

Health Awareness in Female Fitness Training: Competitive and Recreational Perspectives

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Abstract

This study examined the health-conscious strategies, dietary habits, hydration practices, training behaviors, and body image of female fitness competitors and recreational gym users (N=201; 101 competitors in lower-demand categories, 100 recreational athletes). Data were collected via an online questionnaire, including the BSQ-34 for body image assessment. Both groups demonstrated health awareness, but with distinct priorities. Competitors emphasized performance-oriented behaviors, such as structured training, strict seasonal diets, intensive supplement use, and precise hydration, while recreational athletes focused on overall health, long-term well-being, and flexible nutrition. Training frequency was higher among competitors, who adhered to periodized routines, whereas recreational athletes showed greater avoidance of unhealthy fats and preference for natural supplements. Notably, body dissatisfaction was higher among recreational athletes, likely influenced by aesthetic motivations and social media, while competitors maintained a more realistic perception of their physique despite seasonal fluctuations. Even in lower-demand competition categories, extreme preparatory practices persisted, highlighting the need for educational interventions promoting balanced nutrition, safe supplementation, and realistic body image. Overall, the findings underscore the differences in goal orientation, risk exposure, and lifestyle consistency between performance-driven competitors and health-focused recreational athletes.

Keywords: *dietary habits, wellness, gym, exercise*

Introduction

The relationship between women's health, lifestyle habits, and body image has emerged as a key public health concern, highlighting the relevance of examining fitness-related behaviours. In recent years, gym-based training has become one of the most widespread forms of recreational physical activity, while public and professional interest in fitness competitions has also grown dynamically (Kairaitis et al., 2024; Riera & Moragas, 2021). The increasing number of recreational athletes has contributed to greater attention toward competitive sports, leading to the structural expansion of competition categories. In addition to traditional bodybuilding divisions,

new categories emphasizing aesthetic and functional aspects have emerged, such as bikini fitness, wellness fitness, and body fitness. These categories are characterized by lower entry demands, as they do not require the same degree of muscle mass or extremely lean physique as classical bodybuilding disciplines (Vorobiova et al., 2019).

Health consciousness has gained prominence in research, particularly concerning lifestyle, training habits, and recovery practices of fitness competitors. Empirical studies indicate that supplement use is widespread among athletes (Filho et al., 2021; Mazzilli et al., 2021). Nevertheless, atypical nutritional behaviours can be observed in certain sub-

groups, and limited professional knowledge often characterizes supplement intake (Mazzilli et al., 2021; Paaso-Rantala & Turvanen, 2023). Mental health research highlights the high prevalence of body image disturbances, eating problems, and anxiety (Mathisen & Sundgot-Borgen, 2019; Monks et al., 2020; Salvador et al., 2023; Steele et al., 2019). These findings collectively underline that participation in fitness competitions is not solely an aesthetic pursuit but involves complex health challenges (Walberg & Johnston, 1990; Warren & Perloth, 2001).

While fitness was previously almost exclusively associated with bodybuilding, the discipline has evolved to include both aesthetic and health-promoting goals (Andreasson & Johansson, 2019). However, there is limited evidence regarding the nutritional patterns, hydration practices, and general health strategies of athletes entering newer, lower-demand categories. Beginners in these divisions often lack adequate professional preparation, potentially increasing physical and mental health risks. These risks can be further aggravated by inadequate dietary practices, improper supplement use (Espino et al., 2024), and extreme preparatory methods, such as dehydration or electrolyte manipulation, which may lead to severe health consequences (Helms et al., 2014). Preliminary observations suggest that even outside competition periods, the physical condition of athletes in lower categories often deteriorates markedly. Research on recreational athletes remains limited, as most studies focus on competitive sports (Filho et al., 2021).

The aim of this study is to explore and compare the health-conscious strategies of amateur female fitness competitors and recreational gym users performing regular resistance training. Particular attention is given to health awareness in training, including prevention, correct exercise technique, warm-up and cool-down, and recovery strategies. Additionally, the study examines dietary habits, including adherence to healthy eating, potentially harmful patterns, and deviations from prescribed diets, as well as hydration-related attitudes. Finally, the research focuses on training behaviour, motivation, and body image, comparing frequency and intensity of training, performance- versus health-oriented goals, and the prevalence of body dissatisfaction in both groups. Only athletes competing in lower-demand categories (e.g., bikini fitness, wellness fitness, body fitness) were included, as these divisions are assumed to encourage moderate, health-oriented preparation and reduce the likelihood of extreme physiological interventions.

Materials and methods

The study was based on convenience sampling with voluntary participation and targeted two groups: female fitness competitors and recreational gym users engaged in resistance training. The sample included a total of 201 participants, of

whom 101 were active female competitors in lower-entry fitness categories (bikini fitness, wellness fitness, body fitness), and 100 were recreational athletes performing regular gym-based resistance training. Inclusion criteria required at least two years of experience in resistance training, and, for competitors, active participation in one of the specified competition categories. Exclusion criteria included any regular physical activity not related to gym-based resistance training.

Data were collected through a questionnaire survey using both a self-constructed and a validated measurement instrument. The questionnaires were distributed nationwide in an online format via the Google Forms platform between 23 February and 9 March 2025, with a supplementary second data collection conducted between 5 and 9 January 2026. The second data collection was conducted to increase the sample size and improve the robustness and representativeness of the dataset by including additional eligible participants who expressed willingness to take part in the study.

The self-constructed questionnaire contained open-ended, closed-ended, and Likert scale items. The first section recorded sociodemographic data, while the second assessed general health consciousness. The third section examined participants' dietary supplement consumption habits. Considering the importance of annual training planning (periodization) among female fitness competitors, members of this group answered the relevant questions separately for the competition season and the off-season, allowing for the identification of potential differences between these two periods. This approach enabled a comparative analysis of health consciousness, dietary habits, and supplement use across the two phases.

For the examination of body image disturbance, the Body Shape Questionnaire (BSQ-34), a validated instrument developed by sports psychologists, was employed (Cooper et al., 1987). The questionnaire consists of 34 items assessing the degree of dissatisfaction with body shape. Responses are rated on a six-point Likert scale. The total score, ranging from 34 to 204, indicates the level of body dissatisfaction, with higher scores representing greater dissatisfaction. The interpretation ranges are as follows: ≤ 110 points: no or minimal body dissatisfaction; 111–140 points: mild body dissatisfaction; 141–170 points: moderate body dissatisfaction; ≥ 171 points: severe body dissatisfaction. Data processing was performed using Microsoft Excel, applying descriptive statistical measures and frequency distributions.

The sociodemographic data of the two examined target groups are presented in Table 1. Participants had the option to skip the question regarding their income. Among the recreational gym users, 11% ($n=11$) chose not to answer this question, and 2% ($n=2$) reported being dependents. Among the fitness competitors, 15.2% ($n=15$) did not respond to the income-related question, and 4% ($n=4$) of them were classified as dependents.

Table 1. Distribution of participants according to their main sociodemographic characteristics

Category	Group	Recreational gym users (%)	Fitness competitors (%)
Age group (years)	21–25	39	48
	26–30	10	20
	31–35	14	16
	36–40	14	4
	40–45	23	12
Highest level of education completed	PhD degree	1	1
	Tertiary education	48	49
	Grammar school	28	28
	Vocational secondary school	15	18
	Vocational school	4	2
	Primary school	4	2
Place of residence	Town	38	36
	City with county rights	33	28
	Capital city	13	28
	Large village	7	1
	Village	9	7
Monthly net income (EUR)	0–500	19	7
	501–1000	26	26
	1001–1,500	34	36
	1,501–2,500	5	11
	Above 2,500	3	1
	Dependent	2	4
	No response	11	15

Results

Health awareness in training: prevention, technique, and recovery

The utilization of preventive health screenings was notably high among fitness competitors, with 82% reporting that they undergo such examinations regularly, annually, or even more frequently, including prior to the competition season. Among recreational amateur athletes, participation in health screenings was also relatively high (62%), yet this proportion was lower than that observed among competitors.

The importance of correct exercise technique, as well as proper warm-up and cool-down routines, was emphasized by the majority of respondents in both groups.

Regarding sleep, approximately four-fifths of respondents in both groups reported consciously striving to ensure adequate quantity and quality of rest. Among fitness competitors, nearly one-third paid increased attention to sleep during the competition season.

Dietary habits

The degree of avoidance of unhealthy fats and empty calories was lower among competitors during the off-season (mean: 4.02 ± 1.12) compared to recreational gym users (mean: 4.22 ± 1.28). Among competitors, dietary strictness varied seasonally: during the competition season, self-discipline increased significantly (mean: 5.11).

Seventy-five percent of competitors reported consuming foods they considered unhealthy for aesthetic or performance purposes. In contrast, this proportion was lower among recreational athletes (48.5%).

The use of sweeteners was almost universal among competitors: 90% reported regular use, and 64% consumed them daily. This proportion further increased during the competition season. Among recreational athletes, sweetener use was more moderate: 30% reported daily use, 30% occasional use, and another 30% avoided them entirely (Figure 1).

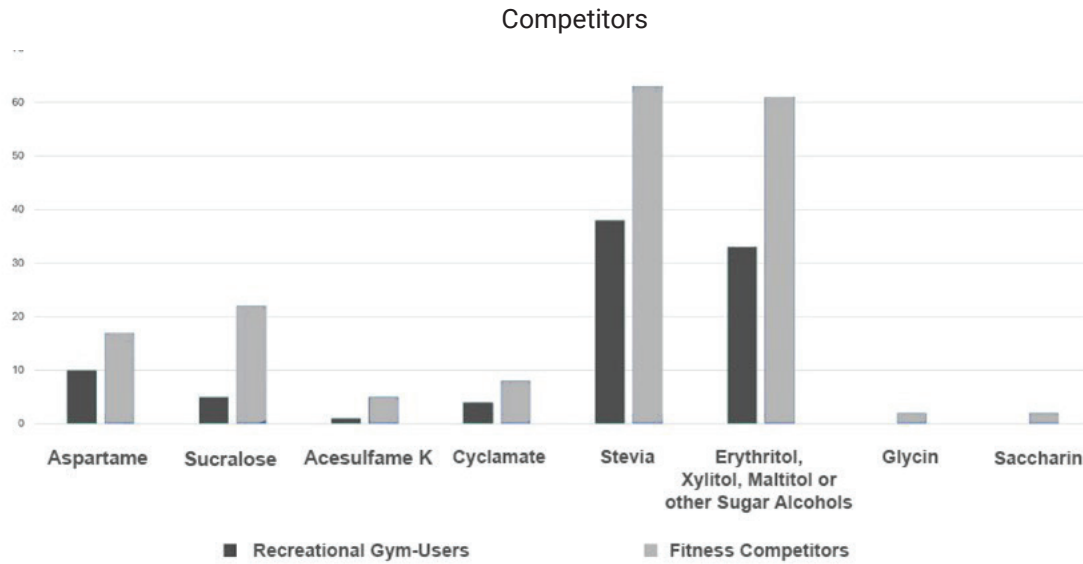


Figure 1. Sweetener consumption habits among gym-going recreational athletes and fitness

The frequency of dietary deviations differed between the two groups. During the off-season, 50% of competitors reported having “cheat days” once or twice a week, whereas during the competition season, 66% reported no deviation from their planned diet. In contrast, 33% of recreational athletes regular-

ly included such meals. When examining the impact of festive and vacation periods, competitors’ responses indicated moderate dietary deviation (mean: 3.8 ± 1.52 ; median and mode: 4), while among recreational gym users, the deviation was slightly higher (mean: 3.52 ± 1.78 ; median: 4; mode: 5).

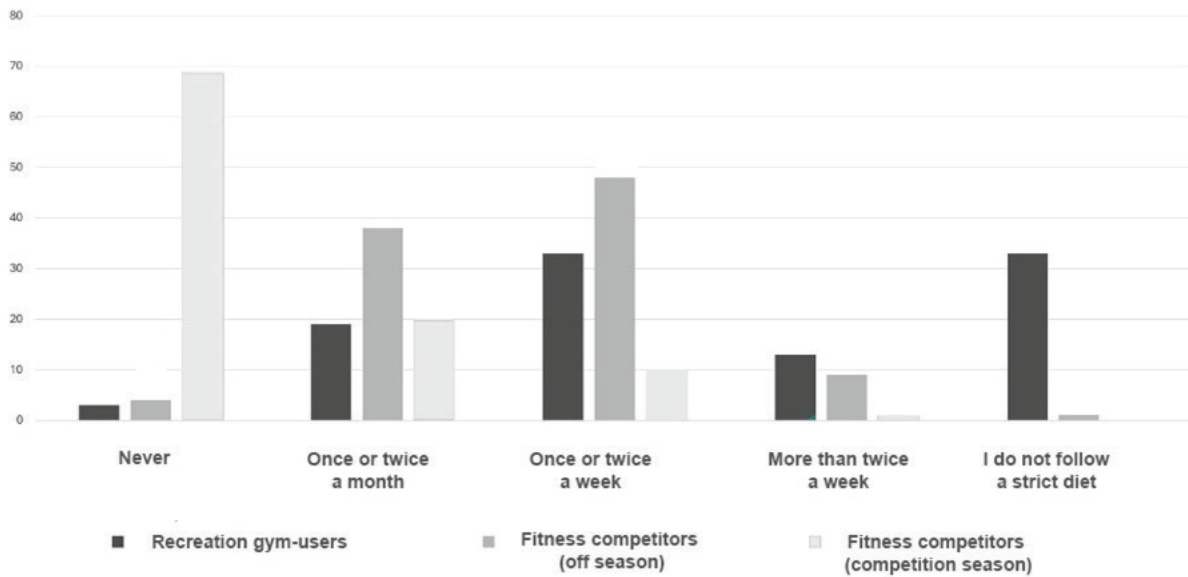


Figure 2. Frequency of dietary deviations among recreational gym users and fitness competitors

The consumption of non-vitamin and non-mineral dietary supplements was widespread in both groups. Among competitors, 92% reported using such products, more than

half on a daily basis, and 39% used them even more intensively during the competition season. Among recreational athletes, 61% consumed supplements, 41% of them daily (Figure 3).

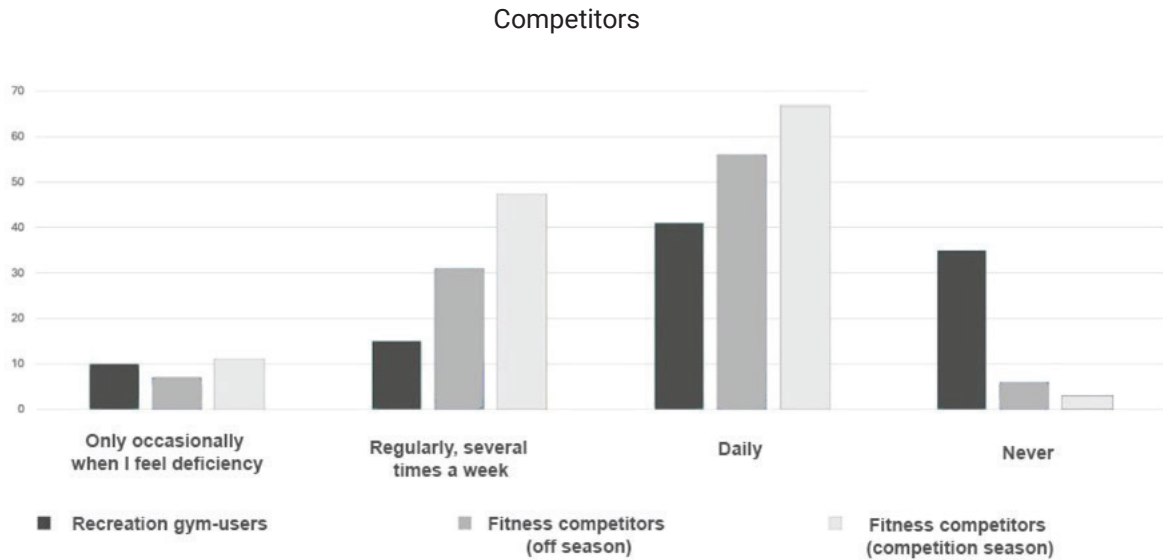


Figure 3. Dietary supplement consumption habits among recreational gym users and fitness

The reasons behind supplement use include their practical nature, rapid absorption, and their roles in performance enhancement and recovery (Mazzilli et al., 2021; Paaso-Rantala & Turvanen, 2023). Virtually all competitors reported using protein powder, and frequent use was also observed for creatine, BCAA/EAA, glutamine, collagen, pre-workout formulas, caffeine, fat burners (e.g., L-carnitine, thermogenics), citrulline, beta-alanine, ashwagandha, and plant-based steroids (e.g., ecdysterone).

According to the responses, 27% of competitors used certain supplements exclusively during the competition season. These included diuretics (e.g., Watercut, Animal Cuts), HMB, and stimulant-containing pre-workout formulations. Recreational athletes also used dietary supplements but within a narrower range—mainly protein powder, creatine, collagen, and occasionally glutamine, BCAAs, and L-carnitine.

When selecting supplements, effectiveness was identified as the most important factor by 44% of fitness competitors and 33% of recreational athletes. However, the latter group showed a greater preference for products containing natural ingredients.

An examination of attitudes toward side effects revealed that 45% of competitors considered the severity of side effects the decisive factor, while 42% prioritized long-term health. In

contrast, more than three-quarters of recreational athletes regarded long-term health as their primary concern.

The use of vitamin and mineral supplements was also widespread: 91% of competitors and 75% of recreational athletes reported taking such products. The most frequently used micronutrients in both groups were vitamin C, vitamin D, and magnesium. Competitors additionally reported frequent use of multivitamins, omega-3 fatty acids, zinc, iron, calcium, B-complex vitamins, and various natural active compounds, such as ashwagandha, turmeric, berberine, inositol, chasteberry, coenzyme Q10, as well as liver and joint-support supplements. These products were also used among recreational athletes, though to a lesser extent and in fewer varieties.

In terms of conscious supplement selection, effectiveness was the primary factor for fitness competitors (44%), while for recreational athletes (33%), natural composition was a stronger consideration. When asked about their attitude toward potential negative side effects, especially in cases where supplement use could clearly enhance performance or physique, nearly half of competitors (45%) stated that the severity of side effects would be the decisive factor, whereas only 42% prioritized long-term health. By contrast, more than three-quarters of recreational athletes reported that preserving long-term health was their foremost concern (Figure 4).

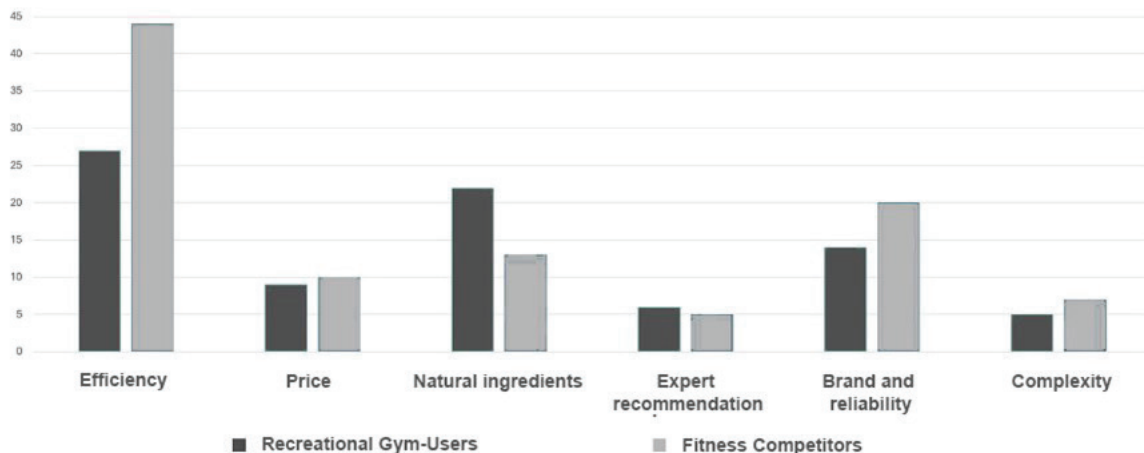


Figure 4. Main criteria for dietary supplement selection among gym-going recreational athletes and fitness competitors

Hydration-related attitudes

Hydration-related awareness was found to be high in both target groups. Among fitness competitors, 98% reported consciously paying attention to adequate fluid intake, while this proportion was 86% among recreational athletes.

In both groups, nearly half of the respondents reported a daily fluid intake of 2–3 liters. However, differences were observed at higher intake levels: 37% of fitness competitors re-

ported consuming 3–4 liters per day, compared to only 10% of recreational athletes. Conversely, approximately one third of recreational athletes reported a daily intake of only 1–2 liters.

Most competitors did not significantly modify their hydration strategies across competition and non-competition periods or between training and rest days. In contrast, recreational athletes more frequently reported consciously increasing fluid intake on training days or adjusting consumption based on thirst (Figure 5).

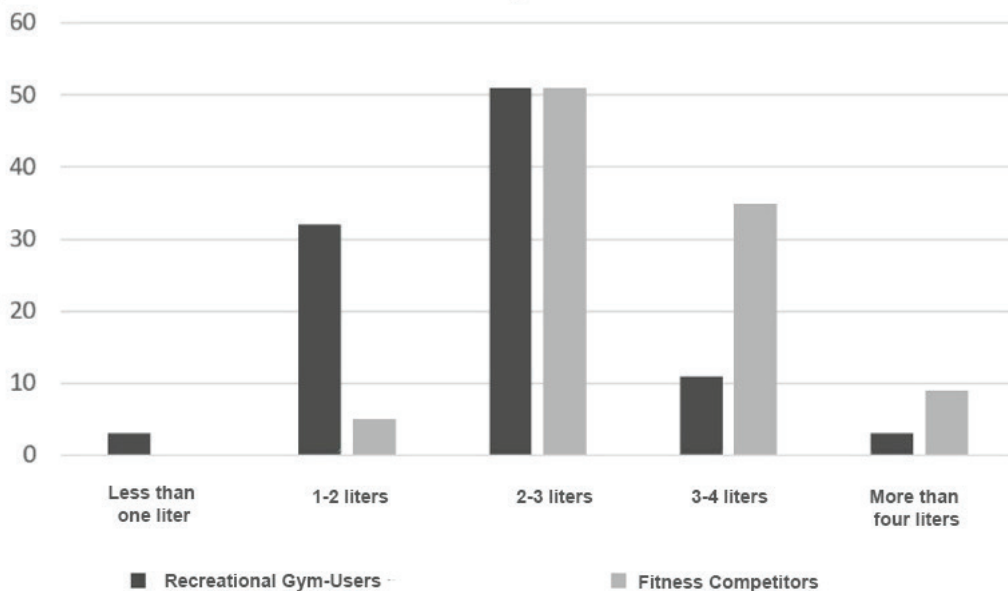


Figure 5. Hydration practices among recreational gym users and fitness competitors

Training behavior, motivation, and body image

Based on responses assessing general health consciousness and training habits, fitness competitors reported a high-

er training frequency compared to recreational gym users. More than half of the competitors trained 5–6 times per week, whereas nearly half (40%) of recreational athletes reported training 3–4 times per week (Figure 6).

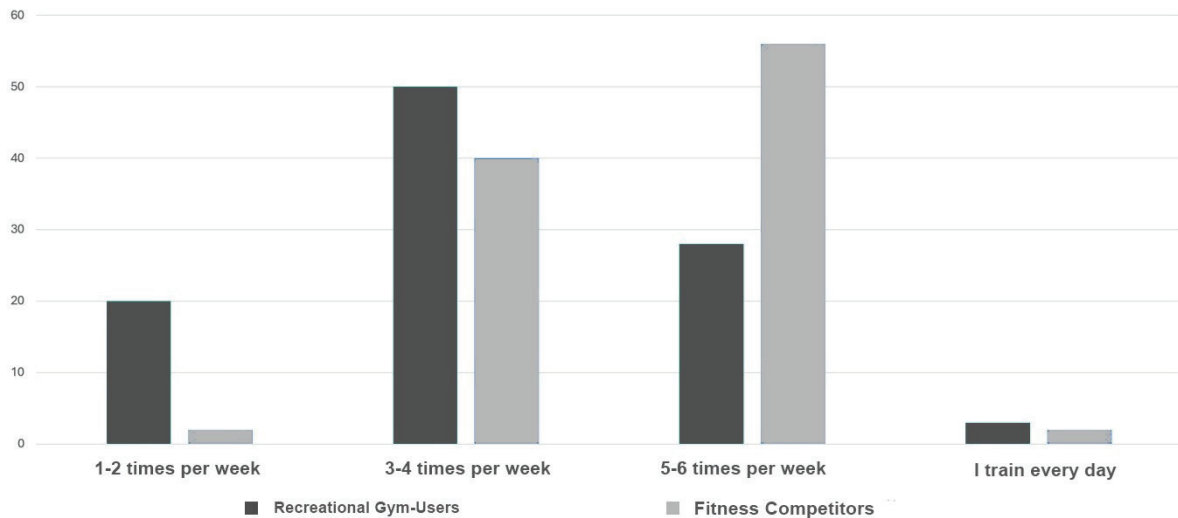


Figure 6. Training frequency among recreational gym users and fitness competitors

Regarding training motivation, nearly half of both competitors and recreational gym users indicated achieving a more muscular and leaner physique as their primary motiva-

tion. However, 25% of recreational athletes reported general health maintenance as a key motivation (Figure 7).

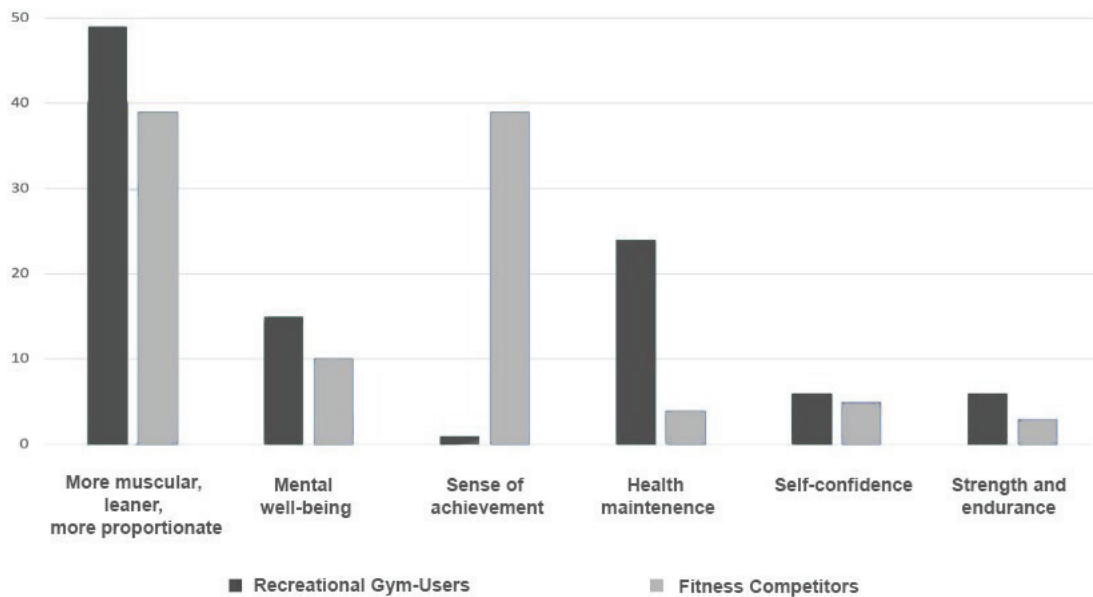


Figure 7. Training motivation among recreational gym users and fitness competitors

Body image dissatisfaction differed between the groups, with recreational gym users exhibiting higher levels than competitors. In the recreational group, only 38% of participants scored in the lower categories of the BSQ scale (no

concern or mild concern with body shape), compared to 61% among competitors. Notably, 1% of competitors and 6% of recreational athletes fell into the most severe dissatisfaction category (Figure 8).

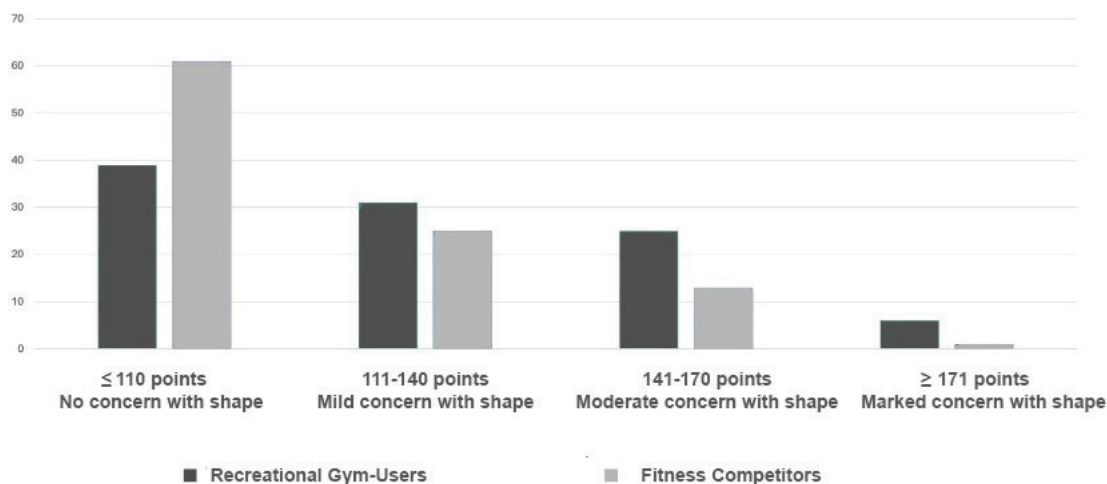


Figure 8. BSQ-34 body image assessment among recreational gym users and fitness competitors

Discussion

The observed differences in preventive health screenings may be closely related to the structural demands of competition preparation, where maintaining optimal physical condition is a prerequisite for successful performance. In this context, regular monitoring may serve not only as a preventive measure but also as a tool for tracking readiness and minimizing the risk of setbacks during preparation phases. In contrast, although recreational athletes also show relatively high participation in screenings, the lower prevalence suggests a less performance-driven necessity for continuous medical supervision.

The emphasis on correct technique, as well as warm-up and cool-down routines in both groups, reflects a generally conscious approach to injury prevention. However, the practical implications of this awareness may differ: for competitors, injury prevention is likely directly linked to maintaining training continuity and achieving peak condition, whereas for recreational athletes, it may be more associated with general safety and long-term participation in physical activity.

Sleep-related behaviors further support this distinction. While both groups recognize the importance of adequate rest, the increased attention observed among competitors during the competition season suggests a more strategic use of sleep as a recovery and adaptation tool. This pattern may indicate a higher level of periodization not only in training but also in recovery strategies.

Differences in dietary habits reveal distinct behavioral models. Recreational athletes appear to follow a relatively stable, health-oriented nutritional pattern throughout the year, whereas competitors exhibit clear seasonal variation. This fluctuation likely reflects the cyclical nature of competition preparation, where dietary strategies are adjusted in accordance with short-term physique goals. The stricter dietary control observed during competition periods may therefore be interpreted as a functional adaptation to performance requirements rather than a consistently maintained lifestyle pattern.

The higher prevalence of consuming foods perceived as unhealthy among competitors suggests a willingness to prioritize aesthetic or performance-related outcomes over general

health considerations. This behavior may reflect the complex trade-offs inherent in physique sports, where achieving a specific body composition can require dietary compromises that deviate from conventional health guidelines.

Sweetener consumption patterns further illustrate this dynamic. Despite a substantial proportion of competitors perceiving sweeteners as potentially harmful, their widespread and frequent use indicates that these products may play a practical role in maintaining dietary adherence, particularly under restrictive conditions. In contrast, the more moderate use and partial avoidance observed among recreational athletes suggests a stronger alignment with natural, less processed dietary approaches.

Differences in dietary flexibility also highlight contrasting behavioral strategies. Recreational athletes demonstrate a balance between health awareness and flexibility, particularly in social contexts such as holidays or vacations. Competitors, on the other hand, tend to maintain stricter dietary control even during such periods, which may be linked to the continuous alignment of their behaviors with training cycles and competition timelines.

The markedly higher and more diverse supplement use among competitors reflects a goal-oriented approach that integrates supplementation as part of performance optimization and recovery strategies (Mazzilli et al., 2021; Paaso-Rantala & Turvanen, 2023). The inclusion of both commonly used supplements and more specialized or season-specific products suggests a structured and targeted supplementation strategy. In contrast, recreational athletes exhibit more limited and selective use, focusing on a narrower range of widely accepted supplements.

Attitudes toward supplement selection and side effects further emphasize differing priorities between the groups. Competitors' stronger focus on effectiveness, alongside a relatively lower emphasis on long-term health, suggests a performance-oriented risk-benefit evaluation. Recreational athletes, by prioritizing long-term health to a greater extent, appear to adopt a more precautionary approach to supplementation.

Hydration practices also reflect these broader patterns. While both groups demonstrate high levels of awareness,

competitors' higher fluid intake and more consistent routines indicate a structured approach integrated into performance preparation. Recreational athletes, in contrast, appear to regulate hydration more flexibly, often in response to immediate needs such as thirst or training load, suggesting a more intuitive strategy.

Differences in training frequency are likely associated with the structured and periodized nature of competition-oriented training programs. Higher training frequency among competitors may reflect not only greater time investment but also a systematic approach to achieving specific performance and physique outcomes. Although aesthetic motivation is prominent in both groups, the additional emphasis on health among recreational athletes indicates a broader motivational framework, whereas competitors' motivations appear more closely aligned with performance and competitive success.

Body image-related findings provide further insight into psychological differences between the groups. The lower prevalence of dissatisfaction among competitors may be associated with regular and objective monitoring of body composition, which can contribute to a more realistic perception of one's physique. Additionally, awareness of the temporary nature of peak competition condition may facilitate acceptance of natural fluctuations. In contrast, recreational athletes may be more susceptible to external influences, particularly idealized representations on social media, which can contribute to unrealistic expectations and increased dissatisfaction (Salvador et al., 2023).

Importantly, the findings indicate that even among female competitors in lower-demand fitness categories, health-compromising practices may still be present. The persistence of extreme preparation strategies, dietary compromises, and potential physiological strain suggests that reduced competition level does not necessarily eliminate associated risks. This observation highlights the complexity of defining "health" within the context of physique sports.

The present results partly contradict previous findings (Mazzilli et al., 2021), which reported no substantial differences in nutritional habits between competitors and recreational athletes. In contrast, the current data demonstrate clear distinctions, particularly in the extent and intensity of supplement use. Furthermore, the absence of significant binge-eating patterns differs from the findings of Mathisen and Sundgot-Borgen (2019), indicating potential variability depending on sample characteristics or competition level.

Taken together, these findings underline the importance of addressing health-related attitudes within the competitive fitness context. Interventions aimed at promoting long-term health considerations, alongside performance goals, may contribute to more balanced behavioral patterns. Educational initiatives, as well as the integration of health-consciousness criteria into coaching qualifications, could support this process. Additionally, encouraging more realistic and natural body representations on social media may help reduce the discrepancy between perceived and attainable physiques, thereby potentially mitigating body image-related concerns among recreational athletes.

Conclusions

The results indicate that both fitness competitors and recreational gym users demonstrate health-conscious behaviors across multiple domains, including training, nutrition, supplementation, hydration, and recovery. At the same time, clear differences were observed between the two groups in the patterns and intensity of these behaviors.

Fitness competitors were characterized by higher training frequency, more structured and consistent routines, and greater engagement in preventive health monitoring. Their nutritional practices showed pronounced seasonal variation, with stricter dietary control during the competition period and more flexible patterns in the off-season. In addition, supplement use was more widespread and diverse among competitors, with a higher proportion of daily use and a broader range of products.

Recreational gym users, in contrast, demonstrated more stable dietary habits throughout the year, with consistently higher avoidance of unhealthy fats and empty calories. Their supplement use was less frequent and involved a narrower range of products. Hydration practices also differed between the groups, with competitors reporting higher daily fluid intake, while recreational athletes more often adjusted their intake based on situational factors such as training days.

Differences were also identified in training frequency and motivational patterns, as well as in body image outcomes. While aesthetic goals were prominent in both groups, recreational athletes more frequently reported general health maintenance as a motivation. Furthermore, a higher prevalence of body image dissatisfaction was observed among recreational gym users compared to fitness competitors. Overall, the findings highlight distinct behavioral patterns between fitness competitors and recreational athletes across all examined areas, including health awareness, dietary habits, supplement use, hydration, training behavior, and body image.

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Conflicts of Interest

The authors declare no conflict of interest.

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References

- Andreasson, J., & Johansson, T. (2019). Bodybuilding and fitness doping in transition. Historical transformations and contemporary challenges. *Social Sciences*, 8(3), 1–14. <https://doi.org/10.3390/socsci8030080>
- Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). *Body Shape Questionnaire (BSQ)* [Database record]. APA PsycTests. <https://doi.org/10.1037/t06040-000>
- Espeño, P. R., Ong, A. K. S., German, J. D., Gumasing, M. J. J., & Casas, E. S. (2024). Analysis of Actual Fitness Supplement Consumption among Health and Fitness Enthusiasts. *Foods*, 13(9), 1–21. <https://doi.org/10.3390/foods13091424>
- Filho, J. M. P., Costa, M. F., & Cavalcanti, J. A. (2021). Healthy lifestyle and opinion seeking in the consumption of food supplements. *Revista De Administração Da UFSM*, 14(4), 750–768. <https://doi.org/10.5902/1983465944497>

- Helms, E. R., Aragon, A. A., & Fitschen, P. J. (2014). Evidence-based recommendations for natural bodybuilding contest preparation: nutrition and supplementation. *Journal of the International Society of Sports Nutrition*, 11(1), <https://doi.org/10.1186/1550-2783-11-20>
- Kairaitis, R., Mamkus, G., Degens, H., & Kamandulis, S. (2024). Nutrition Practices of Lithuanian Elite International and National-level Male Bodybuilders in the Pre-competition Period. *Musculoskeletal Neuronal Interact*, 24(3), 232–242. <https://pubmed.ncbi.nlm.nih.gov/39219321>
- Mathisen, T. F., & Sundgot-Borgen, J. (2019). Mental health symptoms related to body shape idealization in female fitness physique athletes. *Sports*, 7(11), 236. <https://doi.org/10.3390/sports7110236>
- Mazzilli, M., Macaluso, F., Zambelli, S., Picerno, P., & Iuliano, E. (2021). The Use of Dietary Supplements in Fitness Practitioners: A Cross-Sectional Observation Study. *International Journal of Environmental Research and Public Health*, 18(9), 5005. <https://doi.org/10.3390/ijerph18095005>
- Monks, H., Costello, L., Dare, J., & Boyd, E. R. (2020). We're Continually Comparing Ourselves to Something: Navigating Body Image, Media, and Social Media Ideals at the Nexus of Appearance, Health, and Wellness. *Sex Roles*, 84(3–4), 221–237. <https://doi.org/10.1007/s11199-020-01162-w>
- Paaso-Rantala, R., & Turvanen, S. (2023). *Eating Behaviour of Competing Fitness Sports Athletes in Finland*. KAMK, University of Applied Sciences. Theseus. <https://www.theseus.fi/handle/10024/796120>
- Riera, V., & Moragas, M. (2021). Sport and physical activity throughout the lifespan: The "Sport Trajectory Questionnaire". *Aloma*, 39(1), 73–83. <https://doi.org/10.51698/aloma.2021.39.1.73-83>
- Salvador, R., Monteiro, D., Rebelo-Gonçalves, R., & Jiménez-Castuera, R. (2023). Interpersonal Behavior, Basic Psychological Needs, Motivation, Eating Behavior, and Body Image in Gym/Fitness Exercisers: A Systematic Review. *Sustainability*, 15(20), 14914. <https://doi.org/10.3390/su152014914>
- Steele, I. H., Pope, H. G., & Kanayama, G. (2019). Competitive Bodybuilding: Fitness, Pathology, or Both? *Harvard Review of Psychiatry*, 27(4), 233–240. <https://doi.org/10.1097/hrp.0000000000000211>
- Vorobiova, A., Vasylenko, M., & Vysochina, N. (2019). National fitness trends. In *International Proceedings of Human Motricity. Physical Education, Sport and Kinotherapy Journal, Supplementary Issue of Discobolul*, 345–350. <https://doi.org/10.35189/iphm.icpesk.2019.52>
- Walberg, J. L., & Johnston, C. S. (1990). Menstrual function and eating behavior in female recreational weight lifters and competitive bodybuilders. *Medicine and Science in Sport and Exercise*, 23(1), 30–36. <https://pubmed.ncbi.nlm.nih.gov/1997810/>
- Warren, M. P., & Perlroth, P. E. (2001). The effects of intense exercise on the female reproductive system. *Journal of Endocrinology*, 170(1), 3–11. <https://doi.org/10.1677/joe.0.1700003>