longer terms, starting weight loss more than 9 days. This approach to weight loss is typical for female athletes who regularly compete in high-level competitions, where it is necessary to achieve a clear correspondence to the weight category in a short time.

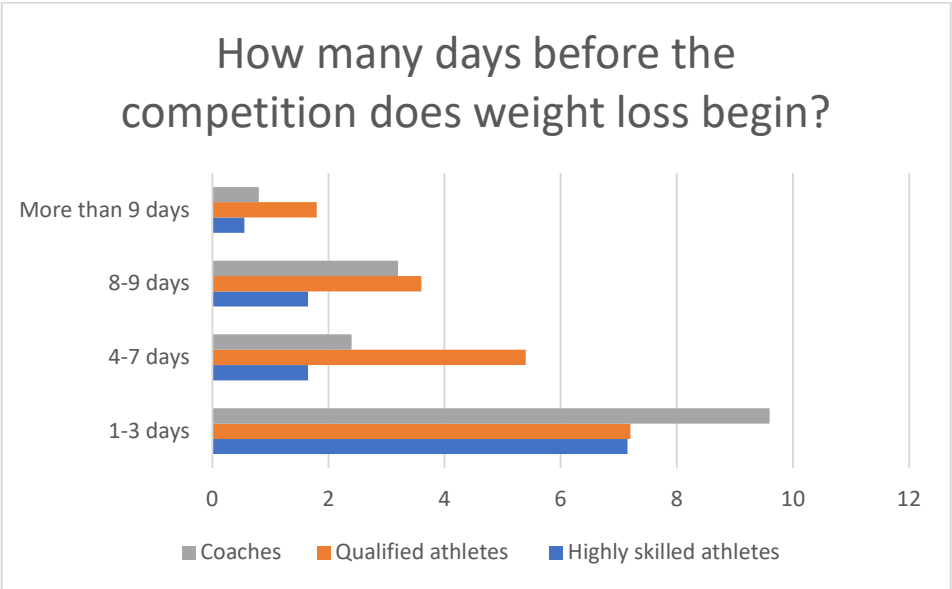

Fig. 2. Distribution of respondents' answers to the question "How many days before the competition does weight loss begin?"

Qualified athletes and weightlifters demonstrate a more even distribution in time. The most popular time frame for weight loss is 1–3 days – this option was chosen by 7 people (39%). At the same time, 5 athletes (28%) start the process in 4–7 days, and 4 participants (22%) adjust their weight in 8–9 days. Another 2 athletes (11%) use a long-term approach, starting weight loss more than 9 days before the start. This distribution indicates a more flexible approach to weight control in athletes of this level, depending on their capabilities and experience.

Coaches who assessed the preparation of their athletes provided the following answers: the largest number of coaches – 10 people (63%) – indicated that weight loss begins 1–3 days before the competition. This coincides with the data of highly qualified athletes, which emphasizes the popularity of short-term methods. Weight loss begins in 4–7 days in 2 cases (13%), while 3 coaches (19%) indicated a period of 8–9 days. Only 1 coach (6%) reported using a period of more than 9 days for athletes to lose weight.

The overall analysis of the results shows that the most common time frame for weight loss is 1–3 days before the competition. This approach is typical for highly skilled athletes and recommended by most coaches. However, skilled athletes and weightlifters, as well as individual coaches, sometimes prefer longer periods (4–9 days or more), which may indicate individual characteristics of the athletes' bodies or the peculiarities of their training.

To the question “How much weight (in kilograms) do you usually lose before a competition?” the respondents' answers were distributed as follows (Figure 3).

Among highly skilled female athletes, the results indicate a different approach to weight loss. In particular, 1 athlete (9%) loses 1 kg, another 1 person (9%) loses 2 kg. Two athletes (18%) lose 3 kg each, and the same number (18%) lose 4 kg. At the same time, two athletes (18%) reported losing 5 kg, and the largest number, 3 athletes (27%), lose more than 5 kg before competitions. This indicates that highly skilled female athletes often work with losing a large amount of weight, which is characteristic of their level of training and high requirements for compliance with weight categories.

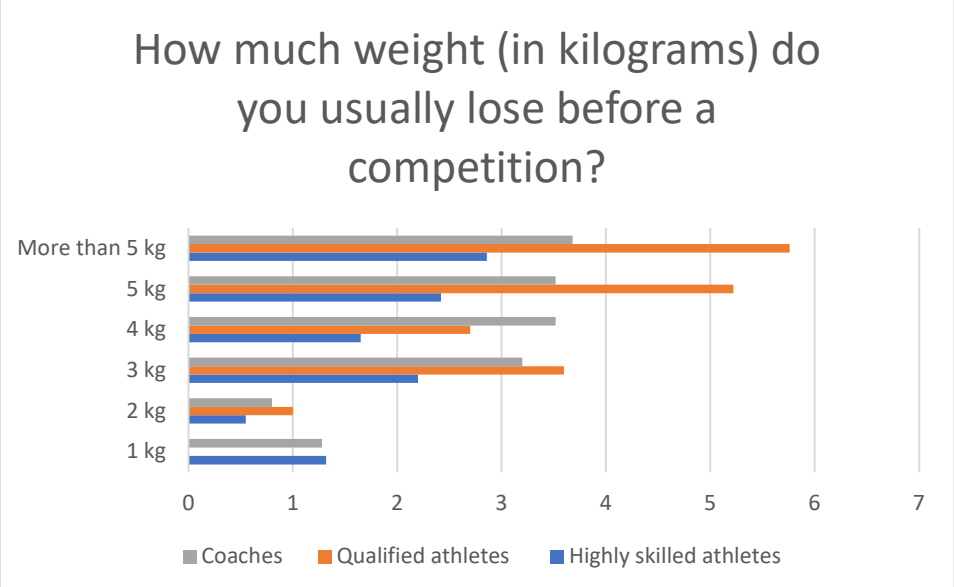

Fig. 3. Distribution of respondents' answers to the question "How much weight (in kilograms) do you usually lose before a competition?"

Among qualified athletes and weightlifters, there is a tendency towards more intensive weight loss compared to the previous group. None of the respondents in this group is limited to a loss of 1 kg. Only 1 athlete (6%) indicated 2 kg, while 4 athletes (22%) lose 3 kg each. Three people (17%) regulate their weight at 4 kg, and 5 athletes (28%) work with a loss of 5 kg. The largest share – 6 athletes (33%) – lose more than 5 kg. This

indicates a significant load in the training process, probably due to the need to achieve the optimal weight category with less experience and less effective methods.

The data provided by the coaches show trends in the training of their athletes. Thus, 1 coach (6%) noted a weight loss of 1 kg, and another 1 (6%) - 2 kg. Three coaches (19%) reported a weight loss of 3 kg, and 4 coaches (25%) noted an indicator of 4 kg. A similar number of coaches (25%) indicated a loss of 5 kg. Another 4 coaches (25%) noted that their athletes lose more than 5 kg before competitions. This distribution is in line with the general trend, where more experienced groups of athletes and coaches use a combination of quick and effective methods to achieve the weight norm.

Weight loss of 5 kg or more is the most common option among all groups of respondents, indicating the need for significant body weight adjustment to achieve competitive performance. At the same time, skilled athletes are more likely to lose a large amount of weight, which may indicate insufficient experience or less optimized techniques, while highly skilled athletes demonstrate a more balanced approach. Coaches' data confirm this trend and reflect their control over the athletes' training, adapting strategies according to individual needs and capabilities.

To the question “What method of pre-competition weight regulation do you consider the most effective?” the respondents’ answers were distributed as follows (Fig. 4).

Among highly qualified female athletes, there is a preference for fasting as a method that, in their opinion, is the most effective. This option was chosen by 5 female athletes (45%). Next in frequency of mention are medical devices, which were chosen by 3 respondents (27%), which may indicate an attempt to minimize stress on the body with the help of medications or supplements. 1 female athlete (9%) named a water-food regimen, a sauna, and intensive training as effective methods. However, a weight loss suit was not chosen by any female athlete in this group, which indicates its low popularity among representatives of this level of training.

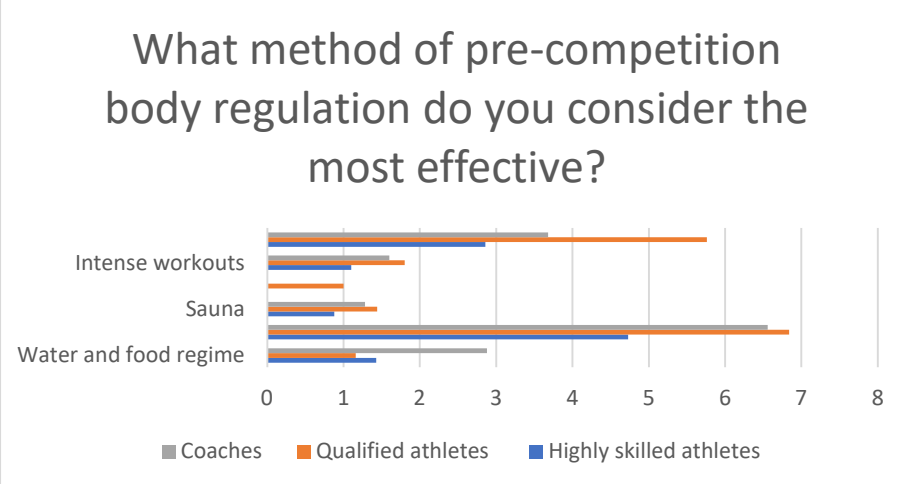

Fig. 4. Distribution of respondents' answers to the question "What method of pre-competition body regulation do you consider the most effective?"

Among qualified female athletes and weightlifters, the dominant method is also fasting, which was chosen by 7 people (39%). This indicates its widespread use among female athletes of this level, despite the potential negative impact on physical performance. A significant number of respondents (6 people, 33%) preferred medical means, which indicates an attempt to use more effective and controlled methods. 2 female athletes (11%) consider intensive training to be effective, and 1 female athlete (6%) chose a water-food regimen, a bathhouse, and a weight loss suit. This indicates a

variety of approaches among female athletes of this group and the search for individually acceptable methods of weight regulation.

Coaches who evaluate the effectiveness of methods for their athletes also most often indicate fasting as the most effective method (7 people, 44%). At the same time, medical devices were chosen by 4 coaches (25%), which confirms their popularity as a tool for minimizing the time for weight loss. Water-food regimen is considered effective by 3 coaches (19%), while 2 coaches (12%) each called intensive training the best method of pre-competition body weight regulation. Only 1 coach (6%) noted a sauna, and a weight loss suit was also not used in this group.

The overall analysis shows that fasting is the most popular method among all groups of respondents. This approach, despite its prevalence, can have a negative impact on the health and performance of female athletes, especially when used for a long time. A significant number of respondents, especially among qualified female athletes and coaches, also choose medical means, which may indicate a desire to control the weight loss process more effectively. Less popular methods are water-food regimen, sauna and intensive training, while the weight loss suit is losing relevance and is used extremely rarely.

To the question “How did weight loss affect your strength abilities?” the respondents’ answers were distributed as follows (data are presented in Fig. 5). Among highly qualified female athletes, the results show that weight loss most often negatively affects strength abilities. Thus, 6 female athletes (55%) noted that their strength indicators decreased after weight regulation procedures. Four female athletes (36%) reported that their strength abilities did not change, and only 1 female athlete (9%) noted that strength indicators increased. This indicates a significant impact of weight loss processes on the physical condition of even highly qualified female athletes, which may be due to a large volume of training and insufficient recovery.

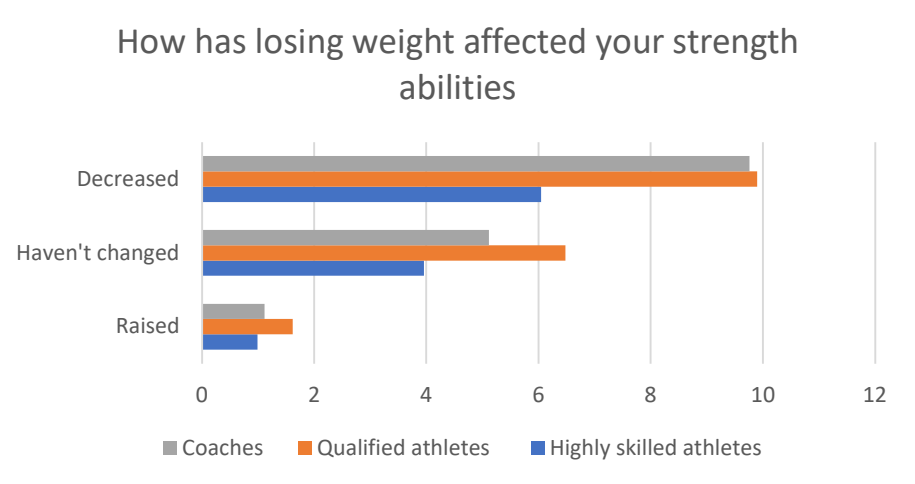

Fig. 5. Distribution of respondents' answers to the question "How has losing weight affected your strength abilities?"

Among qualified athletes and weightlifters, negative effects also prevail. Ten athletes (56%) indicated that their strength abilities decreased after weight-loss procedures. Six athletes (33%) reported that their performance did not change, and only 2 athletes (11%) reported an increase in strength abilities. This indicates that less experienced athletes are more likely to face difficulties in maintaining strength due to insufficiently optimized weight-loss techniques or lack of experience in maintaining functional characteristics during weight-loss procedures. Coaches' assessment showed that weight-loss procedures have a negative effect on the strength abilities of the athletes they train. Ten coaches (63%) indicated that their athletes' strength abilities decreased. Five coaches (31%) indicated that their performance did not change, and only 1 coach (6%) reported

an increase in strength abilities. This indicates that coaches are aware of the negative impact of weight regulation on the results of female athletes, especially in conditions of insufficiently individualized approaches.

The results show that in most cases (over 50% in all groups) weight loss leads to a deterioration in the strength abilities of female athletes, regardless of their qualifications. Only a small number of respondents (6–11%) noted an increase in indicators, which may be associated with improved technical training or adaptation of the body to a lower weight. About a third of respondents in each group reported that their strength abilities did not change, which indicates the possibility of preserving physical characteristics provided that the weight loss process is properly organized.

To the question "How has losing weight affected your endurance?", the respondents' answers were distributed as follows (data are presented in Fig. 6).

Most respondents among highly qualified athletes (6 people, 55%) noted that their endurance did not change after weight regulation procedures. This may indicate a high level of adaptation of the body to loads and the use of less aggressive methods of weight loss. Three athletes (27%) reported an increase in endurance, which may be associated with a decrease in body weight and a decrease in energy expenditure during exercise. Only 2 athletes (18%) indicated a decrease in endurance.

Among qualified athletes and weightlifters, the majority of respondents (9 people, 50%) also noted that their endurance had not changed. This indicates that a significant proportion of athletes maintained stable physical characteristics. Six athletes (33%) indicated an increase in endurance, which may be due to properly organized weight regulation methods. However, three athletes (17%) noted that endurance had decreased, which indicates the need for an individualized approach to the weight loss process in this category.

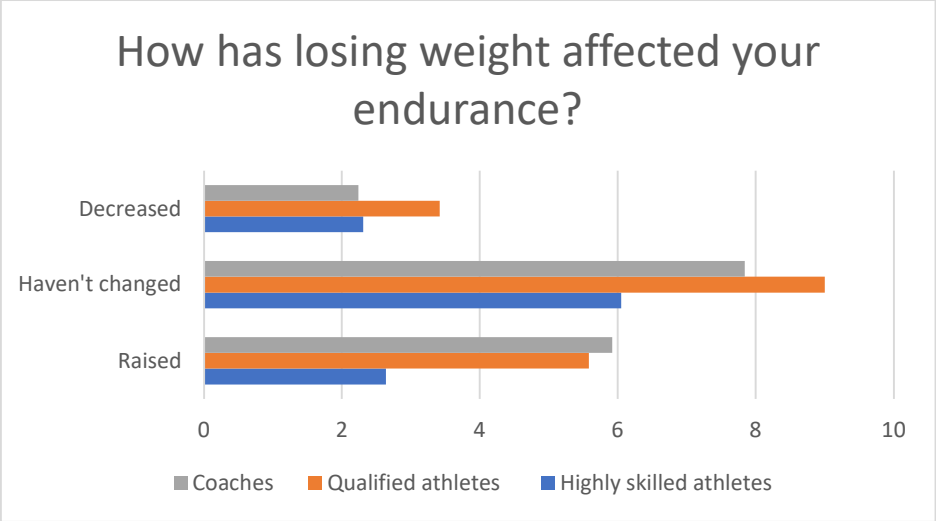

Fig. 6. Distribution of respondents' answers to the question "How has losing weight affected your endurance?"

Coaches, assessing the endurance of their athletes, also noted that in most cases endurance either did not change (8 people, 50%) or increased (6 people, 38%). This indicates positive results of weight correction under conditions of proper control over the weight loss process. Only 2 coaches (12%) noted a decrease in endurance, which indicates the rarity of negative consequences among the athletes they care for.

The results show that weight loss in most cases does not have a significant negative impact on the endurance of female athletes. In the majority of respondents in each group, endurance either did not change (50–55%) or even increased (27–38%). This may

indicate the benefits of a competent approach to weight regulation that takes into account the physiological needs of female athletes.

To the question "What changes in your mental state have you noticed after losing weight?", the respondents' answers were distributed as follows (see Fig. 7).

Among the highly skilled female athletes, two athletes (18%) reported not noticing any changes in their mental state after losing weight. However, the majority (82%) reported various negative symptoms. Four athletes (36%) reported increased nervousness, which was the most common symptom in this group. Two athletes (18%) each reported decreased attention and irritability, and one athlete (9%) reported apathy.

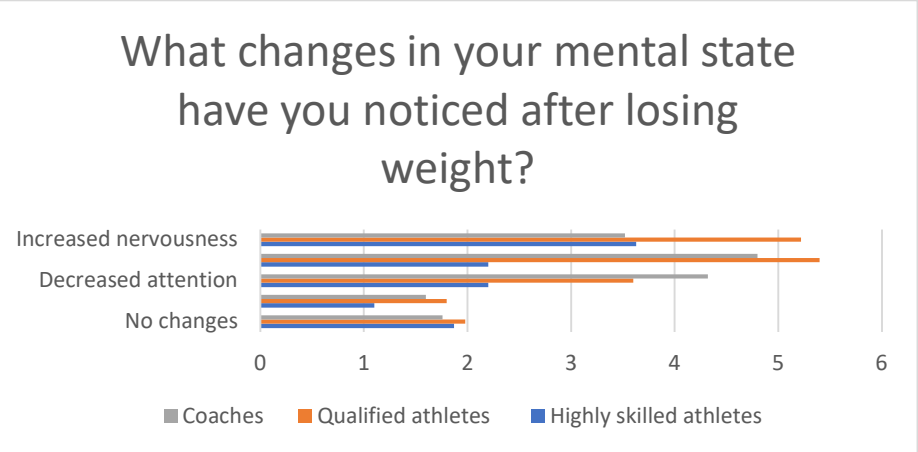

Fig. 7. Distribution of respondents' answers to the question "What changes in your mental state have you noticed after losing weight?"

These data suggest that the process of weight loss has a significant impact on the emotional state even in experienced female athletes, who are likely to experience stress due to high competitive demands.

Among the skilled athletes and weightlifters, only two athletes (11%) reported that their mental state had not changed. The others reported various negative changes. The most common symptoms in this group were irritability and increased nervousness, reported by five respondents (28%) each. Four athletes (22%) reported decreased attention, and two (11%) reported apathy. These results suggest that less experienced athletes may be more susceptible to the negative effects of weight loss on their emotional state due to lack of experience and less sophisticated regulation techniques.

Coaches, assessing the mental state of their athletes, also indicated the prevalence of negative symptoms. Only two coaches (12%) noted that there were no changes in the mental state. Most often, coaches noticed irritability (5 people, 31%) and increased nervousness (4 people, 25%), which coincides with the data of the athletes themselves. Four coaches (25%) also noted a decrease in attention, and two (12%) - apathy.

The results demonstrate that in most cases, weight loss causes negative changes in the mental state of female athletes, including increased nervousness and irritability. Only a small proportion of respondents in all groups (11–18%) reported no changes.

A significant number of negative manifestations may be associated with stress caused by physical restrictions during weight loss procedures, as well as with psychological pressure associated with preparation for competitions.

Discussion and Conclusion

The survey results indicate a high prevalence of pre-competition weight loss among female powerlifters, with most athletes losing 3–7 kg in the short period before the competition. The most common methods are fluid restriction, calorie reduction, and

vigorous exercise. These findings are consistent with previous studies that have shown that athletes in weight classes often use aggressive weight loss strategies, including dehydration and dietary restriction (Mendes et al., 2013).

Analysis of the coaches' responses confirms that pre-competition weight loss is considered an integral element of competitive training, although most experts emphasize the importance of an individual approach and the need to monitor the health of the athletes. At the same time, a significant part of the athletes reported negative consequences of rapid weight loss, including decreased strength, sleep disturbances, loss of energy, and emotional instability. These manifestations are likely associated with activation of the sympathetic nervous system and decreased parasympathetic regulation, as demonstrated in other studies using heart rate variability indicators (Acharya et al., 2006; Mosley & Laborde, 2024; Pham et al., 2021; Stein & Kleiger, 1999).

Of particular note is the gender-specific nature of the body's reactions to rapid weight loss. As the authors of the study note, an additional stress factor in women may be hormonal fluctuations associated with the menstrual cycle, which affect cardiovascular regulation (Carter & Goldstein, 2015). This factor is likely to exacerbate the negative consequences of weight loss in female powerlifters compared to men, which was also reflected in the comments of some coaches about the increased risk of overtraining.

The conducted study allowed to reveal the characteristic features of pre-competition body weight regulation in female powerlifters depending on the level of sports qualification and experience of coaches. The results of the survey showed that highly qualified female athletes resort to weight loss much more often - more than four times a year, using mainly short-term weight regulation methods within 1-3 days before the start. At the same time, lower-level female athletes and their coaches observe greater variability in approaches and timing of weight loss.

A significant proportion of respondents, regardless of qualification, reduce body weight by 5 kg or more. At the same time, highly qualified athletes demonstrate a more balanced approach, while qualified athletes more often reduce weight sharply, which may be a sign of insufficient adaptation or suboptimal technique).

Kısaltmalar / Abbreviations

None.

Beyanlar / Declarations

Etik Onay ve Katılım Onayı / Ethics approval and consent to participate

Bu çalışmanın hazırlanma ve yazım sürecinde "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında bilimsel, etik ve alıntı kurallarına uyulmuş olup; toplanan veriler üzerinde herhangi bir tahrifat yapılmamış ve bu çalışma herhangi başka bir akademik yayın ortamına değerlendirme için gönderilmemiştir. Makale ile ilgili doğabilecek her türlü ihlallerde sorumluluk yazara aittir.

During the preparation and writing of this study, the principles of scientific integrity, ethics, and citation, as stipulated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive," were fully observed; no falsification was made on the collected data, and this study has not been submitted to any other academic publication platform for evaluation. The author bears full responsibility for any potential violations regarding the article.

Veri Ve Materyal Erişilebilirliği / Availability of data and material

Bu çalışmanın bulgularını destekleyen veriler, makul talepler üzerine sorumlu yazardan temin edilebilir. Veri seti yalnızca akademik amaçlar için erişilebilir olacak ve verilerin herhangi bir kullanımı, orijinal çalışmayı referans gösterecek ve katılımcıların gizliliğini koruyacaktır.

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset will be accessible only for academic purposes, and any use of the data will recognize the original study and maintain the confdentiality of the participants.

Çıkar Çatışması / Competing interests

Yazarlar, bu makalede sunulan çalışmayı etkileyebilecek herhangi bir çıkar çatışması veya kişisel ilişkiye sahip olmadıklarını beyan etmektedirler.

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Yazar Katkıları / Authors' Contribution Statement

O.O., N.D., O.T. ve M.K., çalışma tasarımını, veri toplama sürecini, literatür taramasını, makale yazımını ve veri analizini eşit düzeyde gerçekleştirmiştir.

O.O., N.D., O.T., and M.K. contributed equally to the study design, data collection, literature review, article writing, and data analysis.

Fon Desteği / Funding

This Bu çalışma, kamu, özel veya kar amacı gütmeyen sektörlerdeki fon sağlayıcı kurumlardan herhangi bir özel destek almamıştır.
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