



# Relationship Between Nutrition Knowledge and Body Composition Changes Across a Season in Collegiate Women's Soccer



Emily M. Mowbray, Harry P. Cintineo, Kyle L. Sunderland  
Department of Kinesiology, Lindenwood University, St. Charles, MO 63301

## Introduction

- Nutrition is crucial for athletic performance and recovery, yet collegiate athletes often exhibit poor nutrition knowledge, hindering optimal dietary practices and outcomes.
- While many studies have explored collegiate athletes' nutrition knowledge, few have examined its impact on physical adaptations.
- Investigating how nutrition knowledge influences body composition changes during a competitive season provides key insights into enhancing physical adaptations and athletic performance, as well as ways to improve educational tools.

## Purpose

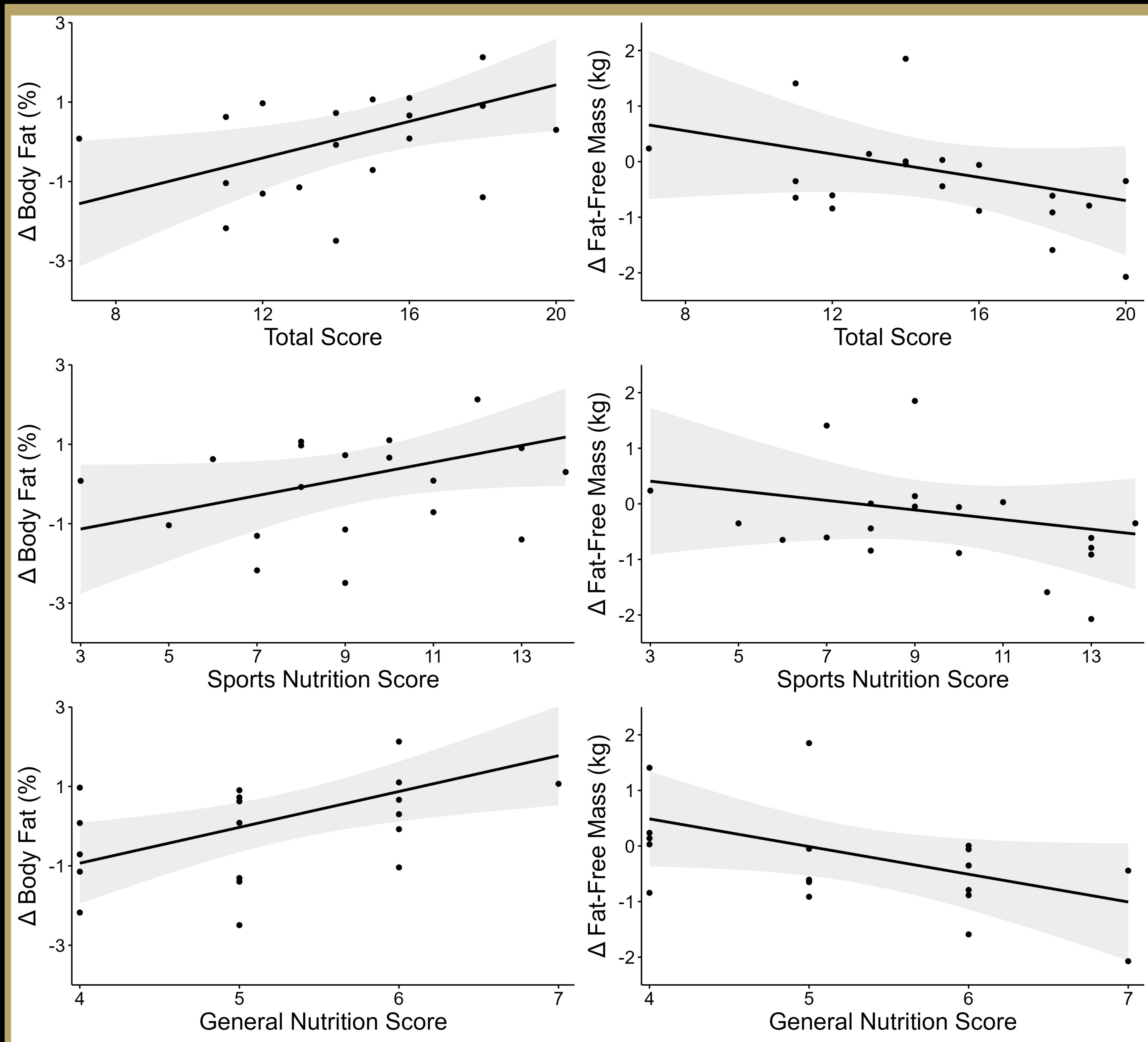
- To determine the relationship between athlete pre-season nutrition knowledge and changes in body composition over a competition season.

## Methods

- Twenty NCAA Division I women's soccer athletes ( $20 \pm 2$  y,  $167.8 \pm 6.5$  cm,  $64.4 \pm 7.2$  kg) participated in this study.
- Prior to fall training, athletes completed the Abridged Nutrition for Sport Knowledge Questionnaire (A-NSKQ) to assess general and sports nutrition knowledge.
- Body composition was assessed via dual-energy X-ray absorptiometry (DEXA) pre-season and one week post-season.
- Spearman's rank correlations were used to examine relationships between A-NSKQ scores and DEXA-derived body composition measures ( $\alpha = 0.05$ ).

## Example Survey Questions

- Eating more energy from protein than you need can make you put on fat.
- Do you think 1 medium banana has enough carbohydrate for recovery from intense exercise?
- When we exercise at a low intensity, our body mostly uses fat as a fuel.
- Athletes should drink water to: (a) keep plasma (blood) volume stable (b) stop dry mouth (c) allow proper sweating (d) all of the above (e) not sure



## Results

- Total A-NSKQ score showed a significant positive correlation with change in % body fat ( $\rho = 0.514$ ,  $p = 0.017$ ), as did general nutrition knowledge ( $\rho = 0.546$ ,  $p = 0.011$ ).
- No significant relationship was found between sports nutrition knowledge and % body fat change ( $\rho = 0.380$ ,  $p = 0.089$ ).
- Total A-NSKQ score ( $\rho = -0.448$ ,  $p = 0.042$ ) and sports nutrition knowledge ( $\rho = -0.468$ ,  $p = 0.032$ ) were negatively correlated with change in fat-free mass.
- General nutrition knowledge was not significantly associated ( $\rho = -0.351$ ,  $p = 0.119$ ).

## Conclusions and Applications

- These findings highlight a gap between nutrition knowledge and practical application, likely due to inadequate resources, ineffective strategies, or misaligned dietary perceptions.
- Future research should focus on improving access to nutrition education resources and ensuring athletes can effectively implement their knowledge into daily nutrition practices.
- Athletic programs should provide tailored nutrition education that emphasizes both knowledge and practical application to improve body composition outcomes.
- Strength and conditioning coaches should collaborate with sports dietitians to ensure athletes have individualized, actionable nutrition strategies throughout the season.
- Universities should assess the effectiveness of their nutrition resources and provide additional support to help athletes align their dietary habits with performance goals.

# Higher pre-season nutrition knowledge was unexpectedly associated with less favorable body composition changes