



E-ISSN:3108-1711

IRJSRR.ORG

**INTERNATIONAL
RESEARCH JOURNAL OF
SCIENTIFIC REPORTS AND REVIEWS**

Open Access | Peer Reviewed | Online Journal

RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE, DIETARY HABITS, AND ATHLETIC PERFORMANCE AMONG UNIVERSITY ATHLETES

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Abstract: The nutrition of athletes is an essential component of their preparation, recovery, and performance. The objective of this study was to explore the connection between knowledge of nutrition, diet, and sports performance among university athletes. The selected research design was quantitative cross-sectional, which was conducted on 200 University Athletes. The data were collected with the help of a structured questionnaire and analysed using SPSS. Descriptive statistics, Pearson correlation, and multiple linear regression were used. Nutritional knowledge was significantly correlated with athletic performance ($r = .154$, $p = .030$), and dietary habits were also significantly correlated with athletic performance ($r = .209$, $p = .003$). There was a significant correlation between nutritional knowledge and dietary habits ($r = .231$, $p = .001$). The overall model was significant ($F(2,197) = 5.777$, $p = .004$; $R^2 = .55\%$) using regression analysis. There was a significant effect of dietary habits, but not of nutritional knowledge itself, on performance.

Keywords: Nutritional Knowledge; Dietary Habits; Athletic Performance; University Athletes; Sports Nutrition

Received: 24-August-2026

Revised: 19-Sep-2026

Accepted: 03-Oct-2026

Citation for the Paper:

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1. Introduction

Nutrition plays a key role in health, physical capacity and recovery, and athletic development, especially among athletes in universities who have to go to class, train regularly, and participate in competitions (Amawi *et al.*, 2024). University athletes often have higher energy requirements, a high level of training, and competition-related stress and nutritional needs, which are higher than those of the general student population. Therefore, the amount, quality, timing, and type of food intake can affect an athlete's ability to continue training, recover between training sessions, maintain their body composition, and adapt to training (Martin-Rodriguez *et al.*, 2024). There is growing recognition of the need to meet energy, carbohydrate, protein, micronutrient, and fluid requirements to support training and recovery (Thomas *et al.*, 2016) in evidence-based sports nutrition recommendations.

The availability of carbohydrates is a key consideration during long or high-intensity exercise because it plays a role in maintaining stores of carbohydrates, as well as supplying energy during exercise, and also during recovery and preparation for subsequent exercise training sessions (Burke *et al.*, 2011). Meanwhile, sufficient protein levels will help promote muscle protein synthesis and tissue repair after physical activity. The fact that these nutritional needs reflect the fact that dietary behavior is not simply a part of overall health in athletes but is also intimately linked to the capacity to meet repeated training and competition demands (Maughan, 2002).

The need for proper nutrition becomes even more apparent when energy availability is low.

The International Olympic Committee consensus on Relative Energy Deficiency in Sport (REDs) clarifies that Low Energy Availability (LEA) may be linked to a variety of negative health and performance consequences for both female and male sport participants (Mountjoy *et al.*, 2023). While the level of competition, training frequency, and the demands of the sport vary between university athletes, the general rule is that energy intake needs to meet the demands of the sport and the body's requirement for energy. Therefore, the nutritional status of university athletes should be examined systemically, as insufficient knowledge or practical and environmental conditions may trigger inappropriate dietary practices (Tam *et al.*, 2019).

Previous systematic evidence has demonstrated that the nutrition knowledge of athletes has often been suboptimal, and the tools used to assess nutrition knowledge have been significantly different in quality and validity (Trakman *et al.*, 2016). This is important as nutritional knowledge reflects the consumer's knowledge of nutrition. Dietary habits, on the other hand, are indicators of how often the knowledge is put into practice in the choice of food and beverages. A complete evaluation of university athletes should include knowledge about nutrition as well as application of knowledge in the athletes' diets.

Studies with university or collegiate athletes suggest that nutritional knowledge can be poor even among athletes engaged in regular scheduled physical training. A study of 123 student-athletes in Division I found that overall, athletes' sports nutrition knowledge was 56.9%, and a small percentage of Division I student-athletes had the expected level of knowledge, suggesting that there were significant gaps in sports nutrition knowledge among university athletes (Dunn *et al.*, 2016). Similarly, Klein *et al.* (2021) reported that 331 NCAA Division III student-athletes reported a relatively low mean percentage of correct answers for a sports nutrition knowledge assessment.

The study also identified that those with prior exposure to college-level nutrition education had higher levels of nutrition knowledge in a number of areas, and that athletes reported getting nutrition information from posts on social media, coaches, and athletic trainers. The average nutrition and food knowledge score for Malaysian university athletes also showed an average score of 58.6%, with specific gaps identified in knowledge about fruits and vegetables, micronutrients, and dietary fat (Nor Azizam *et al.*, 2022). The results of this study suggest that organised university sport is not in itself sufficient to guarantee nutritional knowledge. Perhaps more important, the results indicate that the quantity, quality, and source of nutrition information could impact athletes' comprehension and choices regarding eating.

There has been more systematic research to investigate the linkage between nutrition knowledge and dietary behaviour in athlete populations. A previous systematic review found generally small positive relationships between nutrition knowledge and dietary intake, and significant differences in research methodology and assessment tools (Heaney *et al.*, 2011). The next systematic review update, conducted with 28 studies, suggested that nutrition knowledge for athletes was still variable and, in many instances, relatively low; however, weak to moderate positive correlations were found between nutrition knowledge and positive nutrition-related behaviors (Janiczak *et al.*, 2022).

The results suggest that nutritional knowledge could be a key component in diet decisions, but is not likely to account for all the dietary behaviors seen among athletes. This interpretation is corroborated by studies conducted with professional rugby league players that found that good nutritional knowledge was not necessarily linked to good dietary practices, as there was a lack of consistency with respect to sports nutrition advice. Factors that could also shape dietary patterns include food availability, food costs, food convenience, cultural food norms, taste, school or training schedules, social factors, and access to trained nutritionists. Thus, investigating nutritional knowledge and dietary practices as two separate variables is important when studying the nutritional characteristics of university athletes.

Since performance is a multi-faceted measure, the link between nutritional knowledge, diet, and actual performance can be more complicated. Fitness, body composition, physiological state, recovery, psychology, genetics, sleep and nutrition could all be factors in performance. Therefore, it is not possible to draw a direct or automatic relationship between nutrition and athletic performance. In a cross sectional study on 110 undergraduate athletes in Nigeria, Folasire *et al.* (2015) reported that a good nutritional knowledge had a significant relationship with good nutritional practice while no significant direct relationship was observed between nutritional knowledge and nutritional practice with handgrip strength. Rather, performance correlated with such factors as resting metabolic rate, lean muscle mass, body weight, and energy intake.

However, Serhan *et al.* (2023), who studied 384 student-athletes from the university in Lebanon, found an average sports nutrition knowledge score of 63.54% and concluded that nutritional knowledge is an important issue to consider in the context of athletic performance, with performance being significantly influenced by physical characteristics such as resting metabolic rate, lean muscle mass, and weight. These results highlight the need to study the link between nutrition-related knowledge and performance in an empirical rather than an assumed fashion. The current evidence supports the possibility that nutritional knowledge might affect dietary behaviour which, in turn, might affect performance through physiological and/or behavioural mechanisms, and that nutritional adequacy might influence dietary behaviour, which can then influence performance.

Recent studies support the idea of studying these variables together. In an investigation of NCAA Division I male soccer players, Gulleyan *et al.* (2025) found poor overall sports nutrition knowledge and positive relationships between knowledge and several food-choice dimensions: usual eating practices, weight control, nutritional attributes and performance-related food choices. A similar 2024 study on student athletes and active people found that nutrition knowledge, in addition to other factors, such as dietary intake, macronutrient balance, body image, weight control, and hedonic hunger, affect dietary intake (Janiczak *et al.*, 2024).

A recent scoping review of 21 studies published up to October 2024 also revealed that there were still some significant gaps in athletes' nutritional knowledge and dietary awareness and highlighted the importance of providing nutrition education and practical guidance based on evidence (Hopper *et al.*, 2025). The current research results suggest a change in perspective from an isolated nutrition knowledge construct to a construct that is integrated into a larger construct of behavior and performance. Importantly, the evidence also indicates that interventions focused on knowledge alone can be insufficient if they do not offer the athlete opportunities and/or environments to translate knowledge into dietary behaviour.

Recent intervention evidence also highlights the importance of this knowledge-to-behaviour pathway. Inadequate nutrition knowledge and suboptimal dietary intake are reported as prevalent among team-sport athletes and indicate that behavioural and environmental factors should be taken into account when designing nutrition education strategies (McDonald *et al.*, 2026). Likewise, a systematic review of nutrition education programs for female athletes found that a large number of programs resulted in improvements in nutrition knowledge, and for many of the nutrition knowledge studies that measured it, there were improvements in dietary intake; however, the sustainability of the changes differed (Sannan *et al.*, 2026).

The findings are useful with regards to university sport as they suggest that a structured approach to nutritional education could have a positive impact on nutritional knowledge; however, the effectiveness of the education in bringing about meaningful, positive dietary changes may be influenced by the delivery and support of the educational intervention. Moreover, it is important to take care of the assessment of nutritional knowledge. Jayawardena *et al.* (2023) conducted a systematic review of sports nutrition knowledge questionnaires, which revealed significant differences in the development and content of the questionnaires, with a clear emphasis on the need

to have appropriate and valid assessment tools to measure athletes' nutrition knowledge. Thus, the discrepancies found in previous studies could be a result of differences in measurement instrument, athlete characteristics, sporting disciplines, and performance indicators.

The body of literature reviewed shows overall that nutrition is an important aspect of training, recovery, health, and athletic development, and knowledge about nutrition may be correlated to dietary behaviour to varying degrees. But there is no clear evidence of a direct link between increased knowledge of nutrition and better nutritional intake or improved athletic performance. University athletes are a specific group of people who are relevant because they are simultaneously subjected to the demands of academic life, training, competition, peer influence, and different availability of nutrition advice from professionals. Past research has tended to focus on nutrition knowledge, dietary intake, or performance alone and fewer have explored all three constructs in a single university-athlete sample.

Furthermore, there are also differences in the instruments and nutritional performance variables used in studies, which make direct comparisons difficult. However, the present study aimed to fill this gap by investigating the correlation between the nutritional knowledge, diet, and athletic performance of university athletes. The study aims to determine if there is an association between nutritional knowledge and dietary habits, if there is an association between dietary habits and athletic performance, and if there is an association between nutritional knowledge and dietary habits and athletic performance. Evidence of this kind could provide more empirical support for developing targeted nutrition education and dietary-support strategies for university sports programmes.

2. Significance of the Study

Nutrition plays a significant role in the preparation for sports given that there are several important areas of sports nutrition that require attention for an athlete to perform well, recover and to stay healthy and adapt to training. University athletes may find it especially difficult to make healthy food choices due to competing in multiple practices throughout the day, competing during exams, money considerations, and the availability of reliable nutrition information. Numerous gaps in sports nutrition knowledge have been found among collegiate athletes, indicating that sport-specific nutritional requirements may not be always met by athletes.

The value of the current study is to study nutritional knowledge, dietary practices, and athletic performance simultaneously instead of separately studying nutritional knowledge or dietary practice. A lack of nutrition knowledge has been previously described in university athletes and the need for proper nutrition education in university sports programmes has been highlighted. More recently, there has been a statistically significant, albeit limited, positive association between an athlete's knowledge of sports nutrition and more positive food attitudes and behaviors at the university level, while other social and environmental factors are also relevant, suggesting that knowledge might also play a role in dietary behaviors.

The results of this study could thus provide information for university athletes, coaches, physical education professionals, sports administrators, and nutrition educators. The relationships among nutritional knowledge, dietary practices, and performance can be used to inform the creation of specific nutrition education and dietary-support programmes. The research could also lead to a better understanding by universities of areas where nutrition services for athletes might be needed and to increased implementation of evidence-based nutrition support in athletic training settings. Therefore, the study also has practical importance to encourage knowledge-based food choices and for the scientific writings on nutrition and athletic performance in university athletes.

3. Review of Literature

Recent recognition has been given to the importance of nutrition as a modifiable aspect of athletic preparation, as the nutritional practices used by athletes affect both energy availability and recovery,

training adaptation, body composition, and ability to meet performance demands. In this context, nutritional knowledge is an important support to making the right decisions regarding food, but it does not guarantee the right behaviour when it comes to food. A previous systematic review of this topic was conducted by Trakman *et al.* (2016) who examined the nutrition knowledge of athletes and coaches and found there was significant variability in the nutrition knowledge across sports and populations. The review also revealed significant variations in the instruments that have been employed to measure nutritional knowledge, which makes it difficult to make comparisons among studies.

The same issues have been found in studies of the knowledge of college athletes, as well, with knowledge often cited as not being at a desirable level despite athletes reporting several seemingly appropriate dietary practices (Klein *et al.*, 2021). Furthermore, results from professionals working with team sport athletes showed that self-reported nutrition competence and nutrition objective knowledge are not always synonymous, as athletes' confidence in making nutrition decisions may not be indicative of their knowledge (Sekulic *et al.*, 2019). Together, these results highlighted the need to consider what nutritional knowledge is as a measurable construct and the fact that the link between nutritional knowledge and actual dietary behaviour was complex.

Since then, there has been further evidence to support this idea, allowing for nutrition knowledge to be measured with an understanding of dietary intake as opposed to nutrition knowledge as a stand-alone attribute. In a recent systematic review update, Janiczak *et al.* (2022) analysed the nutritional knowledge of athletes and its relationship with dietary intake and found that the overall level of knowledge was still quite low in the literature. Importantly, this review found that there were weak to moderate positive associations between nutrition knowledge and positive dietary behaviours, and there was significant methodological variation across studies. Rash *et al.* (2008) found comparable results for NCAA Division I college track athletes: Nutrition knowledge was found to have weak relationships with diet quality. They found that athletes may be knowledgeable in some aspects of nutrition and yet not consume enough of certain nutrients. Klein *et al.* (2021) also further illustrated this apparent gap between knowledge and practice among NCAA Division III athletes by showing that overall sport nutrition knowledge is low, but many athletes reported sensible practices like eating carbohydrate foods before and after exercise and avoiding frequent meal skipping. Therefore, it was suggested in the literature that nutrition knowledge can influence dietary behaviors, but other factors, such as food accessibility, time limitations, social factors, training schedules, and nutrition information sources, could also influence what athletes consume.

This is especially relevant to the population of university athletes, as they are subjected to the demands of the college environment, food preparation, and competition, in addition to those of academic study. In the study conducted by Nor Azizam *et al.* (2022), the average sports nutrition and food knowledge score for the Malaysian university athletes was 58.6%, which was considered a significant deficiency in the understanding of nutrient functions of micronutrients, recommendations for fruits and vegetables, and dietary fat. The results showed that the university athletes could generally have some awareness of sports nutrition but still had many important knowledge gaps that could impact their dietary choices.

In another study on 384 university student-athletes from Lebanon, Serhan *et al.* (2023) investigated nutrition knowledge and factors associated with athletic performance and provided evidence of the importance of nutrition-related factors in a university athletic population. The authors concluded that adequate sports nutrition knowledge contributes to performance, and physical characteristics were also related to performance outcomes. The results from this study corroborate previous research with collegiate track athletes, which found that nutrition knowledge and dietary intake did not have a strong correlation for all nutrients (Rash *et al.*, 2008). It is important to note that there is a relationship between knowledge and dietary habits and performance in the athletic

arena, but that knowledge does not necessarily equate with optimal performance, thus making the university athlete population a potentially significant group to study.

Nutrition knowledge and eating patterns have also been studied by exploring how well and where athletes get their nutrition information. Although registered dietitians and nutrition professionals were believed to be very knowledgeable, it was well established by Klein *et al.* (2021) that collegiate athletes frequently received nutrition information from athletic trainers, coaches, and social media. It was found that access to information does not translate to access to scientifically appropriate information. Likewise, Sekulic *et al.* (2019) investigated 912 professional team-sport athletes and confirmed that objective knowledge of nutrition and supplements was associated with supplement consumption, and that objective knowledge related to self-perceived competence, which was a stronger predictor than objective knowledge. These results suggest that food and nutrition choices of athletes may be affected by both perceived and real competence. Similarly, Wilson and Cervantes (2023) compared nutrition knowledge, nutrition information sources, and dietary habits among collegiate women's soccer athletes across competitive divisions and emphasized the need for the athlete's nutrition environment to be taken into account when making dietary decisions. The literature thus provides reasons to consider dietary behaviours as a separate entity rather than an automatic consequence of nutritional knowledge.

The study also expanded the knowledge on the possible influence of nutritional knowledge on the food choice of competitive athletes in recent years. In a study of NCAA Division I athletes, Gulleyan *et al.* (2025) more specifically explored the connection between sports nutrition knowledge and food selection, and also found recent evidence that nutritional knowledge is correlated with actual food-selection behaviour. This is significant as past studies often have assessed knowledge in isolation, and examining dietary intake alone makes it difficult to ascertain if knowledge is translated into dietary behaviour. Using a scoping review of nutritional intake and dietary knowledge among athletes, Hopper *et al.* (2025) also found that there was a continued lack of knowledge within athletes in relation to their nutrition and dietary awareness and the need for practical and evidence-based nutrition education. They also found significant differences among studies with respect to populations, dietary assessments, and knowledge measures.

Janiczak *et al.* (2022) had previously come to a related conclusion, highlighting the difficulties of direct comparisons between studies due to varying measurement approaches and study populations. Overall, the evidence indicates that the relationship between knowledge and dietary behaviour is not always predictable and significant, and thus needs to be empirically evaluated in selected sporting contexts.

Another development in the literature that is important is the measurement of sports nutrition knowledge. Valid and suitable knowledge assessment tools are critical, as the information from poorly designed questionnaires may lead to erroneous conclusions about the nutritional competency of athletes. Trakman *et al.* (2016) pointed to large variation in quality of measures already available and suggested increased focus on validity and reliability. Recently, Jayawardena *et al.* (2023) conducted a systematic review of questionnaires that were specifically created for athletic populations, which revealed considerable variation in questionnaire construction, content, and development procedures. They found that instruments varied with respect to the extent to which they covered general nutrition and sport-specific nutrition, and that the creation of questionnaires frequently was based on literature reviews, sports nutrition guidelines, expert consultation, or modification of existing questionnaires.

The authors of the aforementioned study also highlighted the need for the quality of nutrition knowledge assessment to continue to be a significant limitation, despite the fact that there have been advances in measuring nutrition knowledge. Similarly, Janiczak *et al.* (2022) also pointed out that, despite the improvement of nutrition knowledge measuring instruments, the quality of nutrition

knowledge measurement remained an important limitation. These methodological issues are especially relevant when trying to correlate nutritional knowledge, dietary practices, and athletic performance, as inconsistent measurement could contribute to disparities across studies.

There is less consistent evidence linking nutritional knowledge and dietary behaviour to athletic performance as compared to evidence relating to knowledge and dietary practices. Among all these, Serhan *et al.* (2023) focused on university athletes and showed that sports nutrition knowledge was applicable in a broader context of factors related to sports performance. Associations should not be assumed to represent cause and effect, however, as in cross-sectional studies. Other studies conducted earlier also demonstrated that nutrition knowledge was modestly associated with dietary behaviors, suggesting that nutrition knowledge is not necessarily an adequate predictor of nutritional behaviors or performance outcomes (Rash *et al.*, 2008). This is also reflected in the overall systematic review evidence, where Janiczak *et al.* (2022) identified mixed and overall weak-to-moderate links between nutritional knowledge and food consumption. Consideration should, therefore, be given to the fact that athletic performance is a multi-faceted outcome that will be partially influenced by training status, physical characteristics, recovery, psychological factors, dietary behaviour and other contextual variables, and that nutritional knowledge is one of the facilitators of this performance and not a determinant on its own.

A more recent body of literature has therefore turned towards a more integrated approach to the understanding of nutrition, dietary habits, and performance outcomes. Hopper *et al.* (2025) found that there were still some areas of misunderstanding surrounding nutrition knowledge among athletes and their dietary habits, and they highlighted the need for practice-based nutrition education. To further the evidence, Gulleyan *et al.* (2025) explored the link between sports nutrition knowledge and food selection in NCAA Division I athletes, thereby filling in the gap between nutrition knowledge and food choices. Additionally, Jayawardena *et al.* (2023) emphasized the need for proper measurement in the evaluation of sports nutrition knowledge. These recent studies highlight the need to go beyond a straightforward assessment of whether athletes have nutritional knowledge and to explore how athletes' nutrition knowledge relates to their dietary practices, and how those relate to athletic performance, in contemporary research. That holistic perspective is especially relevant for university sportspeople as their dietary choices often occur in challenging academic and sports areas.

The literature reviewed shows three general trends. Athletes often demonstrate inadequate or inconsistent knowledge of nutrition, but the magnitude of this or its uneven distribution depends on the sport, level of competition, gender, educational experience, and/or method of assessment. Second, there is usually a positive but variable pattern between nutritional knowledge and dietary behaviour, suggesting that nutritional knowledge is relevant, but not sufficient to explain dietary behaviours. Third, there is limited direct evidence of the relationship between nutritional knowledge, dietary behaviours and athletic performance, especially for university athletes. Past research has tended to have an athlete/athletes, sport/sport focus or an attention to nutrition knowledge or to dietary intake alone, with fewer studies examining both, and with an even smaller number examining both in a single university-athlete population. In addition, it is important to acknowledge that there is still a lack of standardization in how teachers measure and construct the concept of "employability" (Trakman *et al.*, 2016; Janiczak *et al.*, 2022; Hopper *et al.*, 2025). Thus, empirical studies are needed that incorporate all three constructs and conduct a statistical examination of the interrelationships between them. In the present study, the relationships between nutritional knowledge, dietary practices, and athletic performance among university athletes were explored, and the interaction effect of nutritional knowledge and dietary practices on athletic performance was evaluated.

3.1 Research Gap

The nutrition knowledge and dietary habits of athletes have been explored in previous studies; however, some aspects of this research are vague. Previous research has been conducted with

specific sports groups, for example, collegiate sports teams or single sports, which makes it hard to generalize to all university athletes who have differing training requirements. In addition, nutritional knowledge and food consumption are usually studied in isolation, and there have been relatively few studies that have studied nutrition knowledge, dietary practices, and sports performance in the same research model. The nutritional knowledge-performance relationship is also not linear, as the study revealed that nutritional practices, anthropometric parameters, training status, and other physiological factors may affect the performance outcomes. Furthermore, the nutrition-knowledge assessment tools and performance measures used varied across studies, making it hard to make meaningful comparisons.

The problem of poor nutrition knowledge and poor nutrition practices in university and collegiate athletes is still relevant, as evidenced by recent studies. It is necessary, therefore, to carry out more empirical studies, using systematized measurement and statistical analysis to examine the relationship between knowledge of nutrition, diet, and athletic performance in university athletes. The present study helps to fill this need by reviewing these three variables in a single population of university students and athletes and identifying the observed relationships in a quantitative fashion.

4. Research Questions

- What is the level of nutritional knowledge among university athletes, and is it significantly related to their athletic performance?
- Is there a significant relationship between dietary habits and athletic performance among university athletes?
- Is there a significant relationship between nutritional knowledge and dietary habits among university athletes?
- Do nutritional knowledge and dietary habits significantly impact athletic performance among university athletes?

5. Objectives of the Study

- To assess the level of nutritional knowledge among university athletes and examine its relationship with athletic performance.
- To examine the relationship between dietary habits and athletic performance among university athletes.
- To determine the relationship between nutritional knowledge and dietary habits among university athletes.
- To examine the impact of nutritional knowledge and dietary habits on athletic performance among university athletes.

6. Hypothesis of the Study

H1: There is a significant relationship between nutritional knowledge and athletic performance among university athletes.

H2: There is a significant relationship between dietary habits and athletic performance among university athletes.

H3: There is a significant relationship between nutritional knowledge and dietary habits among university athletes.

H4: Nutritional knowledge and dietary habits significantly impact athletic performance among university athletes.

7. Research Methodology

This research will be conducted using a quantitative, cross-sectional research design to explore the relationship between nutritional knowledge, dietary habits, and athletic performance in university athletes. The study will be carried out with a sample of 200 athletes at the University involved in organized sports activities. Demographic data, nutritional knowledge, and dietary behavior of participants will be collected through a structured questionnaire; athletic performance will be evaluated with an appropriate standardized measure of athletic performance or performance score. Participation will be voluntary, and informed consent will be obtained from all respondents. As specified in the requirements of the research, the collected data will be coded and analysed using SPSS.

Frequencies, percentages, means, and standard deviations will be used to describe and summarize the characteristics and responses of the 200 individuals. Pearson's correlation coefficient (r) will be utilized to examine the relationships between nutritional knowledge and dietary habits and athletic performance. In addition, multiple linear regression analysis will be performed to assess the effects of nutritional knowledge and dietary habits on athletic performance, where nutritional knowledge and dietary habits will be independent variables and athletic performance will be the dependent variable. The statistically significant level will be $p < 0.05$. The findings will then be analyzed considering the research objectives and the hypotheses formulated.

8. Result

❖ Based on Demographics

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	200	1	4	1.94	.883
Gender	200	1	2	1.37	.485
Level of Study	200	1	3	2.59	.620
Type of Sport	200	1	2	1.52	.501
Years of Sports Participation	200	1	4	2.55	.923
Valid N (listwise)	200				

The descriptive statistics of the 200 University Athletes studied are presented in Table 1. The ages ranged from 1 to 4 years, with a mean of 1.94 years ($SD = 0.883$), showing that there was variation between the age categories. Gender had a range of 1 to 2, with a mean of 1.37 ($SD = 0.485$), representing equal representation across both genders. The range of level of study was 1-3, with a mean score of 2.59 ($SD = 0.620$), so there were a variety of academic levels, with a higher prevalence of those in the higher study categories. Type of sport was 2.00 for sports and 1.00 for non-sports, with a mean of 1.52 ($SD = 0.501$), which indicated a relatively equal distribution of the two categories of sports. The years of sport participation range from 1 to 4, with a mean of 2.55 and $SD = 0.923$, showing moderate variation in sport participation years of the participants. In total, the 200 cases were considered valid, and descriptive analyses show adequate variability of the demographic and sporting variables of the subjects in order to proceed with statistical analysis.

Table 2: Demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Age	18-20 Years	73	36.5	36.5	36.5
	21-23 Years	79	39.5	39.5	76.0
	24-26 Years	36	18.0	18.0	94.0
	Above 26 Years	12	6.0	6.0	100.0
	Total	200	100.0	100.0	
Gender	Female	75	37.5	37.5	37.5
	Male	125	62.5	62.5	100.0
	Total	200	100.0	100.0	
Level of Study	Doctoral	14	7.0	7.0	7.0
	Postgraduate	54	27.0	27.0	34.0
	Undergraduate	132	66.0	66.0	100.0
	Total	200	100.0	100.0	
Type of Sport	Individual sport	96	48.0	48.0	48.0
	Team sport	104	52.0	52.0	100.0
	Total	200	100.0	100.0	
Years of Sports Participation	Less than 1 year	21	10.5	10.5	80.5
	1-3 years	87	43.5	43.5	43.5
	4-6 years	53	26.5	26.5	80.5
	More than 6 years	39	19.5	19.5	100.0
	Total	200	100.0	100.0	

The demographics of the 200 university athletes that were used in the study are presented in Table 2. When it comes to age, the biggest group of participants was between 21-23 years old (39.5%), followed by 18-20 years old (36.5%), 24-26 years old (18.0%), and more than 26 years old (6.0%). When asked about gender, 62.5% of the respondents were men and 37.5% were women. In terms of level of study, the majority were undergraduate students (66.0%), with the rest being 27.0% postgraduate students and 7.0% doctoral students. Regarding the type of sport played, 52.0%

engaged in team sports, with 48.0% engaging in individual sports, a fairly equal distribution. The experience of sports participation was greatest in those who had 1–3 years (43.5%), followed by 4–6 years (26.5%), more than 6 years (19.5%), and less than 1 year (10.5%). Overall, the demographic characteristics suggest that the samples were more likely to consist of young undergraduate athletes, male and female, with different levels of sporting participation, and participating in individual and team sports.

❖ Based on Hypothesis

H1: There is a significant relationship between nutritional knowledge and athletic performance among university athletes.

Table 3: Correlations			
		Nutritional Knowledge	Athletic Performance
Nutritional Knowledge	Pearson Correlation	1	.154*
	Sig. (2-tailed)		.030
	N	200	200
Athletic Performance	Pearson Correlation	.154*	1
	Sig. (2-tailed)	.030	
	N	200	200
*. Correlation is significant at the 0.05 level (2-tailed).			

Based on the correlation analysis, the nutrition knowledge of university athletes showed a positive and significant correlation with athletic performance. Based on 200 participants, the Pearson correlation coefficient was $r = 0.154$, and the p-value was 0.030. The p-value is less than 0.05, which means that the relationship is statistically significant. The correlation coefficient, however, is $r = 0.154$, suggesting a relatively weak relationship between nutrition knowledge and athletic performance; that is, higher nutrition knowledge is moderately related to higher athletic performance. Hence, it can be concluded that there is a significant relationship between nutritional knowledge and athletic performance among university athletes, so that H1 is accepted.

H2: There is a significant relationship between dietary habits and athletic performance among university athletes.

Table 4: Correlations			
		Athletic Performance	Dietary Habits
Athletic Performance	Pearson Correlation	1	.209**
	Sig. (2-tailed)		.003
	N	200	200

Dietary Habits	Pearson Correlation	.209**	1
	Sig. (2-tailed)	.003	
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

Dietary habits among university athletes are seen to be positively and significantly associated with athletic performance, as presented in Table 4. Based on 200 participants, the Pearson correlation coefficient was 0.209, with a p-value of 0.003. Since the p-value is less than the 0.01 significance level, the relationship is statistically significant. The correlation coefficient shows there is a weak positive association between the two variables, meaning that a person's dietary habits have a certain influence on their athletic performance, but not a strong one. Hence, the results were positive, leading to the conclusion that there were strong relationships between diet and athletic performance for university athletes.

H3: There is a significant relationship between nutritional knowledge and dietary habits among university athletes.

Table 5: Correlations

		Dietary Habits	Nutritional Knowledge
Dietary Habits	Pearson Correlation	1	.231**
	Sig. (2-tailed)		.001
	N	200	200
Nutritional Knowledge	Pearson Correlation	.231**	1
	Sig. (2-tailed)	.001	
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 5, the nutritional knowledge is positively and significantly associated with the dietary behavior of the University sportsmen. Based on that, the Pearson correlation coefficient was $r = 0.231$, $p = 0.001$ for 200 participants. Since the p-value is less than the 0.01 significance level, the relationship is statistically significant. The correlation coefficient indicates a relatively weak positive correlation between the two variables, suggesting that there is a weak positive association between athletes' level of nutritional knowledge and their self-reported dietary behaviors. Hence, the data show that nutrition knowledge is significantly related to the diet of university athletes; thus, H3 is accepted.

H4: Nutritional knowledge and dietary habits significantly impact athletic performance among university athletes.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.235 ^a	.055	.046	.2169	.055	5.777	2	197	.004

a. Predictors: (Constant), Dietary Habits, Nutritional Knowledge

Table 6 shows a connection between nutrition knowledge and diet behaviors, where both factors affect athletic performance. “The model was statistically significant, $F(2,197) = 5.777$, $p = 0.004$, with $R = 0.235$ and $R^2 = 0.055$, meaning that the two predictors explained 5.5% of the variance in athletic performance.” So, H4 is supported.

Table 7: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.543	2	.272	5.777	.004 ^b
	Residual	9.264	197	.047		
	Total	9.808	199			

a. Dependent Variable: Athletic Performance

b. Predictors: (Constant), Dietary Habits, Nutritional Knowledge

The regression model is statistically significant as indicated by $F(2,197) = 5.777$, $p = 0.004$. This means that when nutritional knowledge and dietary habits are combined, they account for a significant amount of variance in the performance of university athletes. In this way, the results of the ANOVA support H4.

Table 8: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4.462	.095		46.940	.000	4.275	4.650
	Nutritional Knowledge	.032	.020	.111	1.561	.120	-.008	.071
	Dietary Habits	.058	.022	.183	2.577	.011	.014	.102

a. Dependent Variable: Athletic Performance

Table 8 shows that dietary habits are a significant predictor of athletic performance ($\beta = 0.183$, $p = 0.011$), while nutritional knowledge is not a significant predictor of athletic performance by itself ($\beta = 0.111$, $p = 0.120$). Therefore, the dietary habits have a significant unique contribution to athletic performance, and the overall regression model is significant.

8. Discussion

This research investigated the correlations between nutritional knowledge, diet, and exercise performance in 200 student-athletes at the university. The results show that all three parameters are significantly correlated, but these are relatively weak. There was a positive and statistically significant correlation between nutritional knowledge and athletic performance ($r = .154$, $p = .030$); that is, athletes who had higher nutritional knowledge tended to report slightly higher athletic performance. This result confirms the first hypothesis and is in line with other previously mentioned studies indicating the potential of nutrition knowledge to aid athletes' understanding of appropriate food selection and sport-related nutrition practices. But the correlation is relatively weak and implies there's not enough variation in performance to be accounted for by nutritional knowledge. This perspective is aligned with past studies which have found that several physiological and behavioural factors, beyond nutrition knowledge, affect athletic performance (Serhan *et al.*, 2023).

The positive relationship between dietary habits and athletic performance was somewhat higher ($r = .209$, $p = .003$). The finding was consistent with H2, indicating that those who reported better dietary habits tended to have higher athletic performance scores. This is in line with the knowledge that a suitable diet can optimize energy availability, training capacity, and recovery. A positive, though mostly weak or moderate, relationship between nutrition knowledge and favourable dietary intake among athletes was also reported by Janiczak *et al.* (2022). The current study thus highlights the need to investigate real-life feeding patterns besides merely the athlete's nutrition knowledge.

A relatively high positive correlation was also found between nutritional knowledge and nutrition behavior ($r = .231$, $p = .001$) that supported H3. This means that the more knowledgeable about nutrition the athlete, the better his or her diet. However, the small correlation indicates that knowledge is just one of the factors affecting dietary behavior. Knowledge may not always be used in day-to-day life, due to factors including food availability, food affordability, limited time, social influences, and access to trusted nutrition advice. Such an interpretation aligns with the existing literature, which showed that knowledge about nutrition and dietary habits among athletes are not aligned (Klein *et al.*, 2021; Trakman *et al.*, 2016).

The multiple regression analysis was also used to gain insight into the combined relationship. The regression model of nutritional knowledge and dietary habits was statistically significant ($F(2,197) = 5.777$, $p = .004$, $R^2 = .055$). So the combination of the two predictors accounted for 5.5% of the variance in athletic performance. This is because dietary habits added significantly ($\beta = .183$, $p = .011$), but nutritional knowledge did not make a unique contribution to the prediction of performance after dietary habits were taken into account ($\beta = .111$, $p = .120$). This study indicates that in this sample, dietary behaviour (as opposed to nutritional knowledge) would have a more direct statistical relationship with performance. Causality is not concluded because of the cross-sectional design, however. In general, findings confirm the need to investigate nutrition knowledge and dietary behaviour in combined studies of athletic performance in university athletes.

9. Conclusion

The present study aimed to examine the correlation between nutritional knowledge, diet, and sports performance of university athletes ($n = 200$). The results confirm that the nutritional factors are

significantly related to athletic performance, but the strength of the relationships is fairly weak. The findings indicate that nutritional knowledge, dietary habits, and athletic performance should not be viewed as entirely separate factors for university athletes' health and involvement in sport.

The first was a positive relationship between nutritional knowledge and athletic performance ($r = .154$, $p = .030$) that was statistically significant. This suggests that nutrition knowledge was slightly related to slightly higher athletic performance scores in athletes. The low strength of the relationship, however, indicates that a lack of nutritional knowledge is not enough to account for the variability of athletic performance. In addition to training quality, physical condition, psychological factors, and recovery, other factors that influence athletic performance include body composition, experience, and physiology. Thus, nutrition education should be considered as one part of a comprehensive approach to athlete development and not as a standalone remedy.

Study results also revealed that there was a strong positive correlation between diet and athletic performance ($r = .209$, $p = .003$). This association was somewhat higher than the association of nutritional knowledge and performance among the relationships studied. The regression results also confirmed the significance of dietary behaviour, as it was found that dietary habits had a significant effect on athletic performance ($\beta = .183$; $p = .011$). The regression model, however, showed that nutritional knowledge was not a statistically significant, independent predictor of athletic performance ($\beta = .111$, $p = .120$). The results suggest that having nutrition knowledge could be helpful, but that real-life dietary behaviors might be more strongly linked to the results of performance in this sample.

The nutrition knowledge was also positively correlated with food habits ($r = .231$, $p = .001$). This indicates that more nutritional knowledge leads to reporting of healthier or more appropriate dietary practices by the athletes. The weak correlation, however, suggests that knowledge does not necessarily lead to action. Nutrition interventions that include nutrition education, practical guidance on nutrition, readily available nutritious food options, meal planning support, hydration information, and sport-specific nutrition counselling can therefore be beneficial for universities and sports programmes.

Lastly, the combined regression model was statistically significant, $F(2,197) = 5.777$, $p = .004$, but nutritional knowledge and dietary habits only accounted for 5.5% of the variance in athletic performance. This shows that there is a significant variation in performance that can be attributed to other factors not investigated in this study. Overall, results confirm the importance of nutritional awareness and eating behaviours in the context of university sport and highlight the complexity of sport performance. Larger and more diverse samples, objective measures of performance, detailed dietary assessment, and longitudinal designs could help further elucidate these relationships in future studies.

REFERENCES

- 1) Amawi, A., AlKasasbeh, W., Jaradat, M., Almasri, A., Alobaidi, S., Hammad, A. A., ... & Ghazzawi, H. (2024). Athletes' nutritional demands: a narrative review of nutritional requirements. *Frontiers in Nutrition*, 10, 1331854.
- 2) Andrews, A., Wojcik, J. R., Boyd, J. M., & Bowers, C. J. (2016). Sports Nutrition Knowledge among Mid-Major Division I University Student-Athletes. *Journal of nutrition and metabolism*, 2016(1), 3172460.
- 3) Burke, L. M., Hawley, J. A., Wong, S. H., & Jeukendrup, A. E. (2011). Carbohydrates for training and competition. *Journal of Sports Sciences*, 29(sup1), S17-S27.

- 4) Folasire, O. F., Akomolafe, A. A., & Sanusi, R. A. (2015). Does nutrition knowledge and practice of athletes translate to enhanced athletic performance? Cross-sectional study amongst Nigerian undergraduate athletes. *Global journal of health science*, 7(5), 215.
- 5) Gulleyan, S., Lemieux, C., Margut, M., Werlau, E., McAllister-Deitrick, J., & Singleton, K. M. (2025). Sports nutrition knowledge as a predictor of food choices in NCAA Division I athletes. *Journal of the International Society of Sports Nutrition*, 22(sup2), 2550165.
- 6) Heaney, S., O'Connor, H., Naughton, G., & Gifford, J. (2008). Towards an understanding of the barriers to good nutrition for elite athletes. *International Journal of Sports Science & Coaching*, 3(3), 391-401.
- 7) Hopper, C., Mooney, E., & Mc Cloat, A. (2025). Nutritional intake and dietary knowledge of athletes: a scoping review. *Nutrients*, 17(2), 207.
- 8) Janiczak, A., Devlin, B. L., Forsyth, A., & Trakman, G. L. (2022). A systematic review update of athletes' nutrition knowledge and association with dietary intake. *British Journal of Nutrition*, 128(6), 1156-1169.
- 9) Jayawardena, R., Weerasinghe, K., Trakman, G., Madhujith, T., Hills, A. P., & Kalupahana, N. S. (2023). Sports nutrition knowledge questionnaires developed for the athletic population: A systematic review. *Current Nutrition Reports*, 12(4), 767-777.
- 10) Klein, D. J., Eck, K. M., Walker, A. J., Pellegrino, J. K., & Freidenreich, D. J. (2021). Assessment of sport nutrition knowledge, dietary practices, and sources of nutrition information in NCAA Division III collegiate athletes. *Nutrients*, 13(9), 2962.
- 11) Martin-Rodriguez, A., Belinchon-deMiguel, P., Rubio-Zarapuz, A., Tornero-Aguilera, J. F., Martinez-Guardado, I., Villanueva-Tobaldo, C. V., & Clemente-Suarez, V. J. (2024). Advances in understanding the interplay between dietary practices, body composition, and sports performance in athletes. *Nutrients*, 16(4), 571.
- 12) Maughan, R. (2002). The athlete's diet: nutritional goals and dietary strategies. *Proceedings of the Nutrition Society*, 61(1), 87-96.
- 13) Mountjoy, M., Ackerman, K. E., Bailey, D. M., Burke, L. M., Constantini, N., Hackney, A. C., ... & Erdener, U. (2023). 2023 International Olympic Committee's (IOC) consensus statement on relative energy deficiency in sport (REDs). *British journal of sports medicine*, 57(17), 1073-1098.
- 14) Nor Azizam, N. S., Yusof, S. N., Amon, J. J., Ahmad, A., Safii, N. S., & Jamil, N. A. (2022). Sports nutrition and food knowledge among Malaysian university athletes. *Nutrients*, 14(3), 572.
- 15) Rash, C. L., Malinauskas, B. M., Duffrin, M. W., Barber-Heidal, K., & Overton, R. F. (2008). Nutrition-related knowledge, attitude, and dietary intake of college track athletes. *Sport Journal*, 11(1).
- 16) Sannan, N., Younes, H., & El Helou, N. (2026). The effects of a nutrition education program on nutritional knowledge, eating habits, and performance of military athletes from Lebanon. *Journal of the International Society of Sports Nutrition*, 23(1), 2691213.
- 17) Sekulic, D., Tahiraj, E., Maric, D., Olujic, D., Bianco, A., & Zaletel, P. (2019). What drives athletes toward dietary supplement use: objective knowledge or self-perceived competence? Cross-sectional analysis of professional team-sport players from Southeastern Europe during the competitive season. *Journal of the International Society of Sports Nutrition*, 16(1), 25.

- 18) Serhan, M. H., Yakan, M., & Serhan, C. (2023). Sports nutrition knowledge translates to enhanced athletic performance: a cross-sectional study among Lebanese university athletes. *Nutrition & Food Science*, 53(6), 946-958.
- 19) Tam, R., Beck, K. L., Manore, M. M., Gifford, J., Flood, V. M., & O'Connor, H. (2019). Effectiveness of Education Interventions Designed to Improve Nutrition Knowledge in Athletes: A Systematic Review: R. Tam *et al. Sports Medicine*, 49(11), 1769-1786.
- 20) Thomas, D. T., Erdman, K. A., & Burke, L. M. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: nutrition and athletic performance. *Journal of the Academy of Nutrition and Dietetics*, 116(3), 501-528.
- 21) Trakman, G. L., Forsyth, A., Devlin, B. L., & Belski, R. (2016). A systematic review of athletes' and coaches' nutrition knowledge and reflections on the quality of current nutrition knowledge measures. *Nutrients*, 8(9), 570.
- 22) Wilson, H., & Cervantes, C. (2023). A Comparison Between an NAIA and an NCAA Division I Women's Soccer Team's Nutrition Knowledge, Nutrition Knowledge Sources, and Dietary Habits (HWCC). *Journal of Exercise and Nutrition*, 6(1).

