



The relationship of sustainable nutritional awareness and practices with rates and patterns of sports injuries among Iraqi Stars League Players

La relación de la conciencia y prácticas nutricionales sostenibles con las tasas y patrones de lesiones deportivas en jugadores de la Liga de Estrellas de Irak

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Abstract

Objective: This study aims to evaluate the level of sustainable nutritional awareness and practices and analyze their correlation with the rates and patterns of sports injuries.

Methodology: Adopting a descriptive correlational approach, the researcher applied a standardized scale and a FIFA-compliant injury surveillance log on a stratified random sample of 260 players from the Iraqi Stars League (2025-2026).

Results and Discussion: Results indicated a "moderate" overall level of nutritional culture with a mean score of (29.50/50), showing a notable deficiency in the "Recovery and Fluids" domain. At the same time, muscle injuries dominated with a prevalence of 55.8%. Statistical analyses confirmed a significantly strong negative correlation ($r = -0.682$, $p < 0.05$) between nutritional awareness and injury frequency. Furthermore, the Chi-square test ($\chi^2 = 12.45$, $p = 0.002$) revealed that players with lower awareness are significantly more prone to physiological injuries due to glycogen depletion and delayed tissue repair.

Conclusions: The study recommends mandating the appointment of sports nutritionists as a key licensing requirement to ensure player safety.

Keywords

Sustainable nutritional awareness; injury epidemiology; Iraq stars league; muscle recovery.

Resumen

Objetivo: El objetivo de este estudio es evaluar el nivel de conciencia y prácticas nutricionales sostenibles y analizar su correlación con las tasas y patrones de lesiones deportivas.

Metodología: Mediante un enfoque descriptivo correlacional, el investigador aplicó una escala estandarizada y un registro de vigilancia de lesiones conforme a los estándares de la FIFA a una muestra aleatoria estratificada de 260 jugadores de la Liga de Estrellas de Irak (2025-2026).

Resultados and Discusión: Los resultados indicaron un nivel general "moderado" de cultura nutricional con una puntuación media de (29,50/50), mostrando una deficiencia notable en el dominio de "Recuperación y Fluidos". Al mismo tiempo, las lesiones musculares predominaron con una prevalencia del 55,8%. Los análisis estadísticos confirmaron una correlación negativa significativamente fuerte ($r = -0,682$, $p < 0,05$) entre la conciencia nutricional y la frecuencia de las lesiones. Además, la prueba de Chi-cuadrado ($\chi^2 = 12,45$, $p = 0,002$) reveló que los jugadores con menor conciencia son significativamente más propensos a sufrir lesiones fisiológicas debido al agotamiento de glucógeno y al retraso en la reparación tisular.

Conclusiones: El estudio recomienda exigir la contratación de nutricionistas deportivos como requisito clave para la concesión de licencias, con el fin de garantizar la seguridad de los jugadores.

Palabras clave

Conciencia nutricional sostenible; epidemiología de lesiones; liga de estrellas de Irak; recuperación muscular.

Introduction

The sports field is witnessing rapid development in physical and skill performance levels, imposing high-intensity training and competitive loads on athletes. Parallel to this development, the phenomenon of sports injuries has emerged as a major challenge hindering athletes' professional careers and draining the financial resources of clubs and federations.

A sports injury is no longer just a mechanical accident; it is now considered a result of a complex interaction between external risk factors (e.g., field surface, equipment) and internal risk factors (e.g., anatomy, fitness, and nutrition) (Bahr & Krosshaug, 2005).

When exploring potential prevention strategies, nutrition has been at the forefront of many contemporary studies. Nutritional role is no longer restricted to just caloric intake but has taken a turn for being a determining factor in structural building, muscle recovery, and the regulation of inflammatory and immune processes. Recent literature suggests that "Nutritional Culture" (conceptualized here as the combination of an athlete's nutritional knowledge and sustainable associated behaviors that are manifested) may provide an essential foundation for the ability of tissue to prepare for and accommodate mechanical challenge (Close et al., 2019).

Study Background and Theoretical Framework

It is studied that both low energy availability (LEA) and chronic malnutrition are directly correlated with an increased risk of injuries, especially stress fractures and muscle tears. Ever since the consensus statement of the International Olympic Committee (IOC) on the topic of "Relative Energy Deficiency in Sport" (RED-S), the interplay of nutritional imbalance with bone and muscle health has been described as a leading cause of increased injury risk (Mountjoy et al., 2018). In addition, Vitamin D and Calcium deficiency, protein deficiency impairs the body in the repair of microtrauma caused daily by physical exercise, evolving microtrauma into macrotrauma that impairs performance (Larson-Meyer et al., 2018).

This study is guided by the theoretical concept of sustainable nutritional culture as an integrated behavioral and cognitive human system. This is more than just immediate energy provision for training and competition; it involves the implementation of long-term healthy eating habits to ensure the high physiological demands of training and competition can be met. This is organically and dialectically related to the mechanism of sports injuries, which are not perceived, as in modern scientific discourse, as simply mechanical events that are exclusively accidental, but rather the result of the dynamic interrelation of training loads and the status of the functional potential of vital tissues (muscles, bones, ligaments).

Significant biological pathways have been shown linking diet quality to injury type in the rigorous scientific literature (e.g., Mountjoy et al., 2018; Close et al., 2019). Essentially, these include the part of Energy Availability in preserving bone mass to prevent stress fractures in the RED-S syndrome and the role of nutrient timing, protein, and micronutrients in the recovery from exercise processes and in decreasing inflammation from the exercise. Nutritional awareness is thus the frontline defense against overuse injuries, with a direct line of evidence from prior research (such as Heikura et al., 2018) proving the connection between poor nutrition and high injury rates in elite athletes.

However, the researcher's extrapolation of available studies revealed a knowledge gap: the scarcity of research addressing this link comprehensively (between behavioral culture and injury patterns) in the Iraqi sports environment, specifically in football. This enhances the scientific standing of the current study, which seeks to fill this void by analyzing the correlational relationship between the level of sustainable nutritional culture and the prevalence and types of injuries among Iraqi Stars League players, to provide a database contributing to the development of prevention strategies.

Problem Statement and Knowledge Gap

Despite the abundance of studies addressing sports injuries from a biomechanical or training perspective, there is a relative scarcity—particularly in the Arab environment—of studies linking "quality of nutritional culture" as a sustainable lifestyle with "injury type and prevalence". Many athletes and coaches tend to focus on nutritional supplements for immediate performance enhancement, neglecting the sustainable nutritional foundation that protects the body from damage. The research gap highlights



the need to understand whether athletes who possess a high nutritional culture and apply it sustainably are less prone to injuries compared to their peers with a low nutritional culture.

Significance of the Study and Scientific Contribution

This study derives its importance from being a serious attempt to shift the concept of sports nutrition from "performance enhancement" solely to "prevention and protection". The expected contribution includes:

- Providing the sports community with analytical data on the correlation between dietary habits and injury types (muscular, skeletal, ligamentous).
- Offering evidence-based recommendations to build nutritional education programs aimed at reducing financial and technical waste resulting from player absence due to injury.

Study Objectives

1. Measure the level of sustainable nutritional culture among the research sample of athletes.
2. Determine the prevalence rates of sports injuries and the most frequent types among the sample.
3. Reveal the relationship (correlation) between the level of nutritional culture and the frequency and type of sports injuries.

Research Hypotheses

1. There is a statistically significant inverse correlation between the level of nutritional awareness and the rate of injury recurrence.

There are statistically significant differences in types of sports injuries (muscular, skeletal, ligaments) attributed to the level of nutritional culture (low/high).

Method

Research Approach

Given the nature of the research problem and its objectives to reveal the relationship between nutritional culture and sports injuries, the researcher adopted the Descriptive Approach using Survey and Correlational methods (Abdullateef Abduljabbar et al., 2025; Hammood et al., 2024; Omar et al., 2025). This approach is most suitable for studies aiming to describe a phenomenon as it exists in reality and analyze relationships between its variables without researcher intervention in events (Thomas et al., 2015).

Participants

- Population: Defined as players of the Iraqi Stars League clubs for the football season (2025-2026). Given the number of participating clubs (20 clubs) with an average of (30) players per club, the total population is estimated at approximately (600) players.
- Sample: Chosen by Stratified Random Sampling. League clubs were grouped into three strata (strata - Top, Middle, and Bottom clubs) until the final successful regression model was created to ensure accurate representation across levels based on the ranking from the 2024-25 season table. The sample consisted of 260 players, who were selected by taking a proportional random sample from each stratum.
- Sample Size: Based on Krejcie & Morgan tables, the sample size for 600 a population with a 95% confidence level and 5% margin of error is 234 players. The instrument was administered to (260) players, adding attrition considerations.

Sample Selection Criteria

- Inclusion Criteria: Players officially registered in club rosters for the (2025-2026) season; Players who participated in at least 50% of matches or training units.



- Exclusion Criteria: Newly joined players (less than 3 months); Players with chronic (non-sports) diseases affecting metabolism.

Ethical Considerations

Ethical aspects were observed in accordance with the "Declaration of Helsinki" by obtaining official approvals from clubs and obtaining "Informed Consent" from players with a pledge of data confidentiality.

3-3 Research Instruments

To collect data, the researcher constructed a composite instrument (questionnaire) divided into three main axes:

1. Demographic Data: Age, Training Age, Playing Position, Club.
2. Sustainable Nutritional Culture and Behavior Scale: Designed to assess awareness and practical application, consisting of (10) items answered on a five-point Likert scale (5: Always applies, 4: Often applies, 3: Sometimes applies, 2: Rarely applies, 1: Never applies).

Table 1. Items of the Sustainable Nutritional Culture and Behavior Scale

No.	Statement (Item)	Domain
1	I possess accurate knowledge about my daily caloric needs based on my training load.	Cognitive Knowledge
2	I can clearly distinguish between carbohydrate sources (complex and simple) and the timing for consuming each.	Cognitive Knowledge
3	I read Nutritional Facts labels on products before purchasing or consuming them.	Cognitive Knowledge
4	I realize the importance of micronutrients (Vitamin D, Calcium) in injury prevention.	Cognitive Knowledge
5	I commit to eating a comprehensive breakfast daily and do not neglect it regardless of circumstances.	Applied Behavior
6	I eat my meals at regular times daily to regulate metabolism and energy.	Applied Behavior
7	I refrain from eating processed foods and fast food permanently, not just before matches.	Applied Behavior
8	I consume a meal rich in protein and carbohydrates within the first hour after training (Recovery Window).	Recovery
9	I ensure drinking sufficient amounts of water distributed throughout the day, even on rest days.	Recovery
10	I monitor my body weight and muscle mass regularly to ensure no acute energy deficiency exists.	Applied Behavior

3. Injury History Log: Designed based on the (Fuller et al., 2006) model to monitor injuries during the current season.

Table 2. Injury History Monitoring Form Model

Question	Options
1. Have you suffered an injury that kept you off the field for more than 24 hours this season?	<input type="checkbox"/> Yes (Complete the table) <input type="checkbox"/> No (Stop here)
2. Number of injuries during the season:	<input type="checkbox"/> Once <input type="checkbox"/> Twice <input type="checkbox"/> 3 times or more
3. Most frequent injury type:	<input type="checkbox"/> Muscular <input type="checkbox"/> Ligaments & Tendons <input type="checkbox"/> Skeletal <input type="checkbox"/> Other
4. Timing of injury occurrence (mostly):	<input type="checkbox"/> Preparation Period <input type="checkbox"/> During Competition <input type="checkbox"/> End of Season

Scientific Bases and Statistical Treatments of the Instrument

To ensure the validity of the instrument for field application, the following scientific treatments were conducted on a pilot sample of 20 players outside the main sample:

- First: Face Validity. The form was presented to (10) experts in Movement Sciences, Sports Medicine, Nutrition, and Measurement & Evaluation. An agreement rate of 80% or more was adopted. As shown in Table 3, all items achieved acceptable agreement (80-100%).
- Second: Construct Validity (Internal Consistency). Pearson Correlation was calculated between the score of each item and the total score of its domain. Table 4 shows that all correlation coefficients ranged between (0.541 – 0.810), all significant at ($p < 0.05$), confirming high internal consistency.



- Third: Reliability. Cronbach's Alpha was used.

Table 5. Reliability Coefficients (Cronbach's Alpha) for Questionnaire Domains and Total Scale

No.	Scale Domains	No. of Items	Reliability Coefficient (Alpha)	Scientific Evaluation
1	Cognitive Knowledge	4	0.782	Good
2	Behavior and Application	3	0.815	Very Good
3	Recovery and Fluids	3	0.764	Good
Total	Total Scale	10	0.856	High Reliability

The total reliability value (0.856) exceeds the acceptable threshold (0.70), indicating the instrument is valid for final application.

Field Procedures

- Pilot Study: Conducted on (15/07/2025) to test clarity and timing (10-15 mins).
- Main Study Application: Distributed to (260) players between August and October 2025. Distribution was coordinated with club administrations before or after training sessions to ensure seriousness.
- Timeline:
 - June 2025: Proposal & Design.
 - July 2025: Expert review & Pilot study.
 - Aug - Oct 2025: Data Collection.
 - Nov 2025: Data Analysis.
 - Dec 2025: Final Writing.

Statistical Analysis

SPSS v.28 was employed for data processing, including Frequency, and Percentage, Mean and SD (standard deviation), Pearson correlation, Cronbach's alpha, and Chi-Square tests (Fayyad et al., 2025; Khalaf et al., 2025; Mohammed Hammood et al., 2025; Fayyad et al., 2026).

Results

Descriptive Results of Research Variables

Description of Sustainable Nutritional Culture Level:

Table 7. Means and Standard Deviations for Nutritional Culture Scale Domains and Total Score (n = 260)

No.	Domain	Max Score	Mean	SD	Estimated Level
1	Cognitive Knowledge	20	12.40	3.15	Moderate
2	Behavior and Application	15	8.90	2.60	Moderate
3	Recovery and Fluids	15	8.20	2.85	Weak/Moderate
Total	Total Scale	50	29.50	6.45	Moderate

Analysis of Table (7): The general arithmetic mean was (29.50). The "Weighted Mean" ($29.50 \div 10 = 2.95$) falls within the category (2.60 - 3.39), indicating a "Moderate" level, reflecting fluctuation in players' nutritional awareness.

Description of Injury Reality (Prevalence and Types):

Table 8. Frequencies and Percentages for Number and Type of Injuries (n = 260)

Variable	Categories	Frequency	Percentage (%)
Injury Frequency	Not injured	45	17.3%
	Once	98	37.7%
	Twice or more	117	45.0%
Total		260	100%
Most Common Injury Type*	Muscular (Tear/Strain)	145	55.8%



Ligaments & Tendons	72	27.7%
Skeletal & Contusions	43	16.5%
Total	260	100%

Note: The most frequent injury type was calculated for each player.

Analysis: Results show a high injury rate, with 82.7% of players injured at least once. Muscle injuries dominated (55.8%).

Hypothesis Testing

Testing the First Hypothesis (Correlation):

Table 9. Correlation Coefficient between Nutritional Culture Score and Number of Injuries

Variable 1	Variable 2	Calculated (R)	Sig.	Relationship Type	Significance
Sustainable Nutritional Culture	Number of Injuries	- 0.682	0.000	Strong Inverse	Significant

Analysis: There is a strong negative correlation (-0.682). From a statistical point of view, higher values of the player's nutritional culture are associated with lower values of the number of injuries, thus providing confirmation for hypothesis 1.

Testing the Second Hypothesis (Differences in Injury Type):

Table 10. Chi-Square Test for the Relationship between the Level of Culture and the Type of Injury

Culture Level	Muscular	Ligaments & Tendons	Skeletal/Other	Total	Value (χ^2)	Sig.
Low Culture	95	30	15	140	12.45	0.002 (Sig.)
High Culture	50	42	28	120		
Total	145	72	43	260		

Analysis: Study Analysis Chi-square results (12.45, $p=0.002$): differences $p<0.05$. The proportion of muscular injuries was significantly higher with low-culture players (95) than with high-culture players (50). This indicates that cultural nutrition (mainly of fluids and recovery) is associated more with physiological (muscular) injury than with purely mechanical injury.

Discussion

Discussion of Descriptive Results

The Study Results: The overall level of nutritional culture among Iraqi Stars League players was "Moderate leaning towards Low" with the domain of "Recovery and Fluids" The reason for this is that, instead of educational programs in clubs, where the focus is on technical/physical aspects, and the absence of sports nutritionists, players only rely on personal efforts or folklore. When it comes to injuries, the main defect is related to the "Physiological Readiness" of muscles, with "Muscular Injuries" being the highest (55.8%).

Discussion of the Correlational Relationship

This is similar to Mountjoy et al., which shows a strong inverse relationship (-0.682). (2018) regarding RED-S syndrome. Not getting enough nutrients to recover leads to an inability to recover, hormone imbalances, and a suppressed immune system.

Physiological Justification: Players without the incorporation of nutritional culture tend to disregard nutrient timing. Early depletion of Muscle Glycogen leads to central and peripheral nervous system fatigue and the loss of Neuromuscular Control. Here, the muscle fails to absorb any more shock, reducing its ability to withstand tearing (Bahr & Krosshaug, 2005).

Explaining the Prevalence of "Muscle Injuries" in Low Culture Group

Failure to Synthesize Protein: The failure to consume enough rapidly digesting protein after exercise (recovery window) does not allow for proper repair of the micro-trauma, which then translates into macro-injury (Close et al., 2019)

Hydration / Muscle Elasticity No fluid or imbalance between tissue and blood plasma causes poor viscoelasticity of muscle, which is the characteristic that prevents it from moving, such as cramping and breaking (Burke et al, 2018)



Micronutrients: Magnesium, calcium, and vitamin D deficiencies reduce the efficacy of muscle contraction.

Comparison with Previous Studies

- Agreement: Results align with Heikura et al. (2018) and regional indicators (Al-Shammari, 2023), confirming that poor nutritional awareness correlates with delayed recovery.
- Distinction: While Heikura focused on bone injuries in runners, this study highlights "Muscle Injuries" in football. This is due to the nature of the sport (Sprinting and cutting), which requires immediate glycogen energy availability.

Implications

Persistent bad eating practices lead to wasted economy (treatment), wasted technology (missing actors), and wasted low age of training (scar).

Conclusions

1. Iraqi Stars League players suffer from a clear deficiency in "Nutritional Recovery Culture," focusing on pre-match energy while neglecting the post-match recovery window.
2. Muscular injuries are the most common, being physiological in nature and directly linked to chemical/nutritional status rather than just physical contact.
3. Nutritional culture is a "Prophylactic Factor"; players with sustainable habits are less frequently injured.
4. High injury rates in low-culture players are due to "Tissue Repair Failure" and "Glycogen Depletion," leading to loss of neuromuscular control.

Recommendations

1. Mandate the presence of a certified sports nutritionist as a requirement for professional club licensing.
2. Mandatory workshops on "Nutrition for Injury Prevention" for players and coaches.
3. Allocate budgets for studied meals (especially post-training) as an investment to reduce treatment costs.
4. Periodic checks (monthly) for Body Composition and Vitamin levels (D, B12, Iron).
5. Design individual nutritional programs based on position and injury history.
6. Ensure protein/carb intake within 30-60 minutes post-effort and monitor urine color for hydration.

Future Studies

- Effect of an antioxidant-supported diet on hamstring recovery.
- Longitudinal experimental study comparing teams with/without strict nutritional programs.
- Relationship of RED-S to stress fractures in female Iraqi players.

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