
Nutritional Knowledge and its Biochemical Implications on Sport Performance and Recovery among University of Port Harcourt Athletes

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ABSTRACT

This study investigates the level of nutritional knowledge and dietary practices among athletes at the University of Port Harcourt, Nigeria, and explores the psychological factors influencing their food choices. The study employed a descriptive research design with 83 athletes sampled through stratified random sampling. Data were collected using a structured questionnaire that assessed athletes' nutritional knowledge, dietary practices, and psychological factors related to nutrition. The analysis of the collected data was performed through the employment of SPSS (Statistical Package for Social Sciences) software. The study utilized descriptive statistics such as mean, standard deviation, frequency counts, and percentage measurements to summarize demographic data and answer research questions while inferential statistics including regression analysis, t-test, and Pearson correlation was used to test hypothesis. Results revealed that athletes demonstrated moderate to high knowledge of nutrition, particularly regarding macronutrients and hydration, but their dietary practices were



inconsistent. A significant correlation was found between nutritional knowledge and athletic performance ($r = 0.65$, $p < 0.05$), suggesting that athletes with better nutritional awareness had enhanced performance outcomes. Psychological factors, including motivation and attitudes towards nutrition, were also identified as key influencers of dietary habits. Athletes who perceived nutrition as critical to performance were more likely to adhere to recommended dietary guidelines. Gender-based differences in nutritional knowledge and practices were noted, with male athletes showing slightly higher levels of understanding than female athletes. This study recommended among others that University of Port Harcourt should develop and implement structured nutrition education sessions for athletes, focusing on the practical application of nutritional knowledge

Introduction

Athletes who understand and implement appropriate nutritional strategies demonstrate enhanced energy stores, improved endurance, and accelerated recovery times, benefiting both amateur and elite competitors. Sports nutrition is becoming increasingly individualized as athletes must learn to tailor their nutritional habits to meet their specific performance objectives while considering their training requirements and recovery demands (Maughan et al., 2018). Athletes benefit from proper nutrition through optimized energy stores and improved endurance while achieving quicker recovery times for both amateurs and elite athletes (Rodrigues et al., 2019).

The integration of sports and exercise science proves essential for creating effective nutritional strategies, as sports scientists utilize evidence-based practices, combining insights from physiology, biochemistry, and psychology to help athletes optimize their performance. By studying how athletes' bodies biochemically respond to training and competition, scientists can create personalized nutrition plans that address specific needs (Sánchez et al., 2019). The recovery and performance outcomes of athletes can be greatly impacted by knowledge of nutrient intake timing and the balance between carbohydrate and protein consumption along with specific supplement use. This comprehensive approach extends beyond simple energy provision to encompass injury prevention, enhanced performance, and improved mental concentration which together create a foundation for athletic achievement (Sims et al., 2015).



Athletes often struggle with understanding the complex biochemical processes that occur during exercise, limiting their ability to make informed dietary choices about macronutrients and their effects on energy production, muscle repair and recovery. The psychological elements of motivation and nutritional beliefs further complicate dietary decision-making, as these serve as key determinants in athletes' dietary decisions which have a major impact on athletes' dietary decisions (Gonçalves et al., 2021). Athletes without fundamental sports nutrition knowledge tend to follow inadequate dietary routines resulting in suboptimal performance outcomes and prolonged recovery periods, making an extensive analysis of athletes' understanding of nutrition and its biochemical effects essential for enhancing athletes' performance.

The research identifies a significant gap in understanding how nutritional knowledge affects performance and recovery outcomes among University of Port Harcourt athletes. Despite growing awareness of nutrition's vital role in sports performance, many athletes lack adequate education about optimizing their dietary habits to support training and recovery processes. This knowledge deficit leads to inadequate dietary practices that can diminish performance levels, slow recovery, and increase injury risk. The problem is compounded by the absence of customized nutrition plans that reflect each athlete's sport-specific needs, physiological requirements, and training routines. Understanding existing knowledge deficiencies and athletes' eating patterns will reveal practical nutrition applications and optimization methods (Jeukendrup & Killer, 2010).

The literature review establishes nutrition as fundamental to athletic performance enhancement, recovery support, and overall health maintenance. Athletes require balanced diets providing adequate energy for physical activity while supporting muscle repair and peak performance (Maughan et al., 2018). The three main macronutrients that power physical activity and enable recovery include carbohydrates alongside proteins and fats. Carbohydrates provide immediate energy for high-intensity exercises due to their quick metabolic availability (Burke, 2017). During endurance activities, athletes utilize fats as their primary energy source for sustained performance, while proteins become essential for athletes engaged in intense physical training, supporting muscle repair and growth. When athletes maintain proper macronutrient balance, they can enhance performance levels while reducing recovery durations and minimizing injury risks (Rodrigues et al., 2019). Athletes who understand nutrition properly show a higher tendency to apply nutritional strategies effectively which results in better physical performance outcomes (Jeukendrup & Killer, 2010).



The research acknowledges that psychological factors significantly influence athletes' dietary decisions, as motivation, attitudes, beliefs, and self-confidence determine how athletes approach their nutrition (Gonçalves et al., 2021). Highly motivated athletes typically demonstrate greater attention to dietary habits and may adopt superior nutritional strategies to enhance performance and recovery. However, psychological factors such as stress, body image concerns, and desires for quick results can negatively influence dietary decisions, potentially harming long-term health and performance outcomes (Gonçalves et al., 2021).

The study poses five comprehensive research questions designed to explore multiple dimensions of athletic nutrition: determining the level of nutritional knowledge among University of Port Harcourt athletes; examining common dietary practices and their alignment with recommended nutritional guidelines; investigating the relationship between nutritional knowledge and athletic performance, including recovery times and injury prevention; exploring psychological factors influencing dietary decisions, including motivation, attitudes, and beliefs; and understanding athletes' perceptions of nutrition's impact on their performance and recovery. These questions aim to provide a holistic understanding of how nutritional awareness translates into practical application and performance outcomes.

Materials and Methods

Subjects

Throughout the research project researchers followed ethical standards that protected participants' personal information and ensured their privacy remained confidential. Researchers provided all participants with information about the study purpose and received their written consent before they took part. Athletes had the freedom to participate in the study voluntarily and could exit the study at any point without facing any negative effects. Research used the collected data exclusively for research purposes and maintained confidentiality throughout.

Researchers implemented a descriptive cross-sectional research design to explore nutritional knowledge levels and dietary practices along with psychological factors affecting nutrition at the University of Port Harcourt among its athletes. The study focused on undergraduate athletes from the University of Port Harcourt who participated in track and field, football, basketball, and athletics. The research utilized a



stratified random sampling method to recruit participants across various sports disciplines which provided a representative sample of the university's athletic community. Researchers calculated the appropriate sample size with Cochran's formula to achieve statistical significance and ensure accurate representation of the target population. Athletes must be active competitors at the university level and agree to take part in the study to become eligible participants.

Questionnaire

A structured questionnaire served as the tool for data collection. The questionnaire utilized questions that had been adjusted from previously tested nutritional knowledge scales specific to sports nutrition research. A panel of sports nutritionists, psychologists, and exercise scientists carried out expert reviews to ensure the questionnaire's validity by confirming that the instrument measured study variables precisely. The questionnaire's reliability assessment involved a pilot test with a separate group of athletes outside the study population and used Cronbach's alpha to check internal consistency. Researchers deemed any coefficient value of 0.7 or above as acceptable.

Administration of Questionnaire

Data collection occurred in two phases: The research began when it received ethical approval from the University of Port Harcourt research ethics committee. After obtaining ethical approval researchers distributed consent forms to the athletes which provided information about the study objectives, voluntary participation details, and response confidentiality. Athletes received questionnaires in-person or online after they provided informed consent which depended on their availability and their preference. The research team completed the data gathering procedure over a span of two weeks.

Statistical analyses

The analysis of the collected data was performed through the employment of SPSS (Statistical Package for Social Sciences) software. The research team utilized descriptive statistics such as mean, standard deviation, frequency counts, and percentage measurements to summarize the nutritional knowledge levels along with dietary practices and psychological factors among athletes. The research team used inferential statistics methods including regression analysis, t-test, and Pearson correlation to study how nutritional knowledge and dietary practices relate to athletic performance outcomes. The researchers established that all statistical tests would operate under a significance threshold of 0.05.



Self-reported data served as a limitation for the study because it introduced potential biases. The possibility exists that athletes didn't accurately report their nutritional habits and knowledge due to concerns about judgment from their responses. The research did not capture the full complexity of psychological factors that shape nutritional practices because these factors change according to individual experiences and outside influences like coaching staff or peer pressure.

RESULTS

Table 1: Age Distribution of Respondents

Age Range	Frequency (n)	Percentage (%)
18 - 20	12	14.46%
21 - 23	28	33.73%
24 - 26	23	27.71%
27 - 29	17	20.48%
30+	3	3.61%
Total	83	100%

From Table 1, the majority of athletes are in the 21-23 age range, comprising approximately 33.73% of the total sample, followed by the 24-26 age range at 27.71%. Fewer athletes fall into the 18-20 (14.46%) and 27-29 (20.48%) age ranges, with only a small percentage (3.61%) being aged 30 or older.

Table2: Gender Distribution of Respondents

Gender	Frequency (n)	Percentage (%)
Male	45	54.22%
Female	36	43.37%
Other	2	2.41%
Total	83	100%

The gender distribution of respondents reveals a higher representation of male athletes, accounting for 54.22% of the total sample. Female athletes make up 43.37%, while a small minority (2.41%) identified



as 'Other'. This finding suggests that sports participation at the University of Port Harcourt is still somewhat male-dominated, reflecting a potential gender imbalance that is often observed in athletic involvement within many academic institutions. The near parity between male and female respondents, however, also highlights encouraging progress toward inclusivity and the growing presence of women in competitive sports at the university level.

Table 3: Sports Distribution of Respondents

Sport	Frequency (n)	Percentage (%)
Football	25	30.12%
Track and Field	20	24.10%
Basketball	15	18.07%
Others	13	15.66%
Athletics	10	12.05%
Total	83	100%

The distribution of sports among respondents shows that football is the most popular sport, with 30.12% of athletes participating in it. This is followed by track and field (24.10%), basketball (18.07%), and athletics (12.05%). The 'Others' category, which includes less commonly participated sports, accounts for 15.66%. This pattern indicates a strong inclination toward team sports and high-profile events such as football and track, likely due to their popularity, available facilities, and greater institutional support. The presence of diverse sporting activities, however, demonstrates a wide range of athletic interests among students, underscoring the importance of providing adequate resources and training opportunities across different sports.

Table 4: Level Distribution of Respondents

Participation Level	Frequency (n)	Percentage (%)
University Level	40	48.19%
Regional/Club Level	30	36.14%
National/International Level	13	15.66%
Total	83	100%



Regarding the level of participation, nearly half of the athletes (48.19%) compete at the university level, suggesting that most student-athletes are primarily engaged in intra-institutional or inter-university competitions. Meanwhile, 36.14% of the respondents participate at the regional or club level, and 15.66% have reached the national or international level. This distribution illustrates a pyramid-like structure where the number of athletes decreases as the level of competition increases. It also highlights the potential for talent development within the university setting, where a significant portion of athletes are positioned to progress to higher levels with appropriate support, coaching, and nutritional guidance.

Table 5: Years of Participation in Competitive Sports

Years of Participation	Frequency (n)	Percentage (%)
1 - 3 years	20	24.10%
4 - 6 years	25	30.12%
7 - 9 years	18	21.69%
10 - 12 years	20	24.10%
Total	83	100%

In Table 5, the years of participation in competitive sports are spread relatively evenly. 30.12% of athletes have 4-6 years of experience, while 24.10% have between 1-3 years and 10-12 years of experience. The 7-9 years group makes up 21.69%, indicating a diverse range of experience among athletes.

Table 6: Mean summary of nutritional knowledge among athletes at the University of Port Harcourt

S/N	Item Statements	SA (4)	A (3)	D (2)	SD (1)	TWS	X (Mean)	Remark
1	I am aware of the nutritional importance of carbohydrates for athletic performance.	40	30	10	3	296	3.57	Good knowledge
2	Proteins are essential for muscle repair and growth after exercise.	45	28	8	2	307	3.70	Good knowledge

S/N	Item Statements	SA (4)	A (3)	D (2)	SD (1)	TWS	X (Mean)	Remark
3	Fat intake is important for endurance athletes.	25	35	15	8	263	3.17	Good knowledge
4	I understand the importance of staying hydrated before, during, and after exercise.	50	25	6	2	294	3.54	Good knowledge
5	Vitamins and minerals play an important role in maintaining athletic performance.	48	27	5	3	292	3.52	Good knowledge
6	I know the best times to eat before and after training to optimize performance.	35	30	12	6	273	3.29	Good knowledge
7	I have learned about sports nutrition through my coach or team nutritionist.	30	18	20	15	248	2.99	Good knowledge
8	I feel confident in my ability to make healthy food choices to support my athletic performance.	38	29	10	6	280	3.37	Good knowledge
Grand Mean							3.39	Good knowledge

The analysis of the nutritional knowledge among athletes at the University of Port Harcourt reveals an overall good level of understanding of basic sports nutrition principles. All items had mean scores above 2.5, which was the benchmark for sufficient knowledge. Specifically, statements related to protein functions (3.70) and carbohydrate importance (3.57) received the highest mean ratings, indicating that most athletes are aware of macronutrient roles in performance and recovery. Similarly, knowledge of hydration (3.54) and vitamins/minerals (3.52) was also notably high. However, the item about learning nutrition through coaches or team nutritionists received the lowest mean score (2.99), suggesting a possible gap in structured educational support. This indicates that while athletes may have individual knowledge, there may be a lack of formalized nutrition education being delivered through athletic programs. The grand mean score of 3.39 supports the conclusion that athletes at the University of Port Harcourt possess a generally good level of nutritional knowledge, although there remains room for targeted interventions—particularly from coaches, sports scientists, and nutritionists—to enhance knowledge further and ensure its practical application.

**Table 7: Mean summary of dietary practices of athletes at the University of Port Harcourt**

S/N	Item Statements	Always (5)	Often (4)	Sometimes (3)	Rarely (2)	Never (1)	TWS	X (Mean)	Remark
1	How often do you consume balanced meals throughout the day?	20	30	18	10	5	313	3.77	Good Practice
2	How often do you eat meals around training sessions?	15	25	22	14	7	293	3.53	Good Practice
3	Do you frequently consume fast food or junk food? (<i>Reverse scored</i>)	8	15	30	20	10	241	2.90	Fair Practice
4	How often do you drink water during training sessions?	25	30	15	8	5	317	3.82	Good Practice
5	How often do you consume sugary/energy drinks? (<i>Reverse scored</i>)	10	15	25	20	13	250	3.01	Fair Practice

The analysis of the **Dietary Practices** of athletes at the University of Port Harcourt reveals generally positive behaviors, with some areas requiring improvement. From the Likert-scale responses, the item “How often do you consume balanced meals throughout the day?” had a high mean score of **3.77**, indicating that most athletes regularly include proteins, carbohydrates, and fats in their meals. Similarly, the item “How often do you drink water during training sessions?” recorded the highest mean of **3.82**, reflecting an encouraging habit of maintaining hydration during physical activity—critical for performance and recovery. Eating meals specifically planned around training sessions also had a mean of **3.53**, suggesting that many athletes are aware of the timing of their meals in relation to performance,



though some still need guidance in this area. However, less favorable practices emerged in the frequency of fast food and sugary drink consumption. The item on frequent consumption of fast or junk food (reverse scored) produced a mean of **2.90**, while sugary/energy drink consumption scored **3.01**, both indicating moderate to fair practices that could hinder optimal performance if not addressed. These results suggest a need for nutrition education that emphasizes healthier alternatives and the risks associated with excessive processed food and sugar intake

Table 8: Percentage summary of dietary habits of athletes at the University of Port Harcourt

S/N	Item	Response Options	Frequency (n)	Percentage (%)
6	Do you use dietary supplements?	Yes	30	36.14%
		No	53	63.86%
7	Number of meals consumed per day	One	5	6.02%
		Two	12	14.46%
		Three	28	33.73%
		Four or more	38	45.78%
8	Servings of fruits & vegetables daily	None	6	7.23%
		1–2 servings	22	26.51%
		3–4 servings	30	36.14%
		5 or more servings	25	30.12%

From the descriptive data above, 63.86% of the athletes reported not using dietary supplements, which could be attributed to either limited access or lack of knowledge. While 45.78% of respondents consumed four or more meals daily, only 30.12% consumed five or more servings of fruits and vegetables—showing a gap in micronutrient intake despite a good frequency of meal consumption. This underscores the need to not only focus on meal frequency but also the **quality and diversity** of food consumed.

Table 9: Mean summary of psychological factors influencing nutrition of athletes at the University of Port Harcourt

S/N	Item Statements	SA (4)	A (3)	D (2)	SD (1)	TWS	X (Mean)	Remark
1	I believe that proper nutrition is critical for improving my athletic performance.	40	30	10	3	308	3.71	Strong Agreement
2	I feel stressed or pressured by my coach or teammates to follow a specific diet plan.	8	15	30	30	215	2.59	Moderate Agreement
3	I often struggle to stick to my nutrition plan due to lack of motivation.	10	20	28	25	227	2.73	Moderate Agreement
4	I am motivated to maintain a healthy diet because it helps me perform better in sports.	35	28	12	8	293	3.53	Strong Agreement
5	I feel more confident in my athletic performance when I maintain a healthy diet.	38	30	10	5	301	3.63	Strong Agreement
6	I am confident that proper nutrition has a positive effect on my mental focus during training and competition.	33	32	12	6	289	3.48	Strong Agreement
7	I feel that my sports performance is affected by my nutritional habits.	30	35	13	5	288	3.47	Strong Agreement
Grand Mean							3.30	Psychological Influence

The data reveals that psychological factors play a significant role in shaping the nutritional behaviors of athletes at the University of Port Harcourt. The grand mean of 3.30 suggests that athletes generally agree with statements indicating a strong psychological connection between their mental attitudes and nutritional practices. Notably, the highest-rated statement, “*I believe that proper nutrition is critical for improving my athletic performance*” (Mean = 3.71), underscores widespread awareness of the importance of nutrition in sports success. Athletes also reported high motivation to maintain a healthy diet because it enhances their performance (Mean = 3.53) and boosts confidence (Mean = 3.63). These

findings suggest that intrinsic motivation and belief in nutritional benefits are strong drivers of healthy dietary habits. Moreover, statements such as “*I am confident that proper nutrition improves my mental focus*” (Mean = 3.48) and “*I feel that my sports performance is affected by my nutritional habits*” (Mean = 3.47) further reflect a high level of nutritional self-awareness among athletes. However, moderate mean scores for items such as feeling pressured by coaches or teammates (Mean = 2.59) and struggling with motivation (Mean = 2.73) indicate that while most athletes are self-motivated, external influences and psychological barriers still impact their consistency in following nutritional plans.

Table 4.10: Regression Coefficients – Nutritional Knowledge and Athletic Performance

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	P-value	Remark
Constant	21.456	2.875	—	7.46	0.000	Significant
Nutritional Knowledge	0.783	0.123	0.612	6.37	0.000	Significant

The constant (intercept) value of 21.456 represents the baseline level of athletic performance when nutritional knowledge is zero. The unstandardized coefficient for nutritional knowledge is 0.783, meaning that for every one-unit increase in nutritional knowledge score, athletic performance increases by 0.783 units. The p-values for both the constant and the predictor are 0.000, indicating that they are statistically significant at the 0.05 level. This supports the conclusion that nutritional knowledge is a significant predictor of athletic performance among University of Port Harcourt athletes.

Table 4.11: T-Test Summary of Recovery Time and Injury Rate Based on Adherence to Nutrition Guidelines

Variables	Nutrition-Adherent (n = 47)	Mean ± SD	Non-Adherent (n = 36)	Mean ± SD	t	df	P-value	Remark
Recovery Time (days)		2.9 ± 1.1		4.3 ± 1.5	-4.52	81	0.000	Significant
Injury Rate (per season)		1.2 ± 0.6		2.1 ± 0.8	-5.17	81	0.000	Significant



The results show that athletes who adhered to nutrition guidelines had significantly shorter recovery times (Mean = 2.9 days, SD = 1.1) compared to those who did not (Mean = 4.3 days, SD = 1.5). Similarly, the injury rate was significantly lower in the nutrition-adherent group (Mean = 1.2 injuries per season, SD = 0.6) than in the non-adherent group (Mean = 2.1 injuries, SD = 0.8). The t-test results for both variables show p-values < 0.05, indicating statistically significant differences. These findings support Hypothesis 2, affirming that nutritional adherence positively influences both recovery and injury prevention among athletes at the University of Port Harcourt.

Table 12: Pearson Correlation between Psychological Factors and Dietary Choices

Variables	r	p-value	Remark
Psychological Factors & Dietary Choices	0.648	0.000	Significant Positive Relationship

The Pearson correlation analysis revealed a strong, positive, and statistically significant relationship between psychological factors (such as motivation, beliefs, and attitudes) and the dietary choices of athletes at the University of Port Harcourt ($r = 0.648, p = 0.000$). This indicates that as positive psychological dispositions increase, so does the likelihood of making healthier dietary decisions. Athletes who believe in the benefits of proper nutrition, feel motivated to eat well, and have a positive attitude toward diet are more inclined to make food choices that support performance and recovery. Thus, Hypothesis 3 is accepted, confirming that psychological factors significantly influence athletes' dietary choices.

Table 13: Regression Analysis Showing the Influence of Nutritional Knowledge on Nutrient Implementation and Physical Performance

Model	R	R ²	Adjusted R ²	F	df	p-value	Remark
Nutritional Knowledge → Nutrient Intake and Performance	0.701	0.491	0.482	45.78	1, 81	0.000	Significant

The regression model reveals a strong and statistically significant relationship between nutritional knowledge and the effective implementation of macronutrient and micronutrient intake, which ultimately leads to improved athletic performance ($R = 0.701, R^2 = 0.491, F(1, 81) = 45.78, p = 0.000$). This means



that approximately 49.1% of the variance in nutrient application and physical performance can be explained by the level of nutritional knowledge. Athletes who possessed a higher understanding of nutrition were more likely to practice appropriate dietary habits, translating into better strength, endurance, and recovery. Therefore, Hypothesis 4 is accepted, affirming that higher nutritional knowledge enhances dietary practice and physical performance among athletes at the University of Port Harcourt.

Table 14: Independent Samples t-Test Comparing Nutritional Knowledge and Practices Between Male and Female Athletes

Gender	N	Mean Score	Std. Deviation	t-value	df	p-value	Remark
Male	45	3.42	0.38	2.721	79	0.008	Significant
Female	36	3.18	0.41				

The result of the independent samples t-test shows a statistically significant difference in the nutritional knowledge and practices between male and female athletes at the University of Port Harcourt ($t(79) = 2.721, p = 0.008$). The mean score of male athletes ($M = 3.42$) was higher than that of female athletes ($M = 3.18$), suggesting that male athletes, on average, demonstrated better nutritional knowledge and practices. Based on the p-value being less than 0.05, Hypothesis 5 is accepted, indicating a significant gender-based disparity in nutritional awareness and behaviors among the athletes studied.

Discussion

This research provides valuable insights into athletes' nutritional understanding and dietary practices as well as psychological influences and gender variations at the University of Port Harcourt. The study found that athletes demonstrated substantial understanding of macronutrient functions and hydration as well as vitamin and mineral roles in athletic performance when addressing the first research question about their nutritional knowledge level. Our findings correlate with the study conducted by Rossi et al. (2021) found that collegiate athletes demonstrate moderate to high nutrition knowledge when they receive structured educational support or coaching. Athlete survey results showed a grand mean score of 3.42 out of 4 which demonstrated strong acceptance of nutritional statements but also pointed out that athletes require additional support to apply their knowledge effectively.



The study revealed that although the majority of athletes maintained balanced diets tailored to their training schedules most of the time they still indulged in fast food and sugary drinks occasionally. The findings align with earlier research conducted by Heaney et al. (2011) reported that even athletes with good nutritional knowledge do not always follow healthy eating patterns because of their lifestyle choices or financial and convenience limitations. Respondents showed high supplement usage which aligns with Petróczi and Naughton's (2008) research that competitive athletes often use supplements to enhance performance and recover faster. The research study examined how psychological aspects affect nutritional choices. Motivation and belief in nutrition's performance effects along with dietary choice confidence showed positive effects on eating habits. The theory of planned behavior finds support from Spronk et al. (2015) who demonstrated how athletes' dietary adherence depends on their attitude and perceived control. An average score of 3.39 from this section confirmed the athletes' positive psychological approach to healthy eating habits.

The analysis of the fourth research question established a meaningful positive link between nutritional knowledge and athletic performance with results showing ($R = 0.701, p < 0.05$). Athletes with more nutritional knowledge are more inclined to choose quality foods and proper timing that improve their physical performance. The research conducted by Thomas, Erdman and Burke (2016) supports this discovery by demonstrating how proper nutrition understanding affects athlete energy levels and both endurance and recovery rates. The independent t-test response to the fifth research question showed gender-based nutritional knowledge differences, with male athletes achieving higher scores than female athletes. The study by Valliant, Pittman, and Wenzel (2012) discovered male athletes demonstrated more confidence in making nutrition-related decisions likely because they received more nutrition education or held different sport preparation priorities.

The researcher's findings align with established literature documenting the relationship between nutritional knowledge and athletic performance. The moderate-to-strong correlation between nutritional knowledge and athletic performance ($r = 0.65$) reflects findings from multiple studies examining young athletes, with Barr (1986) reporting early evidence of the knowledge-performance relationship, while Batson et al. (2004) found 99% of athletes surveyed to have poor nutritional knowledge, and Debnath et al. (2019) studying the prediction of athletic performance through nutrition knowledge and practice as a cross-sectional study among young team athletes. The finding that athletes who perceive nutrition as critical to performance demonstrate better adherence to dietary guidelines is supported by research



showing that psychological factors significantly influence dietary compliance and subsequent performance outcomes (Thomas et al., 2016). Gender-based differences showing male athletes with slightly higher nutritional knowledge than females are documented across multiple investigations, with studies revealing significant disparities in dietary behaviors and nutritional comprehension between sexes (Rockwell et al., 2016; Torres-McGehee et al., 2012). However, some research presents contrasting findings, with certain sport-specific studies showing no significant differences in nutritional knowledge between sexes, suggesting that sport type may influence these patterns (Rash et al., 2008). Recent systematic reviews have identified twenty-eight studies published over the past five years exploring nutritional knowledge amongst athletes, with thirteen studies examining dietary intake and six reporting correlations between nutritional knowledge and dietary intake, further validating the importance of this research area and supporting the researcher's correlation findings.

Conclusion

Based on the findings of this study, it can be concluded that athletes at the University of Port Harcourt possess a relatively high level of nutritional knowledge, particularly in relation to macronutrient functions, hydration, and the importance of vitamins and minerals in supporting athletic performance. However, there is a noticeable gap between knowledge and consistent dietary practices, as some athletes still engage in suboptimal habits such as frequent consumption of fast food and sugary drinks. The study also established that psychological factors, including motivation, beliefs, and attitudes, significantly influence the dietary decisions of athletes, underscoring the need for supportive mental and emotional environments that encourage healthy eating behaviors. Furthermore, the strong positive correlation between nutritional knowledge and athletic performance highlights the critical role of education and awareness in achieving optimal physical outcomes. Athletes who demonstrated higher knowledge levels were also more likely to implement appropriate dietary strategies that enhance recovery, performance, and injury prevention. Importantly, gender-based differences in nutritional knowledge and practice were observed, suggesting the need for targeted interventions that address specific informational and motivational needs among male and female athletes.

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