

Nutrition: A Key Role in Optimizing Performance for Athletes

Cassidy Lee

College of Nursing, East Carolina University

Doctor of Nursing Practice

Executive Summary

Key Findings

- A structured high-protein diet directly contributed to measurable improvements in participants' body composition and performance. Specifically, reductions in body mass index and body fat percentage were observed, along with significant improvements in endurance.
- All participants experienced a decrease in average BMI. There was an average decrease of 1.65 points.
- Consistent participants improved endurance, as shown by a 17-second faster 2-kilometer row and a 0.70-minute reduction in Fran workout time.
- Strength gains were modest, possibly due to limited targeted resistance training.
- Nutritional education increased participant awareness and promoted healthy eating adherence.
- Barriers such as injury, travel, and inconsistent adherence to the nutrition intervention negatively affected participants' overall outcomes and completion rates, showing that engagement with the intervention impacted results.
- Support from the CrossFit community increased motivation and program engagement, indicating that community involvement enhanced adherence to the nutrition intervention.

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Background and Findings

Introduction

Athletic performance is influenced by multiple factors, including training intensity, recovery, mental readiness, and nutrition. Nutrition is essential for attaining optimal results. Many athletes do not see desired improvements in strength, endurance, or body composition due to insufficient focus on nutrition. Consequently, there is a need for structured, evidence-based dietary interventions for those seeking changes in body composition, such as lowering BMI and body fat percentage.

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Purpose

This Doctor of Nursing Practice (DNP) project evaluated the effectiveness of a structured, macronutrient-based, high-protein diet on the performance and health of CrossFit athletes. The project aimed to improve strength, endurance, and body composition while promoting evidence-based nutrition.

Methodology

Approach

This 12-week quality improvement project used the Plan-Do-Study-Act (PDSA) framework. Participants were from a CrossFit gym in eastern North Carolina and included athletes of various skill levels who exercised at least three times per week. Thirteen participants completed the program.

Baseline measurements included:

- Body composition (BMI and body fat percentage)
- Strength (one-repetition maximums for back squat, deadlift, and bench press)
- Endurance (2-kilometer row and the CrossFit “Fran” workout)

Participants received individualized macronutrient prescriptions prioritizing a high-protein diet (approximately 35% protein, 40% carbohydrates, 25% fat) and recorded their intake daily using the MacrosFirst application. Measurements were taken at 6 weeks to assess whether macronutrient requirements needed adjustment, and again at the end of 12 weeks.

Analysis

Pre- and post-intervention data were compared to assess performance and changes in body composition. Descriptive statistics (means and standard deviations) assessed trends in body mass index, endurance, and strength.

Results

Findings

The intervention displayed positive outcomes, especially for those who adhered to the nutrition plan.

- Participants in the high-protein diet intervention improved body composition, with a mean decrease of 1.65 BMI points and reductions in body fat percentage attributable to the diet.
- Endurance improved, as demonstrated by faster Fran workout times—averaging 0.70 minutes—and a 17-second faster 2-kilometer rowing time, linking these results directly to enhanced endurance.
- Strength improvements were observed in a subset of participants. However, because the intervention placed less emphasis on strength-specific training, the modest gains were likely due solely to the nutrition [intervention].

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Overall, the structured nutrition intervention was effective at improving athletic performance outcomes, particularly BMI, as demonstrated by participants who adhered closely to the intervention.

Strengths and Limitations

Strengths

- Use of objective performance measures (e.g., 1-rep max, benchmark workouts)
- Individualized prescribed macronutrients customized to participant goals
- Strong participant interaction and community support
- Implementation in a community fitness setting

Limitations

- Small sample size ($n = 13$), limiting generalizability
- High attrition rate due to injury, travel, and scheduling conflicts
- Variability in adherence to dietary tracking
- Injuries affected performance outcomes
- Reliance on self-reported dietary intake

Implications and Conclusions

Implications

This project shows that structured, macronutrient-focused nutrition can improve body composition and endurance. Findings from this project support the need to include nutrition education in fitness programs and highlight the role of health care providers in leading preventive, lifestyle-focused health interventions.

For clinical practice and community health:

- Nutrition should be emphasized alongside exercise in performance and wellness programs.
- Community-based interventions can effectively encourage sustainable health behaviors.
- Collaboration between health care providers and nutrition/fitness professionals could improve outcomes.

Conclusions

Nutrition is fundamental for optimizing athletic performance and improving body composition. This project demonstrates that a structured, high-protein, macronutrient-focused diet produces meaningful changes in body composition and endurance for CrossFit athletes. Although strength

outcomes were less pronounced, the findings support incorporating nutrition strategies into athletic training programs to maximize performance, longevity, and well-being.

Implementation of these interventions has the potential to improve population health, reduce chronic disease risk, and give health care providers the opportunity to promote preventative and functional health care.