

BENEFITS OF NUTRITION AND SPORTS PSYCHOLOGY IN AN ACTIVE LIFESTYLE: A Brief Review

BENEFÍCIOS DA NUTRIÇÃO E PSICOLOGIA DO ESPORTE NO ESTILO DE VIDA ATIVO: breve revisão

Renan Silva Gomiero¹
Pierry Gomes da Silva²
Afonso Antonio Machado³

Abstract

Nutrition and Psychology in physical performance are prominent themes, with an important role in health issues, performance during sports, recovery and quality of life. Proper nutrition, rich in nutrients, is beneficial for all athletes and individuals who practice sports, since nutrients are important for energy production and recovery. However, young athletes present more complex challenges due to the growth phase, which demands attention to nutrient sources to promote development and performance in physical activity. Multidisciplinary interventions, combining knowledge in nutrition and psychology, are effective tools to help athletes and sportsmen avoid eating issues and promote healthy habits and mental health. One of the factors is stress, which affects the athlete's pattern of psychological behavior, eating and physical conditioning. Obesity is an important public health problem being influenced by the social environment, food and psychological factors. The progression of lifestyle, inadequate diet and physical inactivity in modern life are strongly linked to organization and industrial movements and have contributed to the frequent occurrence of obesity and its complications. In conclusion, combined tools, such as individualized nutrition, adequate psychological care and physical activity, are necessary measures to promote health, prevent diseases and improve the quality of human life.

Keywords: Sportsman; Sportsman; Obesity; Nutrition; Psychology.

Resumo

A Nutrição e a Psicologia no desempenho físico são temas de destaque, com um papel importante em questões de saúde, desempenho durante a realização de esportes, recuperação e qualidade de vida. A nutrição adequada, rica em nutrientes é benéfica para todos os atletas e indivíduos que praticam esporte, uma vez que os nutrientes são importantes para a produção de energia e recuperação. No entanto, jovens atletas apresentam desafios mais complexos devido à fase do crescimento, que demanda atenção às fontes de nutrientes para promover o desenvolvimento e desempenho na atividade física. Intervenções multidisciplinares, combinando conhecimento em nutrição e psicologia, são ferramentas eficazes para ajudar os atletas e esportistas a evitar problemas de alimentação e promover hábitos saudáveis e saúde mental. Um

¹ Student of the Group of Interdisciplinary Studies and Research Applied to Sports Psychology (GEPIAPE); Student of the Faculty of Nutrition of the Padre Anchieta University Center – UniAnchieta

² Student of the Group of Interdisciplinary Studies and Research Applied to Sports Psychology (GEPIAPE); Student of the Faculty of Psychology of the Padre Anchieta University Center – UniAnchieta

³ Supervisor GEPIAPE, São Paulo State University (UNESP), Institute of Biosciences, Rio Claro/SP; Padre Anchieta University Center – UniAnchieta, Faculty of Psychology - Jundiaí/SP; Laboratory of Studies and Research in Sports Psychology (LEPESPE); afonsoa@gmail.com

dos fatores é o estresse, que afeta o padrão de comportamento psicológico, alimentar e de condicionamento físico do atleta. A obesidade é um problema importante de saúde pública sendo influenciado pelo ambiente social, alimentação e fatores psicológicos. A progressão do estilo de vida, alimentação inadequada e inatividade física na vida moderna, estão fortemente ligados à organização e movimentos industriais, e contribuíram para a ocorrência frequente de obesidade e suas complicações. Em conclusão, ferramentas combinadas, como nutrição individualizada, cuidados psicológicos adequados e atividade física, são medidas necessárias para promover a saúde, prevenir doenças e melhorar a qualidade da vida humana.

Palavras-chave: Esportista; Desportista; Obesidade; Nutrição; Psicologia.

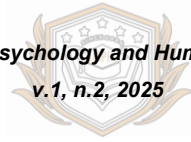
1 INTRODUCTION

Nutrition and physical performance in athletes have been linked since the beginning of the Olympic Games in 776 BC in Ancient Greece, in the search for efficient nutrition that would benefit performance in sports (Simopoulos, 2008). Nutrition represents a fundamental resource in sports practice and physical activities. When properly directed, it contributes to the preservation of the athlete's health, in addition to improving the performance of metabolic pathways linked to physical activity, such as the accumulation of energy through the synthesis and increase of muscle glycogen stores (Maria De Oliveira Pereira; Cabral, [sd]).

Athletes' nutrition is directly linked to their performance in the sport they play, also directly influencing post-exercise muscle recovery (Hulland; Trakman; Alcock, 2024). This applies not only to high-performance athletes, but to anyone who intends to perform physical activities in their daily life.

Good sports nutrition can provide the body with nutrients necessary for physiological processes. Some essential micronutrients, such as calcium, phosphorus, and iron, tend to be higher in youth players than in adults (Collins *et al.*, 2021). Choosing a quality, adequate, and personalized diet benefits the athlete/sportsperson, resulting in improved quality of life, health, and longevity in sports.

Adequate consumption, especially of carbohydrates (CHO), is extremely important for athletes. It is the main macronutrient for energy supply during exercise; it is known that athletes require a higher intake of this macronutrient compared to people who do not engage in physical activity. Consuming CHO before exercise



increases muscle glycogen stores, serving as an energy reserve during exercise (Fontan; Amadio, 2015).

Another extremely important nutrient is iron, and its stores in the body are essential for metabolic processes and for energy generation and oxygenation in muscles. A decrease in these reserves reduces myoglobin levels and can compromise aerobic metabolism and restrict performance in physical activities (Vilardi; Ribeiro; Soares, 2001).

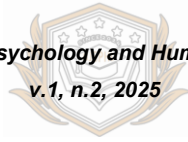
The stress caused in athletes, according to the meta-analysis, the relationship between stress and food consumption has been shown to be weakly proven. Furthermore, studies indicate that 35-40% of athletes in periods of stress increase their food consumption, while the rest do not change their food intake (Hill *et al.*, 2022). Adolescent athletes should be closely monitored, due to their physiological, neurological, and psychological development phase, requiring greater nutrient intake due to physical training in sports (Vilardi; Ribeiro; Soares, 2001).

Nutrition professionals support personalized nutritional recommendations, ensuring athletes consume appropriate meals aligned with their physical activities. These practices can provide numerous benefits. The use of dietary supplements should be evaluated and, if necessary, administered by a nutrition professional.

One of the most commonly suggested ways to assess athletes' nutrition is through 24-hour dietary recalls, analyzing individual diets on different days of the week, including training, rest, and weekend days. This is one way to assess, identify, and quantify the foods and beverages consumed over a 24-hour period, providing specific data on nutrient intake (Fisberg; Marchioni; Colucci, 2009).

There are few studies on nutritional knowledge among athletes, demonstrating significant difficulty in assessing individuals' knowledge of the sources of nutrients in foods. It is already known that the performance of athletes and sportspeople is closely related to carbohydrates, lipids, proteins, minerals, vitamins, fiber, and water. Therefore, understanding the source of nutrients in each food is essential for a better quality of life, health, and long-term participation in sports (Moreira; Rodrigues, 2014).

Therefore, it becomes essential to prevent the appearance and progression of nutritional and psychological complications resulting from all the factors previously mentioned, which are highly detrimental to the health and performance of athletes (Vilardi; Ribeiro; Soares, 2001).



2 DEVELOPMENT

2.1 The Importance of a Multidisciplinary Approach

Several studies indicate that a balanced diet is crucial for athletic performance, affecting everything from energy storage to muscle recovery (Fontan; Amadio, 2015; Vilardi; Ribeiro; Soares, 2001). However, when performed in isolation, nutritional monitoring can leave gaps in the detection and intervention of emotional and behavioral aspects. In this context, nutrition psychology presents itself as a valuable tool for understanding the motivational and emotional elements that affect athletes' eating patterns.

Sport requires not only physical development but also emotional balance capable of withstanding high pressure and competitive demands. In this context, the combination of nutrition and psychology has proven to be an effective strategy for improving performance and maintaining athletes' overall health.

The presence of a psychology specialist in the sports environment allows for a more accurate assessment of eating disorders, providing preventive measures and promoting actions that seek emotional balance. Research indicates that stressful circumstances can result in significant changes in food consumption; as mentioned above, evidence shows changes in consumption patterns in 35 to 40% of athletes during periods of stress (Hill *et al.*, 2022). Therefore, psychological support makes it possible to recognize these patterns and develop more effective coping strategies, helping to preserve the athlete's mental and physical health.

Sports psychology, in addition to helping prevent and treat eating disorders, plays a fundamental role in stress management and mental preparation for competitions. Mental training methods, such as visualization and goal setting, have the potential to increase self-confidence and reduce anxiety, factors that directly affect athletic performance. Psychological support helps improve adherence to nutritional guidelines by simplifying the understanding and assimilation of healthy eating habits, crucial for both high-performance athletes and those who exercise in general.

Thus, collaboration between nutritionists and psychologists provides a unified strategy, in which the health professional not only meets the athlete's physiological needs but also promotes emotional and behavioral balance that enhances athletic results. As Moreira and Rodrigues (2014) point out, understanding the origin of

nutrients and the elements that affect dietary intake is crucial for maintaining health and improving athletic performance.

The combined use of nutrition and psychology in sports is a tactic that seeks not only to improve physical performance but also to prevent eating disorders and promote overall health for athletes. By combining nutritional assessment techniques with psychological support, we can provide more comprehensive care, considering the individual's physical and emotional dimensions. Therefore, experts in this field play a crucial role in creating a healthier and more sustainable sports environment.

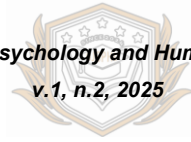
2.2 Comorbidities

Obesity is characterized by excessive or abnormal accumulation of fat in the body, which can pose health risks. This condition is typically measured using the Body Mass Index (BMI) and is characterized as obesity in adults when the BMI exceeds 30 kg/m². According to the International Classification of Diseases (ICD-10), obesity is assigned the code E66 (World Health Organization, 2021).

Obesity has become a major public health issue today, highlighting its complexity, incorporating genetic, environmental, nutritional, and psychological factors. According to Ponte *et al.* (2019), "the prevalence of overweight/obesity among university students was 43.2%, with significant dissatisfaction with their own body image." This highlights the importance of considering body perception as a crucial factor in adopting healthy practices. This issue is especially relevant in the field of Sports Psychology, where self-esteem and self-image directly affect motivation for regular physical exercise, thus contributing to maintaining a healthy lifestyle.

Several studies indicate that genetic factors account for 24% to 40% of the variation in Body Mass Index (BMI). The interaction between genetic predisposition and an obesogenic environment - that is, an environment that can promote weight gain - is one of the main drivers of the growth of global obesity. Therefore, a multidisciplinary strategy that combines nutritional interventions and psychological support with physical activity is crucial to minimize the risks associated with this condition.

Furthermore, research addressing the causes of obesity highlights the relevance of socioeconomic and environmental factors. Porto *et al.* (2019) found that "women and low-income individuals have a higher prevalence of obesity," highlighting that public policies should focus on interventions targeting the most vulnerable groups.



This evidence, combined with behavioral aspects and lifestyle changes driven by urbanization, highlights dietary changes and a sedentary lifestyle as key factors in the dynamics of obesity.

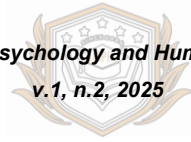
In the 20th century, with the arrival of industrialization, there was significant growth in the agricultural sector, with the aim of producing more resilient foods, with less food waste, and using preservatives and pesticides in production. According to data from Cristina Pinheiro and Luiz Antonio (2004), from the 1970s to the 1990s, data demonstrate an increase in comorbidities and obesity in the country, accompanied by an increase in industrialized products, processed foods, and ultra-processed foods.

Obesity is closely associated with poor eating habits and negatively impacting psychological factors, leading to eating disorders and distorted body image. Therefore, increased energy intake may be a quantitative and/or qualitative increase in food consumption, with the consumption of high-energy-density foods.

Physical inactivity in the population is directly related to the increased prevalence of obesity and changes in occupational profiles and lifestyles. There has been a significant shift from agricultural occupations to industry and, later, to the service sector, accompanied by the modernization of work processes and the consequent reduction in the physical effort required in the professional environment. Furthermore, leisure activities have also undergone transformations, with sports and other physically demanding activities being replaced by long periods of watching television, using computers, and other forms of sedentary entertainment, changing the psychological state of the population. In the domestic environment, the increasing use of household appliances, such as washing machines, has also contributed to a decrease in daily energy expenditure (Mendonça; Anjos, 2004).

However, data on the population's physical activity patterns are still quite limited, even scarcer than information on dietary intake. In Brazil, for example, there is currently no national population-based study that comprehensively assesses physical activity levels. In developed countries, research has historically focused on leisure activities because they are voluntary choices and therefore easier to report accurately. Furthermore, it is assumed that, in these contexts, most occupational activities require little physical effort (Mendonça; Anjos, 2004).

Another aspect where these issues arise is associated with anxiety: anxiety is a common response to circumstances that can cause fear, uncertainty, or anticipation. According to the DSM-5, anxiety is a mental condition marked by exaggerated worries



and fears that last longer than normal. "As anxiety increases, the tendency to use food as a way to cope with or alleviate these emotions also intensifies" (Ferreira *et al.*, 2024, p. 624).

Anxiety also plays a significant role in modulating eating habits. In situations of great stress or anxiety, many individuals opt for what is called "emotional eating." This habit involves consuming high-calorie, high-fat foods, commonly known as "comfort food," as a means of alleviating emotional discomfort. This adaptive reaction activates brain reward zones, offering momentary relief from anxiety symptoms. However, if this behavior becomes persistent, it can lead to an imbalance in calorie intake, making weight control more difficult and favoring the onset or worsening of obesity.

Studies indicate that anxiety can stimulate harmful eating behaviors, such as emotional eating and food indiscriminateness. In this context, Ferreira *et al.* (2024), through studies with university students, found that anxiety can act as a modulating factor in inappropriate food consumption, emphasizing the importance of interventions that combine psychosocial strategies with the promotion of balanced eating habits.

Furthermore, research addressing the causes of obesity highlights the relevance of socioeconomic and environmental factors. Thus, research by Porto *et al.* (2019) found that "women and low-income individuals have a higher prevalence of obesity," highlighting that public policies should focus on interventions targeting the most vulnerable groups. This evidence, combined with behavioral aspects and lifestyle changes driven by urbanization, highlights dietary changes and a sedentary lifestyle as key factors in the dynamics of obesity.

In psychology, the influence of self-image is a frequently discussed topic. Dissatisfaction with one's own body not only affects people's emotional well-being but can also result in reduced participation in physical exercise programs, creating a vicious cycle that intensifies both obesity and its psychological effects. According to Pereira *et al.* (2024), regarding the body self-image study, "more than 75% of participants reported dissatisfaction with their own body image," indicating that interventions targeting self-esteem and body perception may be crucial to the success of prevention and treatment strategies.

The analysis by Pereira *et al.* (2019) highlights that "interindividual variability, obtained through omics techniques (from English: genomics, epigenomics, transcriptomics, proteomics, metabolomics), enables the creation of personalized diagnoses and treatments". The combination of these strategies - genetics, nutrition,

physical exercise, and psychological support - allows for a comprehensive approach that, in addition to preventing obesity, helps improve related conditions such as diabetes mellitus, hypertension, and dyslipidemia, among others. This enables targeted interventions that combine nutritional guidance with motivational tactics from Sports Psychology.

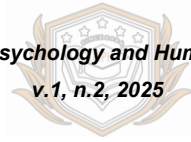
Finally, with the COVID-19 pandemic, the need to maintain physical activity levels has become even more evident, even during this period of social confinement. Pitanga *et al.* (2020) argue that "consistent physical exercise is crucial to mitigate the negative impacts of increased sedentary lifestyles during periods of limited mobility". This suggestion, combined with nutritional interventions and psychological support, can have a significant positive impact on overall health, particularly among those already at greater risk due to risk factors.

2.3 Eating disorders and psychology

Eating disorders (ED) are psychological syndromes characterized by harmful behavioral patterns related to food. They primarily affect young people and are marked by an intense fear of weight gain and a constant pursuit of body loss. Among the main types of ED are Anorexia Nervosa (AN) and Bulimia Nervosa (BN), as indicated by studies by Oliveira Freitas and Lima (2023). In addition, disorders such as Orthorexia Nervosa (ON) and Avoidant/ Restrictive Food Intake Disorder (ARID) also emerge, which also have significant impacts on the physical and psychological health of individuals, especially athletes.

The promotion of a thin body as an aesthetic ideal contributes to the overvaluation of body image, encouraging restrictive and unhealthy eating patterns. In this context, team sports athletes, often subjected to aesthetic and performance demands, become vulnerable to developing eating disorders. This study aims to investigate the prevalence of these disorders among team sports athletes, understanding their characteristics, definitions, nutritional needs, and motivations. To this end, an Integrative Literature Review (ILR) was conducted in databases such as LILACS, SciELO, BVS, and MEDLINE, using descriptors in Portuguese and English related to body image, eating disorders, athletes, eating behavior, and team sports.

Historically, eating disorders date back to the 19th century, when the term "anorexia nervosa" was coined. Food refusal, often associated with religious and



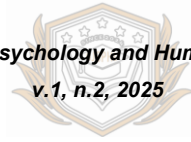
spiritual purposes in the past, evolved into a syndrome characterized by an abnormal and harmful relationship with food. Anorexia and bulimia are distinct conditions, but both increase the risk of morbidity, cause serious psychological damage, and can be fatal. BN, according to Lima; Silva Filho and Carvalho (2023), involves episodes of binge eating followed by compensatory behaviors such as the use of diuretics or appetite suppressants.

In addition to these more well-known disorders, conditions such as Orthorexia Nervosa, a pathological obsession with healthy eating, have emerged, although it is not yet officially recognized in classifications such as the ICD-11 or DSM-5. Its diagnostic criteria were proposed by Dunn and Bratman, based on international studies. Meanwhile, TARE, characterized by severe restriction or avoidance of certain foods, can lead to weight loss and significant nutritional deficiencies. Despite its similarities to anorexia, TARE has particularities that require specific clinical attention.

Eating disorders have multifactorial origins, involving genetic, cultural, social, personal, and familial aspects; the media, in particular, exerts a strong influence on the construction of idealized body models. A clear example of this influence is a study conducted in the Fiji Islands, where adolescents' exposure to television led to significant changes in eating attitudes, highlighting the correlation between media and dysfunctional eating behavior, according to Gomes (2021).

For athletes, adequate nutrition is essential for performance and disease prevention. Carbohydrates should represent between 3 g/kg and up to 12 g/kg of the total energy intake of the diet, depending on the sport (Thomas; Erdman; Burke, 2016), while the recommended protein intake is 1.4 to 2 g/kg for trained athletes, being lower for sedentary individuals (Jäger *et al.*, 2017). Lipids, essential for hormonal and structural functions, should comprise approximately 1 g/kg or 20% to 30% of daily intake (Brazilian Journal of Sports Nutrition, 2020).

Studies show that female team sports athletes often have distorted body image and high levels of adiposity, factors that can trigger inappropriate eating behaviors, according to studies by Penaforte (2018). Furthermore, perfectionism, a common trait among athletes, can increase the propensity for dietary restriction, intensified by environmental pressures. The thin body culture, coupled with the morphological standards required in certain sports, contributes to body dissatisfaction and, consequently, to the risk of ED.



The level of competition also influences this scenario: high-performance athletes are more likely to develop disorders, mainly due to pressure for performance and aesthetics, suggest Oliveira Freitas and Lima (2024). Extreme weight control methods, such as induced vomiting and severe calorie restriction, can seriously compromise muscle strength and anaerobic capacity.

Therefore, nutritional and psychological monitoring becomes essential to prevent and treat eating disorders in athletes. The pursuit of high performance requires a balance between training, nutrition, and rest. Nutritional deprivation, in addition to compromising essential bodily functions, increases the propensity for fatigue and injury, highlighting the importance of interdisciplinary support focused on the athlete's comprehensive health.

Concerns about body image and the desire to achieve standards of physical excellence can lead to inappropriate eating behaviors, often undiagnosed (Lima; Silva Filho; Carvalho, 2023), which pose a health risk to athletes. The pursuit of aesthetic and athletic perfection can distort body perception and result in harmful restrictive or compensatory behaviors.

3 CONCLUSION

In summary, the literature review presented shows that an integrated strategy, which combines Sports Psychology with evidence-based Nutrition interventions in sports, is crucial in combating obesity, increasing physical performance, comfort and longevity in sports, improving quality of life over the years and helping to promote a healthier and more sustainable lifestyle, is timely and necessary.

The pressure to maintain a specific body type can distort self-image, leading athletes to adopt risky eating habits such as extremely strict diets, prolonged fasting periods, or excessive use of supplements and steroids. Vigorexia, defined as the obsession with increasing muscle mass, is common among bodybuilders and can result in serious psychological damage. On the other hand, anorexia and bulimia, more common among athletes involved in sports such as gymnastics, ballet, and running, reflect the assimilation of body standards that are often incompatible with physical and mental health. In this context, psychological support, along with nutritional guidance, is crucial to maintaining athletes' health and performance.

This perspective not only expands understanding of the multiple determinants of obesity, physical performance, and quality of life, but also highlights the need for intersectoral public policies and personalized intervention strategies that address all facets of the problem in a multidisciplinary manner, bringing more personalized approaches.

Our study indicates a significant relationship between self-image, weight concerns, and athletic performance among the climbers analyzed. It highlights the importance of a balanced and adequate diet for good athletic performance and maintaining overall health, indicating the need for future research with larger groups and instruments that more comprehensively address the psychosocial aspects involved.

Finally, we highlight the essential role of nutritionists and physical educators in guiding these athletes, guided by psychology. The interdisciplinary integration of these three areas points to a positive path in Sports Science. Professional work focused on promoting healthy habits and preventing eating disorders is essential to ensuring not only good athletic performance but also a balanced and sustainable relationship with the body and nutrition.

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