The impact of balanced nutrition and physical activity on achieving goals in sports and fitness

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Abstract

Combined interventions involving nutrition and physical activity have been shown to be significantly more effective than isolated strategies in improving body composition, muscle strength, and endurance. Adequate protein intake enhances muscle mass gain and strength development during resistance training. Time-restricted eating combined with exercise contributes to body weight and fat mass reduction. Dietary patterns, particularly the Mediterranean diet, demonstrate potential benefits for aerobic performance and recovery.

Keywords: sports, fitness, balanced nutrition, physical activity, protein, training, muscle mass, diet, body weight, endurance, randomized controlled trials.

Introduction

Optimization of nutrition and training processes is a fundamental condition for achieving athletic goals, including increased strength, improved endurance, enhanced recovery, and better body composition. Modern guidelines emphasize the importance of a personalized, evidence-based approach (ISSN, PubMed).

The aim of this study is to present consolidated findings from recent research on the combined effects of nutrition and physical activity and to formulate practical conclusions.

The Role of Protein and Resistance Training

Morton RW et al. conducted a large meta-analysis of 49 randomized controlled trials involving 1,863 participants and demonstrated that dietary protein supplementation significantly increased muscle strength and muscle size during prolonged resistance training in healthy adults. The meta-analysis revealed improvements in one-repetition maximum strength (+2.49 kg on average) and fat-free mass (+0.30 kg). The effectiveness was greater among trained individuals and decreased with age. The beneficial threshold was approximately 1.62 g/kg/day, while higher doses provided no additional effect.

Combining Nutrition and Physical Activity

Several reviews demonstrate the superiority of combined interventions. Txomin Pérez-Bilbao et al., in a systematic review of exercise and dietary interventions, reported that groups combining physical exercise and dietary strategies achieved significant improvements in cardiorespiratory fitness, muscle strength, body composition, and quality of life. Although the review focused on breast cancer patients, the findings support the general concept that combining nutrition and exercise is more effective than either intervention alone.

Time-Restricted Eating

Zihan Dai et al. performed a meta-analysis of 19 randomized controlled trials involving 568 participants and concluded that time-restricted eating (TRE) combined with exercise may be more effective for reducing body weight, fat mass, and improving lipid profiles compared to standard diets combined with exercise. TRE+EX interventions resulted in reductions in body weight (MD −1.86 kg) and fat mass (MD −1.52 kg), although no consistent benefits for glycemic control were observed.

Dietary Patterns and Endurance

Studies with moderate to high methodological quality have investigated the effects of the Mediterranean diet on athletic performance. Gizem Helvacı et al. (2023) examined a 15-day low-acid Mediterranean-style dietary intervention in adolescent cross-country skiers aged 13–18 years in Turkey. The authors observed improvements in aerobic performance, vertical jump ability, and reduced subjective fatigue without significant short-term changes in body composition. These findings suggest that dietary patterns can positively influence endurance and recovery even over a short period.

Jinhee Kwon et al. conducted a 12-week randomized controlled trial involving older women in Tokyo, Japan. The combined exercise and nutrition intervention improved strength indicators, including handgrip strength, and enhanced health-related quality of life compared to the control group.
This study highlights the practical effectiveness of integrated nutrition and exercise programs in populations where maintaining functional capacity is essential.

Conclusion

Current evidence indicates a clear positive effect of combining balanced nutrition with targeted physical activity for achieving sports and fitness goals. Key factors include adequate protein intake during resistance training, energy balance aligned with physical demands, antioxidant-rich dietary patterns such as the Mediterranean diet, and the use of time-restricted eating for body weight management. Further

large-scale, well-designed randomized studies across diverse athletic populations are needed to establish definitive recommendations.