

## Nutrition and Health: Foundations for Careers in Food and Fitness - Level 2

### **Section 4: Nutrition and Physical Activity: Sustaining and Enhancing Performance**

Understanding the intricate relationship between nutrition and physical activity is essential for anyone pursuing a career in food and fitness. Proper nutrition can boost physical performance, enhance recovery, and reduce the risk of injury. This section explores the role of diet in supporting exercise, the unique nutritional needs of active individuals, and how to tailor diets to various types of physical activity.

## 4.1 Nutritional Foundations for Physical Activity

Physical activity, whether it's structured exercise or daily tasks, requires energy. The macronutrients – carbohydrates, proteins, and fats – play distinct roles in providing and utilising this energy.

### Carbohydrates and Exercise

Carbohydrates are the primary energy source for high-intensity exercise. The body stores carbohydrates as glycogen in the liver and muscles, which can be rapidly converted to glucose for energy. Before high-intensity workouts, a meal rich in complex carbohydrates can ensure adequate glycogen stores. Post-exercise, replenishing glycogen is crucial, and a combination of carbohydrates and protein can aid in recovery.

### Protein's Role in Recovery and Repair

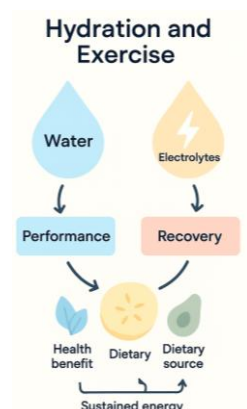
Adequate protein intake supports the repair and growth of muscle tissue. After exercise, consuming protein can help repair muscle microtears, leading to muscle growth and improved strength. The timing of protein intake, along with the quality of protein, is key for optimal recovery.

### Fats for Endurance

For prolonged, moderate-intensity exercise, fats become a significant energy source. While high-fat diets are not generally recommended for athletes, ensuring a healthy intake of unsaturated fats is important for overall health and energy provision during longer exercise sessions.

### Hydration and Exercise

Water is essential for maintaining blood volume, regulating body temperature, and allowing muscle contractions to occur. Dehydration can lead to a significant decline in performance and can be dangerous. It is imperative to stay well-hydrated before, during, and after physical activity. Electrolytes, primarily sodium and potassium, are lost through sweat and must be replaced to preserve electrolyte balance, especially during prolonged or intense exercise sessions.



## 4.2 Tailoring Nutrition to Exercise Types

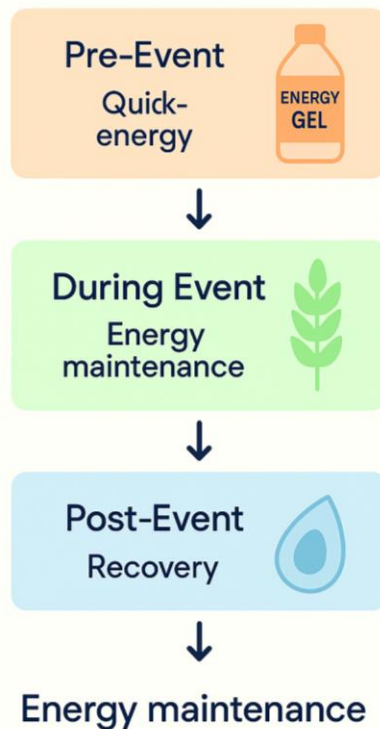
### Strength and Resistance Training

This type of training increases muscle mass and strength. A higher protein intake, combined with adequate carbohydrates for energy, is beneficial. Key timings for protein intake include pre- and post-workout to enhance muscle protein synthesis and recovery.

### Endurance Training

Endurance athletes, like long-distance runners or cyclists, require a diet rich in carbohydrates to maintain glycogen stores. During extended activities, consuming easily digestible carbohydrates can help sustain energy levels.

## Optimising Nutrition for Endurance Athletes



### High-Intensity Interval Training (HIIT)

HIIT sessions are short and intense, requiring readily available energy. A moderate to high carbohydrate intake, along with moderate protein and lower fat, can provide the necessary fuel.

### Team Sports

These sports often combine bursts of high-intensity activity with periods of lower intensity. A balanced intake of carbohydrates, proteins, and fats is essential to support varied energy demands.

#### 4.3 Nutritional Strategies for Active Individuals

To optimize performance and recovery, active individuals should consider the following strategies:

##### Pre-Exercise Nutrition

A meal 2-4 hours before exercise should provide carbohydrates and protein to top up glycogen stores and enhance muscle readiness. A small, carbohydrate-rich snack 30-60 minutes before exercise can further fuel performance.

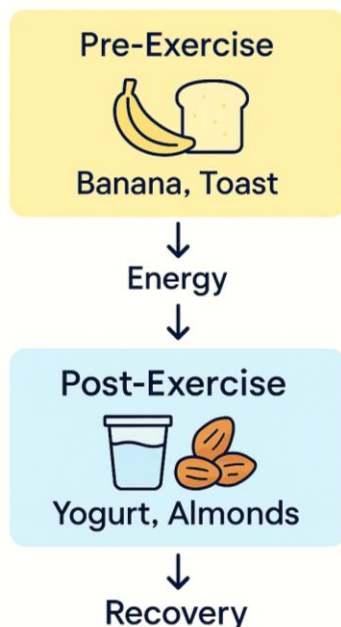
##### Intra-Exercise Nutrition

For exercise exceeding 60 minutes, consuming carbohydrates during the activity can maintain blood glucose levels and delay fatigue. Sports drinks, gels, and fruit are common options.

##### Post-Exercise Nutrition

Within 30 minutes to 2 hours after exercise, a combination of carbohydrates and protein facilitates recovery by replenishing glycogen stores and aiding muscle repair.

### Pre and Post-Exercise Nutrition



##### Special Considerations for Athletic Populations

Athletes have higher energy and nutritional needs than the general population. These needs can vary based on the athlete's size, sport, and training intensity. Energy intake must be enough to support training while also allowing for recovery and adaptation.

### **Nutritional Supplementation**

While a balanced diet is the foundation of good nutrition, supplements may be considered in certain circumstances. Creatine can support high-intensity training, while branched-chain amino acids (BCAAs) may aid in recovery. However, it's important to approach supplementation with caution and ensure that any products used comply with relevant regulations and are not prohibited substances.

### **Section 4 Conclusion**

This section has provided a comprehensive understanding of the relationship between nutrition and physical activity. By mastering the principles outlined, learners are now equipped to advise on nutritional strategies that enhance physical performance and promote recovery. The knowledge gained here is invaluable for anyone looking to excel in a career related to food and fitness, where the ability to optimise nutrition for activity is a key skill. With this foundation, learners can confidently move forward to the next section, which will focus on career pathways and professional development within the food and fitness industry.

**1. What is the primary energy source for high-intensity exercise and is essential for replenishing glycogen stores post-exercise?**

- A. Proteins
- B. Fats
- C. Carbohydrates
- D. Electrolytes

**2. Which macronutrient is particularly important for muscle repair and growth following exercise?**

- A. Carbohydrates
- B. Protein
- C. Fats
- D. Vitamins

**3. Why is hydration critical during physical activity?**

- A. To increase muscle mass
- B. To enhance muscle protein synthesis
- C. To regulate body temperature and maintain blood volume
- D. To provide the primary energy source

**4. Which of the following is a recommended nutritional strategy for endurance athletes during extended activities?**

- A. Consuming high-fat foods
- B. Consuming easily digestible carbohydrates
- C. Focusing on protein-rich foods
- D. Avoiding all macronutrient intake

**5. What are key timings for protein intake to enhance muscle protein synthesis and recovery for those engaging in strength and resistance training?**

- A. Immediately before and during workout
- B. Pre- and post-workout
- C. During and immediately after workout
- D. Only post-workout

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B. Protein

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