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Research Article

Contribution of Diet and Nutrition in Sports Performance

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Abstract - *Diet and nutrition are central to athletic performance, recovery, and long-term health. Athletes must use carefully planned nutrition strategies that match the demands of their sport, training intensity, body composition goals, and competition schedule. Carbohydrates are the main fuel source for moderate- to high-intensity exercise, while proteins support muscle repair, adaptation, and recovery. Dietary fats contribute to energy production, hormone regulation, and the absorption of fat-soluble vitamins. In addition, vitamins, minerals, and fluids are essential for metabolism, oxygen transport, immune function, thermoregulation, and overall physical performance. Inadequate energy intake, poor hydration, and unregulated supplement use can reduce performance and increase the risk of fatigue, illness, and injury. This paper reviews the contribution of diet and nutrition to sports performance and emphasizes the importance of individualized, evidence-based nutrition planning for athletes.*

Keywords - *Sports Nutrition, Athletic Performance, Carbohydrates, Protein, Hydration, Recovery.*

I. INTRODUCTION

Sports performance is influenced by multiple factors, including training quality, genetics, psychological preparation, and nutrition. Of these, diet is particularly important as it supplies the energy and nutrients required for exercise, recovery and adaptation. Exercise elevates energy expenditure, fluid loss, and nutrient turnover and consequently the nutritional needs of athletes are greater and more specific than those of non-athletes. A scientifically planned diet helps athletes sustain training volume, improve recovery, reduce injury risk, and maintain optimal health.

A. Objectives

To enhance the sports performance by creating awareness among the Sports person. To adhere to a strictly followed training schedule with proper dietary plan. An activity that includes the skill, speed, agility, reaction and performance of an individual or a team called a sporting activity. It includes the different form of physical activities or an event organized in the spirit of competition or for recreation and fun with the aim of acquiring good performing ability or skill execution is considered to be sports. There will be a number of sports and games with light motor activity and heavy in some of them.

II. IMPORTANCE OF NUTRITION IN SPORTS

Nutrition affects nearly every aspect of athletic function. Adequate food intake supports muscle contraction, glycogen storage, tissue repair, and immune defence. A poor diet can result in decreased endurance, slower recovery, loss of lean body mass and poor concentration. Research has always identified nutrition as a health problem but also a performance problem particularly in sports demanding strength, speed, power, or long duration.

III. MACRONUTRIENTS AND PERFORMANCE

Carbohydrates are the primary fuel for high-intensity exercise and prolonged activity. They are utilized as glycogen in the muscles and liver and are crucial for maintaining performance during training and competition. Protein aids muscle protein synthesis and helps repair and recover tissues after exercising, particularly

resistance training and high-intensity endurance training. Fats serve as an energy source during lower-intensity and longer-duration exercise and are also important for hormone production and vitamin absorption. Consuming a well-rounded diet of these macronutrients is essential for ensuring energy availability and adaptation to training.

IV. MICRONUTRIENTS AND HYDRATION

Vitamins and minerals are required for energy metabolism, oxygen transport, bone health, and immune function. Iron, calcium, and vitamin D deficiencies and others micronutrient deficiencies can negatively affect performance and the risk of fatigue or injury. Hydration is also a concern, as even dehydration can lead to a drop in endurance, concentration and exercise capacity. Athletes who train in hot environments or sweat heavily need structured hydration strategies before, during, and after exercise.pubmed.ncbi.nlm.nih+2

V. NUTRIENT TIMING

The timing of food intake can influence both performance and recovery. Carbohydrate is best before physical activity to store glycogen and protein is best after physical activity for muscle repair and adaptation. Carbohydrate-protein post-exercise meals are particularly helpful for replenishing energy stores and aiding recovery. For athletes with multiple training sessions in a day, nutrient timing becomes even more important because it helps maintain performance across sessions but it depends mainly on the intensity of workout and duration of the activity.

VI. SUPPLEMENTS IN SPORT

Dietary supplements may be helpful in limited situations, but they should not replace a balanced diet. However, the use of supplements should be taken seriously as not every product is effective and some can be detrimental and present a health or anti-doping risk. Sports participants should always consult their professional advice before taking supplements and, when possible, should obtain their nutrition from food. Evidence-based sports nutrition recommends supplement use only after proper assessment of dietary needs.

Table 1. Recommended Macronutrient Distribution for Athletes Based on Training Intensity

Nutrient	Average Sportsperson	Strenuous Athlete
Carbohydrates	50–65%	70%
Fat	20–25%	15–20%
Protein	10–15%	10–15%

VII. DISCUSSION

The literature shows that optimal sports performance depends on both training and nutrition. Athletes who eat enough energy, carbohydrate, protein, and micronutrients are better able to sustain training intensity and recover effectively. Conversely, not enough or a poor diet plan can deplete glycogen stores, slow down muscle recuperation, and make one more prone to sickness. Every sport and athlete has different nutritional needs, so the best approach is a personalized nutrition plan, created with the guidance of a qualified nutrition professional.

VIII. CONCLUSION

Diet and nutrition are essential contributors to sports performance. A balanced, personalized diet boosts energy supply, aids recovery, helps stay hydrated, and promotes overall health and wellbeing. Evidence-based nutrition practices can help athletes to perform consistently and recover efficiently. So, in conclusion, sports nutrition should be part of the basic foundation in athletic training and performance.

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