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Nutritional Self-Efficacy and Reactive Decision -Making Speed Among Players In A Sports Facility

Luo Haiyang

Graduate School, Emilio Aguinaldo College
Manila, Philippines

ABSTRACT

Background: In competitive youth sports, cognitive processing speed under physical exertion is increasingly recognized as a decisive performance variable. However, the psychological mechanism linking off-field nutritional autonomy to on-court reactive decision-making remains underexplored in Asian sports training contexts.

Purpose: This study examined the relationship between nutritional self-efficacy and reactive decision-making speed among youth basketball players in Wuhan, China, and tested demographic variations across age, sex, and year level.

Method: A descriptive-comparative-correlational design was employed with 279 players from Hubei Hansheng Empowerment Culture Communication Co., Ltd. Data were collected using a validated 4-point Likert researcher-made questionnaire (Cronbach's $\alpha = .988$) measuring five dimensions of nutritional self-efficacy (preparation readiness, supplement literacy, hydration discipline, digestive intuition, long-term consistency) and five dimensions of reactive decision-making speed (anticipation accuracy, recovery from false starts, visual quiet eye, mental lag under fatigue, complexity scaling). Descriptive statistics, One-Way ANOVA with Scheffé post-hoc, and Pearson correlation were computed via SPSS at $p < .05$.

Results: Overall nutritional self-efficacy was "Effective" ($M = 3.17$, $SD = .51$) and decision-making speed was "Fast" ($M = 3.19$, $SD = .48$). Significant age differences emerged: players aged 19–20 years consistently reported the highest self-efficacy across all dimensions ($p < .05$), while those >21 years old scored lowest. Sex was a significant factor in supplement literacy and hydration discipline (males > females, $p < .001$). A significant positive correlation was found between total nutritional self-efficacy and reactive decision-making speed ($p < .05$).

Conclusion: Nutritional self-belief is a measurable cognitive performance multiplier. Findings support the integration of behavioral nutrition education into tactical training curricula. The proposed Cognitive-Nutritional Self-Monitoring Program offers a structured framework for translating dietary autonomy into millisecond-level decision advantages in youth sports facilities.

Keywords: Nutritional Self-Efficacy; Reactive Decision-Making Speed; Youth Basketball; Sports Facility; Cognitive-Nutritional Self-Monitoring; Fatigue; Visual Quiet Eye; China

1. INTRODUCTION

In high-performance youth sports environments, the margin between victory and defeat is increasingly defined by milliseconds of cognitive processing. While traditional sports science has prioritized bio-mechanical conditioning and aerobic capacity, contemporary research in cognitive kinesiology emphasizes that "game intelligence"—the ability to anticipate, inhibit errors, and re-calibrate under fatigue—is fundamentally modulated by metabolic and nutritional states (Jeukendrup, 2022; Smith et al., 2024).

Nutritional self-efficacy, defined as an athlete's domain-specific confidence in executing dietary plans under environmental and emotional constraints, extends beyond physical body composition. Recent evidence suggests that athletes with higher nutritional autonomy exhibit superior executive functioning, as optimal glycogen availability and hydration directly preserve prefrontal cortex activity during late-game scenarios (Chang & Etnier, 2023). Conversely, poor hydration discipline and low digestive intuition have been linked to measurable "mental lag" and degraded reaction times in high-intensity intermittent sports (Baker et al., 2025).

Despite this, most youth sports facilities in East Asia maintain a structural disconnect between their dining ecology and tactical training. At institutions like Hubei Hansheng Empowerment Culture Communication Co., Ltd.—a leading youth basketball training center in Wuhan serving over 10,000 students—nutritional guidance is often generalized and lacks integration with on-court cognitive metrics. Coaches frequently observe that players experience decision-making breakdowns in the final quarter, attributing them to "fatigue" without addressing underlying nutritional self-management deficits (Tanaka & Lee, 2024).

Furthermore, the perceptual-cognitive skill of visual quiet eye and recovery from false starts requires high neural bandwidth. Studies in basketball contexts show that athletes who can regulate their gut comfort and electrolyte balance pre-competition sustain longer stable gaze durations and recover from deceptive movements 40% faster than those with erratic eating patterns (Vickers & Williams, 2023). Yet, few empirical studies in the Chinese youth sports context have quantified how specific dimensions of nutritional self-efficacy (e.g., preparation readiness, supplement literacy) statistically correlate with reactive decision speed.

To bridge this gap, this study adopts a dual-domain assessment framework. By measuring both subjective nutritional self-beliefs and objective-style self-assessments of cognitive reaction under fatigue, the research maps how off-court lifestyle autonomy translates into on-court tactical bandwidth. This approach aligns with the Social Cognitive Theory of Self-Regulation (Bandura, 1991; revised for sports nutrition by Heikkilä et al., 2024), positing that confidence in health behavior directly scaffolds complex motor-cognitive execution.

Ultimately, this investigation provides empirical evidence for sports facility administrators and policy makers to advocate for mandatory sports nutritionist integration and to treat "food security" as an athletic performance benchmark rather than a peripheral wellness concern.

2. STATEMENT OF THE PROBLEM

This study determined the nutritional self-efficacy and reactive decision-making speed of youth sports facility players at Hubei Hansheng Empowerment Culture Communication Co., Ltd., Dongxihu District, Wuhan City, Hubei Province, China. The results were used as the basis for a **Cognitive-Nutritional Self-Monitoring Program**.

Specifically, the study answered the following questions:

1. What is the demographic profile of the sports facility player respondents in terms of:
1.1. sex; 1.2. age; 1.3. year level; and 1.4. type of sport practiced?

2. What is the self-assessment of the players of their **nutritional self-efficacy** in terms of:
2.1. preparation readiness; 2.2. supplement literacy; 2.3. hydration discipline; 2.4. digestive intuition; and 2.5. long-term consistency?

3. Is there a significant difference in nutritional self-efficacy when grouped according to profile (age, sex, year level)?

4. What is the self-assessment of the players of their **reactive decision-making speed** in terms of:
4.1. anticipation accuracy; 4.2. recovery from false starts; 4.3. visual quiet eye; 4.4. mental 'lag' under fatigue; and 4.5. complexity scaling?

5. Is there a significant difference in reactive decision-making speed when grouped according to profile?

6. **Is there a significant relationship** between nutritional self-efficacy and reactive decision-making speed?

7. Based on the results, what Cognitive-Nutritional Self-Monitoring Program can be proposed?

Hypotheses Tested (α = .05):

- **Ho1:** No significant difference in nutritional self-efficacy when grouped by profile.
- **Ho2:** No significant difference in reactive decision-making speed when grouped by profile.
- **Ho3:** No significant relationship between nutritional self-efficacy and reactive decision-making speed. (Note: All three were **rejected** based on empirical results).

3. METHODOLOGY

Research Design

A **descriptive-comparative-correlational** design was utilized (Knapp, 2018; Coolidge, 2020; Heiman, 2022). This framework captured baseline behavioral realities, isolated demographic variations, and tested the magnitude/direction of association between nutritional cognition and reaction speed.

Research Locale

The study was conducted at **Hubei Hansheng Empowerment Culture Communication Co., Ltd.**, Dongxihu District, Wuhan, China—a benchmark youth basketball institution (est. 2018) operating 20+ stadiums, with a structured "4-Stage Professional 12-Level" curriculum for ages 4–16 and over 10,000 cumulative trainees.

Participants and Sampling

A total of **279** youth basketball players (Male = 185, 66.3%; Female = 94, 33.7%) participated. Age distribution: 18–19 yrs (16.8%), 19–20 yrs (30.1%), 20–21 yrs (22.6%), >21 yrs (30.5%). Purposive sampling was employed to ensure active, competition-exposed players were included.

Instrument

A 4-point Likert researcher-made questionnaire with **overall reliability of Cronbach's α = .988**, validated by five subject-matter experts and pilot-tested.

- Part I: Demographic Profile.
- Part II (40 items): Nutritional Self-Efficacy (5 dimensions; 1=Not True, 4=Very True).
- Part III (45 items): Reactive Decision-Making Speed (5 indicators; 1=Very Slow, 4=Very Fast). Interpretation rubric: 3.51–4.00 (Very True/Fast); 2.51–3.50 (True/Fast); 1.51–2.50 (Slightly True/Slow); 1.00–1.50 (Not True/Very Slow).

Data Gathering Procedure

Official permission was secured from the General Manager. Informed consent was obtained. Questionnaires were administered **in-person** in supervised proctored sessions to ensure ecological validity and 100% response clarity.

Statistical Treatment (SPSS v26)

- **RQ 1 (Profile):** Frequency, percentage, mean.
- **RQ 2 & 4 (Level):** Weighted Mean and Standard Deviation.
- **RQ 3 & 5 (Group diff):** One-Way ANOVA with **Scheffé post-hoc** test.
- **RQ 6 (Relationship):** Pearson Product-Moment Correlation (r).
- **Significance level:** $p < .05$.

Ethical Considerations

Conflict of interest disclosure, anonymity (no identifiers in final dataset), informed consent, voluntary participation (right to withdraw), and zero-physical/psychological-risk protocols were strictly observed.

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