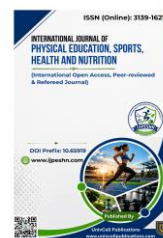


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Food Care and Day-to-Day Life: A Holistic Approach to Healthy Living and Sustainable Development

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Abstract

Food care is a multifaceted concept encompassing nutrition, food safety, hygiene practices, responsible consumption, and choices related to a sustainable lifestyle in daily life. This review analyzes food care as a holistic approach to promoting healthy living and sustainable development, placing special emphasis on physical health, physical performance, athletic performance, recovery, and environmental responsibility. From the perspective of physical education, balanced nutrition and appropriate dietary habits support energy availability, body composition, exercise capacity, recovery, and long-term health. The review also considers the roles of safe food handling, mindful eating, adequate hydration, sustainable diets, and the reduction of food waste. It adopts an interdisciplinary approach that integrates nutritional science, physical education, public health, and sustainable development. It also highlights that responsible food choices can contribute to environmental conservation and the achievement of relevant Sustainable Development Goals. Overall, food care should be understood not merely as dietary management, but as an integral part of a healthy, active, and environmentally responsible lifestyle.

Keywords: Food Care, Balanced Nutrition, Physical Fitness, Sports Performance, Hydration, Environmental Responsibility, Sustainable Development Goals

Introduction

Food is not only a fundamental necessity of human life but also a cornerstone of health, growth, functional capacity, and overall well-being. Proper nutrition goes beyond merely providing energy to the body; it plays a vital role in physical development, immune function, various biological processes, and the maintenance of long-term health. According to the World Health Organization, a healthy diet helps reduce the risk of various forms of malnutrition and numerous non-communicable diseases. A healthy diet generally prioritizes a variety of foods such as whole grains, fruits, vegetables, legumes, and nuts, while emphasizing the limitation of excessive salt, free sugars, and unhealthy fats (World Health Organization (WHO), 2026).

In recent times, rapid urbanization, changing work cultures, a lack of time, reliance on technology, and the widespread availability of convenient food products have brought about significant changes in daily dietary habits. In many contexts, diets based on traditionally diverse and minimally processed foods have been increasingly replaced by the consumption of highly processed foods containing high levels of salt, sugar, and unhealthy fats. The WHO also includes the rising consumption of ultra-processed foods—alongside changing lifestyles and food systems—among the major modern dietary challenges (WHO, 2026). A large prospective cohort study found a link between high consumption of ultra-processed foods and an increased risk of cardiovascular disease, although such observational findings should not be interpreted as causal evidence (Srouf et al., 2019).

Alongside dietary changes, physical inactivity and a sedentary lifestyle have also become significant topics in modern health discourse. Prolonged sedentary periods have been linked to various adverse health outcomes, whereas regular physical activity is crucial for maintaining health and physical fitness. Evidence from systematic reviews also indicates that excessive sedentary behavior may be associated with non-communicable diseases and mortality risk, and that sedentary behavior is linked to cardiorespiratory fitness. Therefore, instead of limiting the concept of a healthy life solely to proper diet or exercise, it is essential to understand it through an integrated approach encompassing nutrition, physical activity, and daily habits.

In this context, the concept of 'Food Care' assumes special significance. Food care is not merely about determining what a person eats; rather, it encompasses interconnected dimensions such as food selection, nutritional quality, balanced meal planning, preparation, hygiene, safe storage, proper consumption, and the responsible use of food resources. In the Indian context, the ICMR–National Institute of Nutrition's 'Dietary Guidelines for Indians 2024' emphasize diverse and balanced food choices, locally available foods, and healthy dietary practices (ICMR-NIN, 2024). Similarly, the Food Safety and Standards Authority of India's 'Eat Right India' initiative presents "Eat Safe, Eat Healthy, and Eat Sustainable" as an integrated approach, establishing a direct link between food safety, health, and sustainability (FSSAI, 2026).

From the perspective of physical education, the importance of food and nutrition becomes even more significant. The body's energy requirements and recovery demands during physical activity, exercise, and sports training can differ from those of a typical sedentary lifestyle. Proper nutritional strategies support training quality, exercise performance, and recovery. Established position statements on sports nutrition identify the type, quantity, and timing of food and fluid intake as crucial for health, athletic performance, and post-exercise recovery (Thomas et al., 2016). Thus, in physical education, linking fitness development solely to exercise prescription is insufficient; balanced nutrition and proper dietary habits are crucial complementary components.

Hydration is also a crucial link between nutritional care and physical performance. Disruptions in the body's fluid balance during exercise—particularly during prolonged physical exertion or activity in hot environments—can affect physiological responses and exercise capacity. Systematic review evidence highlights

hydration, thermoregulation, glycogen, and recovery as key factors influencing exercise performance (López-Torres et al., 2023). Therefore, the comprehensive concept of nutritional care must also incorporate adequate fluid intake and appropriate hydration practices before, during, and after exercise.

The importance of food-related practices extends beyond personal health to encompass environmental responsibility. Food production, distribution, selection, consumption, and waste all impact natural resources and the environment. The FAO and WHO have linked "sustainable healthy diets" to a comprehensive dietary approach that considers environmental and socio-cultural dimensions alongside health (Food and Agriculture Organization of the United Nations [FAO] & WHO, 2019). The judicious selection of local and seasonal foods, planned purchasing, reduction of food waste, and responsible use of resources can foster environmental sustainability alongside a healthy lifestyle.

This comprehensive approach also aligns with the United Nations Sustainable Development Goals (SDGs). Food and nutrition-related practices specifically relate to goals such as Zero Hunger, Good Health and Well-being, and Responsible Consumption and Production, while resource conservation and environmental responsibility link to broader sustainable development efforts, including Climate Action. According to the United Nations, all SDGs are interconnected and form a shared framework for a more sustainable future for humanity and the planet (United Nations, 2015). In particular, SDG 12 emphasizes the need for responsible consumption and production, a concept closely linked to that of 'food care'.

Thus, the need for the current review arises from the fact that food, physical activity, health, and the environment should be understood within a holistic framework rather than as separate subjects. Physical education can play a pivotal role in this integrated approach, as its aim is not merely to develop physical proficiency but also to encourage a healthy and active lifestyle throughout one's life. This review analyzes how responsible dietary behaviors in daily life can contribute to both personal health and sustainable development by linking food-related practices with nutrition, physical health, physical fitness, sports performance, and environmental responsibility.

Objectives of the Study

1. To study the concept of 'Food Care,' its key dimensions, and its importance in daily life.
2. To examine the relationship between food care and physical health.
3. To analyze the role of balanced nutrition and its contribution to the development of a healthy lifestyle.
4. To study the relationship between nutrition and physical fitness.
5. To analyze the interrelationships among nutrition, exercise capacity, sports performance, and recovery.
6. Studying the importance of healthy eating habits and responsible food consumption.
7. Analyzing the relationship between food stewardship and environmental responsibility.
8. Examining the role of food stewardship in the context of the Sustainable Development Goals (SDGs).

Concept and Dimensions of Food Care

Food care should not be viewed as a concept limited merely to the consumption of food or the fulfillment of the body's nutritional requirements. In this review, "food care" refers to the holistic daily processes—encompassing food selection, nutritional quality, meal planning, safe preparation, hygiene, storage, appropriate portion intake, adequate hydration, mindful eating habits, responsible consumption, and the reduction of food waste—that impact an individual's health as well as the well-being of the family, community, and environment. The ICMR-NIN's Dietary Guidelines for Indians 2024 also presents a diverse and balanced diet, food safety, adequate water intake, physical activity, and a healthy lifestyle as interconnected behaviors (ICMR-NIN, 2024).

The first crucial aspect of dietary care is proper food selection and nutritional quality. It is essential to select foods for the daily diet that provide the body with adequate energy, as well as protein, carbohydrates, beneficial fats, vitamins, minerals, and dietary fiber. A healthy diet should be based on variety, adequacy, balance, and moderation. In the Indian context, the ICMR-NIN emphasizes the balanced inclusion of various locally available food groups. Thus, the objective of 'food care' is not to rely on any single so-called "health food," but rather to improve the quality of the overall diet (ICMR-NIN, 2024).

Another aspect of this is balanced meal planning and portion control. Meals should be planned by taking into account an individual's age, physical activity, lifestyle, and energy requirements. Regular meals, dietary diversity, and appropriate portion sizes can help prevent excessive or insufficient intake. Another aspect of this is balanced meal planning and portion control. Meals should be planned by taking into account an individual's age, physical activity, lifestyle, and energy requirements. Regular meals, dietary diversity, and appropriate portion sizes can help prevent excessive or insufficient intake. Food preparation, hygiene, and food safety are essential aspects of food care. Even nutritious food can pose health risks due to improper preparation or contaminated storage. The WHO's "Five Keys to Safer Food" emphasizes maintaining hygiene, separating raw and cooked food, cooking food thoroughly, keeping food at safe temperatures, and using safe water and raw materials (World Health Organization (WHO), 2006). Therefore, maintaining the cleanliness of hands, kitchen surfaces, and utensils, preventing cross-contamination, and ensuring safe storage should be considered integral parts of daily food care.

Hydration is also a crucial aspect of dietary care. Adequate water intake is essential for maintaining normal bodily functions and an active lifestyle. The ICMR-NIN Dietary Guidelines for Indians incorporate physical activity and healthy weight management alongside hydration (ICMR-NIN, 2024). Its importance is further heightened in the context of physical education, as the body's energy and fluid requirements during exercise and sports can vary depending on the nature of the activity and the prevailing conditions. Sports nutrition literature establishes that proper food and fluid intake are crucial components of a nutritional strategy that supports training, performance, and recovery (Thomas et al., 2016).

The modern concept of food care encompasses responsible consumption and environmental sustainability. According to the FAO and WHO guidelines on "Sustainable Healthy Diets," such diets take into account environmental and socio-cultural dimensions alongside human health (FAO & WHO, 2019). From this perspective, purchasing food in necessary quantities, making proper use of available food, minimizing food waste, and adopting responsible practices regarding resources constitute the broader scope of food care.

In the Indian context, FSSAI's 'Eat Right India' initiative is also grounded in the integration of safe, healthy, and sustainable food. Specifically, the 'Eat Right Campus' initiative emphasizes creating safe, nutritious, and environmentally responsible food environments within educational institutions and other campuses. This approach demonstrates that ensuring food safety and well-being is not merely an individual responsibility; families, schools, colleges, universities, and communities also play a vital role in this regard (FSSAI, n.d.). Physical Education can serve as an effective medium for translating this holistic concept into practice. Through physical education, awareness regarding balanced nutrition, hydration, recovery, food hygiene, and a healthy lifestyle—alongside regular physical activity—can be fostered among students. Thus, 'food care' evolves from mere personal nutrition into a holistic way of life that integrates health promotion, an active lifestyle, safe food practices, social responsibility, and environmental sustainability.

Food Care and Physical Health

Food care is a crucial foundation for preserving and promoting physical health. Its objective is not merely to consume an adequate amount of food, but to adopt a balanced, diverse, safe, and high-quality diet that aligns with an individual's age, physical activity, and health needs. A balanced diet provides the body with energy and

essential nutrients and helps maintain normal bodily functions. According to the World Health Organization, the foundation of a healthy diet lies in adequacy, balance, moderation, and variety, with priority given to nutrient-rich foods such as whole grains, fruits, vegetables, legumes, and nuts (World Health Organization (WHO), 2026). Carbohydrates, proteins, and fats are the body's primary macronutrients. Carbohydrates play a crucial role in providing energy for daily activities and exercise, and their quality is also significant for health. It is considered preferable to prioritize carbohydrate sources rich in whole grains and dietary fiber over refined carbohydrates. Large-scale systematic reviews and meta-analyses have linked diets high in fiber and of superior carbohydrate quality to numerous favorable health outcomes (Reynolds et al., 2019). In the Indian context, ICMR-NIN also emphasizes the consumption of cereals, millets, pulses, vegetables, fruits, and other food groups in a diverse and balanced manner (ICMR-NIN, 2024).

Protein is an essential nutrient for the building, maintenance, and repair of body tissues and holds particular importance for muscle health. From the perspective of physical education, adequate protein intake is especially relevant for individuals who engage in regular exercise or resistance training. A systematic review and meta-analysis found that higher daily protein intake can lead to small additional gains in lean body mass and lower-body muscular strength among healthy adults engaging in resistance exercise (Nunes et al., 2022). Therefore, protein intake should be viewed in the context of an overall, balanced diet and individual needs, rather than being limited to a single supplement.

Dietary fat is a crucial nutritional requirement linked to energy, cellular structure, and the utilization of fat-soluble vitamins; however, the quality of the fat is important. The WHO recommends limiting saturated fats and industrially produced trans-fats while prioritizing sources of unsaturated fats. Similarly, limiting the intake of free sugars and excessive sodium is part of a healthy dietary pattern (WHO, 2026). Vitamins and minerals play various roles in energy metabolism, blood formation, bone and muscle health, and general physiological functions. Emphasis is generally placed on meeting these requirements through a diverse diet. The ICMR-NIN's 'Dietary Guidelines for Indians 2024' highlights the importance of utilizing various food groups and making nutrient-dense food choices to support micronutrient adequacy (ICMR-NIN, 2024).

Furthermore, dietary fiber is a crucial component of digestive health and overall diet quality; extensive available evidence links fiber-rich dietary patterns to favorable cardiometabolic health outcomes (Reynolds et al., 2019). Hydration is another essential aspect of normal bodily functions and an active lifestyle. Hydration requirements can increase due to fluid loss through sweating during exercise. Therefore, it is crucial for physically active individuals to focus on adequate fluid intake before, during, and after exercise. Research indicates that dehydration and heat stress can affect physiological strain and recovery-related processes during exercise, although the impact depends on the duration and intensity of the exercise as well as environmental conditions (López-Torres et al., 2023).

Attention to diet is also significant in the context of body composition and lifestyle-related diseases. Imbalanced energy intake, poor-quality dietary patterns, and insufficient physical activity are associated with the risk of obesity and other non-communicable diseases (NCDs). The WHO considers a healthy diet to be part of a comprehensive strategy for the prevention of cardiovascular diseases, type-2 diabetes, and other NCDs (WHO, 2026). Similarly, systematic evidence based on high diet-quality scores has found an association between better dietary patterns and a reduced risk of cardiovascular disease and type-2 diabetes (Schwingshackl et al., 2018). However, nutrition cannot be considered the sole determinant of physical health; regular physical activity is equally important. According to the WHO, regular physical activity is beneficial for various health outcomes, including cardiovascular and metabolic health, whereas physical inactivity is associated with health risks (WHO, 2024).

Physical education is a vital medium for putting this integrated approach into practice. By fostering awareness among students and communities regarding balanced nutrition, regular exercise, proper hydration, healthy body composition, and lifelong active habits, physical education can transform the focus on nutrition into a

comprehensive health-promotion strategy. Thus, rather than limiting the concept of dietary care merely to food quantity, it is more appropriate to view it in conjunction with nutritional quality, balanced energy intake, muscle health, hydration, and regular physical activity. Such an integrated approach provides a solid foundation for enhanced physical performance, healthy body composition, and lifelong well-being.

Nutrition and Sports Performance

Sports performance depends not only on the volume of training or an athlete's technical ability; adequate energy availability, balanced nutrition, hydration, and proper post-exercise recovery are also crucial components. From the perspective of sports nutrition, the type, quantity, and timing of food intake should align with the nature of the training and competition. According to the joint position statement by the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine, proper nutrition supports athletic performance and exercise recovery, and adopting an individualized nutrition strategy tailored to the athlete's needs is crucial (Thomas et al., 2016).

Energy availability is a fundamental concept in sports nutrition. It is essential that sufficient energy remains available for the body's normal physiological processes following training. If an athlete's energy intake remains inadequate relative to their exercise energy expenditure over an extended period, both health and performance can be compromised. The International Olympic Committee's 2023 consensus statement links problematic low energy availability to health and performance consequences associated with Relative Energy Deficiency in Sport (REDs). Therefore, excessive dietary restriction aimed at achieving lower body weight in athletes should not be considered a performance-enhancement strategy (Mountjoy et al., 2023).

Carbohydrates are crucial as a primary fuel source, particularly during moderate- and high-intensity exercise. Glycogen stored in the muscles and liver serves as a vital energy source during physical activity. Therefore, managing carbohydrate availability based on the type, duration, and intensity of training is a key aspect of sports nutrition. Burke et al. (2011) have emphasized the need to tailor carbohydrate strategies for training and competition to the specific demands of the exercise. Carbohydrate intake during prolonged endurance events can support performance, whereas intake following exercise aids in replenishing depleted glycogen stores (Burke et al., 2011; Burke, 2017).

Protein is particularly important for the maintenance and repair of muscle tissue, as well as for training adaptation. Muscle protein turnover increases following resistance and other demanding forms of exercise; therefore, adequate dietary protein supports the recovery process. Available sports nutrition evidence indicates that distributing protein intake appropriately throughout the day—and specifically around exercise—can be beneficial for muscle protein synthesis and training adaptation (Jäger et al., 2017). However, higher protein intake should not be viewed in isolation as synonymous with greater strength or improved performance; its benefits are linked to adequate energy intake and scientifically structured training. Fats are also an essential part of an athlete's balanced diet. In addition to providing energy, dietary fat contributes to the availability of essential fatty acids and fat-soluble vitamins. Drastically reducing fat intake is generally not considered a sound strategy for athletic performance; the intake of carbohydrates, proteins, and fats should be balanced based on the athlete's total energy requirements, training phase, and sport-specific demands (Thomas et al., 2016).

Similarly, micronutrients—such as iron, calcium, vitamin D, and other vitamins and minerals—play a role in energy metabolism, oxygen transport, bone health, muscle function, and other physiological processes. An actual nutritional deficiency in an athlete can impact their health and training capacity. However, taking vitamin-mineral supplements without a demonstrated need cannot be considered a guarantee of superior athletic performance. According to the IOC consensus, the use of supplements should be based on evidence, necessity, and safety assessments, and prioritizing a "food-first" approach is appropriate (Maughan et al., 2018).

In sports nutrition, the goal of pre-exercise nutrition is to support the necessary energy and fluid availability prior to training or competition. The timing and composition of the meal should be tailored to the duration and intensity of the exercise, as well as the athlete's gastrointestinal tolerance. Nutrition during exercise can be particularly important for long-duration endurance events or prolonged high-intensity activities, where

carbohydrate and fluid intake help maintain energy levels and hydration. Conversely, the type of feeding strategy used by competitive endurance athletes is not required for shorter-duration, routine physical activity (Thomas et al., 2016).

Post-exercise nutrition and recovery are crucial for an athlete's readiness for the next training session. Recovery following strenuous exercise involves muscle glycogen restoration, repair of damaged tissue, fluid replacement, and training adaptation. The importance of carbohydrate replenishment and adequate protein intake is heightened, particularly when the recovery period between two demanding sessions is short (Beelen et al., 2010; Kerksick et al., 2017). Hydration and rehydration are closely linked to athletic performance. Fluid loss through sweating can increase physiological strain, particularly during prolonged exercise and in hot environments. Therefore, athletes should focus on adequate hydration before exercise, fluid intake during exercise tailored to the conditions and individual sweat loss, and proper rehydration after exercise. Evidence from systematic reviews identifies hydration, hyperthermia, glycogen status, and recovery as critical factors influencing exercise performance (López-Torres et al., 2023).

From the perspective of physical education, it is essential not to equate the nutritional requirements of an average person with those of a competitive athlete. While a healthy, varied, and balanced daily diet may suffice for the average physically active individual, the energy, carbohydrate, protein, fluid, and recovery needs of a competitive athlete can be far more specific, depending on factors such as training load, the sport itself, environmental conditions, the competition schedule, and individual characteristics. Therefore, the fundamental principle of effective sports nutrition is not to rely on any single "performance food," but rather to integrate a balanced diet tailored to individual needs—along with adequate energy, proper nutrient timing, hydration, and recovery—into the training program. This approach provides a scientific foundation for endurance, strength, fatigue management, adaptation, and long-term athletic development.

Therefore, the fundamental principle of effective sports nutrition is not to rely on any single "performance food," but rather to integrate a balanced diet tailored to individual needs—along with adequate energy, proper nutrient timing, hydration, and recovery—into the training program. This approach provides a scientific foundation for endurance, strength, fatigue management, adaptation, and long-term athletic development.

Food Care, Environmental Responsibility, and Sustainable Development Goals (SDGs)

Food care cannot be viewed merely as a concept limited to the selection, preparation, and consumption of food. In a broader sense, it signifies responsible food-related behavior that encompasses nutritional quality, food safety, hygiene, the prudent use of water and energy, proper storage, planned purchasing, the reduction of food waste, and environmental responsibility. Agricultural and food production systems utilize land, water, energy, and other natural resources, yet the environmental impact of different types of food varies. Extensive life-cycle analyses have revealed that the environmental cost of food production can differ significantly depending on the product and the production method (Poore & Nemecek, 2018).

In this context, the concept of a sustainable healthy diet holds particular significance. The FAO and WHO link such a diet to nutritional adequacy, health, environmental impact, cultural acceptability, and economic contexts (FAO & WHO, 2019). Therefore, "food care" may encompass a diverse and balanced diet, food choices suited to local conditions, the use of seasonal and local foods where appropriate, and a reduction in unnecessary reliance on highly processed foods. At the same time, it is incorrect to assume that a food item is automatically more sustainable simply because it is "local" or "seasonal"; factors such as production methods, transportation, storage, and the entire life cycle also determine its environmental impact (Poore & Nemecek, 2018).

Responsible purchasing, meal planning, portion management, and proper storage are practical ways to reduce food waste. Purchasing only the necessary quantities, employing storage methods that prevent spoilage, and making prudent use of safe leftovers can minimize the unnecessary waste of resources used in food production and distribution. The UNEP Food Waste Index Report 2024 highlights food waste as a significant global challenge

linked to SDG 12.3 and emphasizes the need for systematic action to reduce waste (United Nations Environment Programme [UNEP], 2024). Water and energy conservation represent another environmental dimension of food care. The prudent use of resources during food washing, cooking, refrigeration, and kitchen management is a practical expression of daily sustainability. Safe water is essential for both food hygiene and health, while energy-efficient cooking and organized meal preparation can promote more responsible resource use. Safe water, hygienic preparation, and safe handling are of particular importance in the context of food safety (World Health Organization [WHO], 2026a).

This holistic approach aligns directly with the United Nations' Sustainable Development Goals (SDGs). The 2030 Agenda presents a comprehensive framework of interconnected goals for people, the planet, and prosperity (United Nations, 2015). 'Food care' specifically relates to SDG 2—Zero Hunger—as nutritious food, food security, dietary diversity, and responsible food consumption are crucial for achieving better nutrition. The concept of healthy and sustainable diets also links nutrition, food availability, and environmental sustainability (FAO & WHO, 2019). In the context of SDG 3 (Good Health and Well-being), a balanced diet and regular physical activity are mutually complementary health behaviors. The WHO emphasizes adequacy, balance, moderation, and diversity in a healthy diet and includes regular physical activity among the behaviors essential for health and well-being (WHO, 2026b; WHO, 2024). From the perspective of physical education, it is more beneficial to view nutrition and physical activity not as separate subjects, but as an integrated lifestyle that supports physical fitness, functional capacity, and long-term health.

Food safety and access to safe water are also linked to SDG 6—Clean Water and Sanitation. Food preparation, hand and utensil hygiene, safe food handling, and clean drinking water are fundamental elements of a healthy food environment (WHO, 2026a). Similarly, SDG 4—Quality Education provides a crucial foundation for translating knowledge about food care into practice. Schools, colleges, and universities can integrate nutrition education, food hygiene, physical activity, responsible consumption, and environmental awareness into their curricular and co-curricular activities. Physical education can play a pivotal role in this process, as it offers an opportunity to link health knowledge with physical activity, fitness, hydration, recovery, and daily lifestyle habits. Merely teaching exercise techniques or sports skills to students is insufficient; it is also essential to cultivate a health-conscious mindset in which nutrition, physical activity, personal responsibility, and environmental awareness complement one another. UNESCO's International Charter of Physical Education, Physical Activity and Sport also links physical education and sport to human development and broader social responsibility (UNESCO, 2015).

"Food care" represents one of the most direct environmental dimensions of SDG 12—Responsible Consumption and Production. Purchasing according to need, portion control, safe storage, reduction of food waste, and responsible packaging practices are practical examples of this. Notably, reducing food waste promotes more efficient resource use and sustainable consumption (UNEP, 2024). Similarly, the link between food care and SDG 13—Climate Action stems from the fact that food production and consumption are associated with various environmental impacts, including those related to land, water, energy, and greenhouse gas emissions (Poore & Nemecek, 2018). Therefore, rather than viewing human health and environmental sustainability as separate issues, an integrated food-system approach is more appropriate (FAO & WHO, 2019). At the individual level, responsible food choices, appropriate portioning, and waste reduction are important; at the family level, meal planning, safe storage, and resource-conscious cooking can be beneficial; while at the institutional level—in canteens, hostels, and sports facilities—nutritious menus, food safety practices, waste monitoring, and sustainability education can be promoted. Thus, mindful food practices can be viewed as a practical bridge connecting health and the environment. Integrating balanced nutrition, food safety, physical activity, water and energy conservation, food waste reduction, and responsible consumption can foster a lifestyle that is more health-conscious and sustainability-oriented. Physical education and educational institutions can play a pivotal role in this transformation, as they possess the capacity to simultaneously influence knowledge, behavior, and lifelong habits.

Conclusion

Proper attention to nutrition forms a holistic foundation for a healthy and balanced life, integrating appropriate food choices, balanced nutrition, food safety, adequate hydration, regular physical activity, and responsible consumption. Proper nutrition supports physical health, physical efficiency, athletic performance, energy availability, muscular function, and post-exercise recovery. Similarly, the combined effect of regular physical activity and a balanced diet is crucial for fostering long-term health and an active lifestyle. At the individual and family levels, planned meals, appropriate portion sizes, safe storage, and the reduction of food waste encourage responsible food-related habits. Educational institutions can play a significant role in cultivating healthy and sustainable lifestyles through nutrition education, physical activity, food hygiene, and environmental awareness. Physical Education is particularly useful in this process, as it links health-related knowledge with practical activities and lifelong behaviors. Food stewardship is also linked to environmental responsibility and the Sustainable Development Goals. Therefore, in the future, it is essential to promote a lifestyle that integrates health, nutrition, Physical Education, and sustainability, thereby contributing to the creation of healthy individuals, responsible communities, and a more sustainable society.

References

1. World Health Organization. (2026, January 26). Healthy diet. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>
2. Srouf, B., Fezeu, L. K., Kesse-Guyot, E., Allès, B., Méjean, C., Andrianasolo, R. M., Chazelas, E., Deschasaux, M., Hercberg, S., Galan, P., Monteiro, C. A., Julia, C., & Touvier, M. (2019). Ultra-processed food intake and risk of cardiovascular disease: Prospective cohort study (NutriNet-Santé). *BMJ*, 365, 11451. <https://doi.org/10.1136/bmj.11451>
3. ICMR–National Institute of Nutrition. (2024). Dietary guidelines for Indians—2024. Indian Council of Medical Research–National Institute of Nutrition. https://www.nin.res.in/dietaryguidelines/pdfs/locale/DGI_2024.pdf
4. Food Safety and Standards Authority of India. (n.d.). Eat Right India. FSSAI. <https://fssai.gov.in/eat-right-india>
5. Thomas, D. T., Erdman, K. A., & Burke, L. M. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and athletic performance. *Journal of the Academy of Nutrition and Dietetics*, 116(3), 501–528. <https://doi.org/10.1016/j.jand.2015.12.006>
6. López-Torres, O., Rodríguez-Longobardo, C., Escibano-Tabernero, R., & Fernández-Elías, V. E. (2023). Hydration, hyperthermia, glycogen, and recovery: Crucial factors in exercise performance—A systematic review and meta-analysis. *Nutrients*, 15(20), 4442. <https://doi.org/10.3390/nu15204442>
7. Food and Agriculture Organization of the United Nations, & World Health Organization. (2019). Sustainable healthy diets: Guiding principles. Food and Agriculture Organization of the United Nations. <https://doi.org/10.4060/CA6640EN>
8. United Nations. (2015). Transforming our world: The 2030 Agenda for Sustainable Development. United Nations. <https://sdgs.un.org/2030agenda>
9. World Health Organization. (2006). Five keys to safer food manual. World Health Organization. <https://www.who.int/publications/i/item/9789241594639>

10. Food Safety and Standards Authority of India. (n.d.). Eat Right Campus. Food Safety and Standards Authority of India.

<https://westregion.fssai.gov.in/Eat-Right-Campus.php>

11. Reynolds, A., Mann, J., Cummings, J., Winter, N., Mete, E., & Te Morenga, L. (2019). Carbohydrate quality and human health: A series of systematic reviews and meta-analyses. *The Lancet*, 393(10170), 434–445.

[https://doi.org/10.1016/S0140-6736\(18\)31809-9](https://doi.org/10.1016/S0140-6736(18)31809-9)

12. Nunes, E. A., Colenso-Semple, L., McKellar, S. R., Yau, T., Ali, M. U., Fitzpatrick-Lewis, D., Sherifali, D., Gaudichon, C., Tomé, D., Atherton, P. J., Camprubi Robles, M., Naranjo-Modad, S., Braun, M., Landi, F., & Phillips, S. M. (2022). Systematic review and meta-analysis of protein intake to support muscle mass and function in healthy adults. *Journal of Cachexia, Sarcopenia and Muscle*, 13(2), 795–810.

<https://doi.org/10.1002/jcsm.12922>

13. Schwingshackl, L., Bogensberger, B., & Hoffmann, G. (2018). Diet quality as assessed by the Healthy Eating Index, Alternate Healthy Eating Index, Dietary Approaches to Stop Hypertension score, and health outcomes: An updated systematic review and meta-analysis of cohort studies. *Journal of the Academy of Nutrition and Dietetics*, 118(1), 74–100.e11.

<https://doi.org/10.1016/j.jand.2017.08.024>

14. World Health Organization. (2024, June 26). Physical activity. World Health Organization.

<https://www.who.int/news-room/fact-sheets/detail/physical-activity>

15. World Health Organization. (n.d.). Nutrition. World Health Organization. Retrieved August 12, 2026, from

<https://www.who.int/health-topics/nutrition>

16. Mountjoy, M., Ackerman, K. E., Bailey, D. M., Burke, L. M., Constantini, N., Hackney, A. C., Heikura, I. A., Melin, A., Pensgaard, A. M., Stellingwerff, T., Sundgot-Borgen, J. K., Torstveit, M. K., Jacobsen, A. U., Verhagen, E., Budgett, R., Engebretsen, L., & Erdener, U. (2023). 2023 International Olympic Committee's (IOC) consensus statement on Relative Energy Deficiency in Sport (REDs). *British Journal of Sports Medicine*, 57(17), 1073–1097.

<https://doi.org/10.1136/bjsports-2023-106994>

17. Burke, L. M., Hawley, J. A., Wong, S. H. S., & Jeukendrup, A. E. (2011). Carbohydrates for training and competition. *Journal of Sports Sciences*, 29(Suppl. 1), S17–S27.

<https://doi.org/10.1080/02640414.2011.585473>

18. Jäger, R., Kerksick, C. M., Campbell, B. I., Cribb, P. J., Wells, S. D., Skwiat, T. M., Purpura, M., Ziegenfuss, T. N., Ferrando, A. A., Arent, S. M., Smith-Ryan, A. E., Stout, J. R., Arciero, P. J., Ormsbee, M. J., Taylor, L. W., Wilborn, C. D., Kalman, D. S., Kreider, R. B., Willoughby, D. S., ... Antonio, J. (2017). International Society of Sports Nutrition position stand: Protein and exercise. *Journal of the International Society of Sports Nutrition*, 14, Article 20.

<https://doi.org/10.1186/s12970-017-0177-8>

19. Maughan, R. J., Burke, L. M., Dvorak, J., Larson-Meyer, D. E., Peeling, P., Phillips, S. M., Rawson, E. S., Walsh, N. P., Garthe, I., Geyer, H., Meeusen, R., van Loon, L. J. C., Shirreffs, S. M., Spriet, L. L., Stuart, M., Vernec, A., Currell, K., Ali, V. M., Budgett, R. G., ... Engebretsen, L. (2018). IOC consensus statement: Dietary supplements and the high-performance athlete. *British Journal of Sports Medicine*, 52(7), 439–455.

<https://doi.org/10.1136/bjsports-2018-099027>

20. Beelen, M., Burke, L. M., Gibala, M. J., & van Loon, L. J. C. (2010). Nutritional strategies to promote postexercise recovery. *International Journal of Sport Nutrition and Exercise Metabolism*, 20(6), 515–532.

<https://doi.org/10.1123/ijsnem.20.6.515>

21. Kerksick, C. M., Arent, S., Schoenfeld, B. J., Stout, J. R., Campbell, B., Wilborn, C. D., Taylor, L., Kalman, D., Smith-Ryan, A. E., Kreider, R. B., Willoughby, D., Arciero, P. J., VanDusseldorp, T. A., Ormsbee, M. J., Wildman, R., Greenwood, M., Ziegenfuss, T. N., Aragon, A. A., & Antonio, J. (2017). International Society of Sports Nutrition position stand: Nutrient timing. *Journal of the International Society of Sports Nutrition*, 14, Article 33.

<https://doi.org/10.1186/s12970-017-0189-4>

22. Burke, L. M., Castell, L. M., Casa, D. J., Close, G. L., Costa, R. J. S., Desbrow, B., Halson, S. L., Lis, D. M., Melin, A. K., Peeling, P., Saunders, P. U., Slater, G. J., Sygo, J., Witard, O. C., Bermon, S., & Stellingwerff, T. (2019). International Association of Athletics Federations consensus statement 2019: Nutrition for athletics. *International Journal of Sport Nutrition and Exercise Metabolism*, 29(2), 73–84.

<https://doi.org/10.1123/ijsnem.2019-0065>

23. Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992.

<https://doi.org/10.1126/science.aag0216>

24. United Nations Educational, Scientific and Cultural Organization. (2015). *International Charter of Physical Education, Physical Activity and Sport*. UNESCO.

<https://unesdoc.unesco.org/ark:/48223/pf0000235409>

25. United Nations Environment Programme. (2024). *Food Waste Index Report 2024*. United Nations Environment Programme.

<https://www.unep.org/resources/publication/food-waste-index-report-2024>

26. World Health Organization. (2026, June 4). *Food safety*. World Health Organization.

<https://www.who.int/news-room/fact-sheets/detail/food-safety>

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