

ORIGINAL ARTICLE



# The Perception of Sports Nutrition for Thai National Youth Athletes

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## ABSTRACT

**Background.** Athletes' poor understanding of sports nutrition could place their health in danger, degrade their performance, and have an impact on their lean body mass and energy levels. **Objective.** The research study aims to study the perception of Thai national youth athletes regarding nutrition understanding and the relation between endurance, power, and mixed sports and believing in the food selection before, during, and after the competition. **Methods.** The quantitative research was used with 216 respondents divided into three categories (Endurance Sport, Power Sport, and Mix Sport) which consisted of the Thai national youth athletes for each category in Thailand, and analyzed by the descriptive statistics, and the chi-square test by using SPSS. **Results.** The result of the chi-square test between the athlete samples of endurance, power, and the mixed sport and believing in the food selection before the competition found that by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 1241.381, DF=32, and the p-value were 0.01. During the competition found that the food selection was related to the sports categories by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 485.438, DF=26, and the p-value was 0.01, and after the competition found that the food selection was related to the sports categories by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 718.997, DF=30, and the p-value were 0.01. **Conclusion.** The result of this research may be applied as important information for developing an effective guideline for Thai national youth athletes in the future.

**KEYWORDS:** *Sports Nutrition, Perception, Athlete, Nutritionist.*

## INTRODUCTION

Many athletes do not meet the current dietary recommendations and lack adequate nutrition knowledge for optimal performance. Moreover, inadequate energy and food intake, combined with poor weight management techniques, increases the risk of injury (1).

Therefore, sports nutrition is the practice of maintaining the optimum nutrition, and diet to support individual athletes in achieving peak performance in physical activity, either recreational exercise or participate in competitive sports (2). Supporting athletes' abilities, strength, speed, power, and endurance is the main objective of sports nutrition (2). It can be said that sporting

activities are enhanced by well-chosen nutrition strategies (3). In other words, the nutritional strategies will support the training and the competition goals (4). The nutritional requirements of tactical athletes to support optimal health and performance (5).

However, the lack of information about nutrition and the frequent "unsure" responses indicated a lack of assurance in that understanding (6). According to that, there are many internet gurus designing nutrition that are not proven by reliable research (2). Athletes felt most at ease discussing nutrition with their parents, families, athletic trainers, and strength

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and conditioning specialists. Other primary sources of nutrition information included the internet and media (6). Unfortunately, most coaches do not have training in nutrition to properly guide their athletes (7).

According to that, Coaches and trainers are educated about certain suitable dietary suggestions, but competent sports nutritionists or registered dietitians may supplement the instruction and counseling of athletes on nutrition (8).

It can be said that physical activity is associated with greater well-being, exercise plus nutrition (9). Likewise, the evidence base should include suggestions for athletes' sports nutrition (10).

However, it is unclear whether the athletes in Thailand have adequate sports nutritional knowledge. Therefore, we aimed to study the perception of the Thai national youth athletes in the nutrition understanding and to study the relation between endurance, power, and mixed sport and believing in the food selection before, during, and after the competition. We chose 216 Thai national youth athletes as our research samples. The result will benefit the relevant organizations, and also respond to the Sustainable Development Goal: Zero Hunger, which concerns improving nutrition.

## MATERIALS AND METHODS

**Research Method.** This study utilized quantitative research to study the perception of the Thai national youth athletes in nutrition and to study the relation between endurance, power, and mixed sport and believing in the food selection before, during, and after the competition.

**Participants.** 216 respondents were used in this research divided into three categories (Endurance Sport, Power Sport, and Mix Sport), and all of them were the Thai national youth athletes for each category in Thailand. All were selected by the non-probability sampling by Quota method. This research also was approved the ethics by the Office of the Committee for Research Ethics (Social Sciences), Faculty of Social Sciences and Humanities, Mahidol University.

**Instrument.** The researchers developed a questionnaire based on the previous literature. The survey consisted of the four parts of the questionnaire. The first part was the 7 demographic characteristics questions. The second part was the 8 sports nutrition understanding questions. The content validity of

this survey was determined through Item – Objective Congruence (IOC). Furthermore, reliability was the standard criteria for every item.

**Analysis.** The quantitative data was analyzed through descriptive statistics including frequency, mean, and standard deviation, and the chi-square test by using SPSS version 21.

## RESULTS

Analyzing the perceiving of the sports nutrition information can be described as follow;

From [Table 1](#), most of the respondents were in the group of the mixed sport (116 people, 53.70%). Most of the respondents were female (126 people, 58%). Most of the respondents were less than 20 years old (147 people, 68.05%). Most of the respondents were 41-60 Kg (97 people, 44.89%). Most of the respondents were 161-180 Cm (104 people, 48.32%).

From the [Table 2](#), most of the respondents were provided food by the provider (110 people, 51%), and Breakfast (87 people, 40.19%). Most of the respondents agreed that the knowledge of the food providers was at an average level (127 people, 58.72%), and most of the respondents had the knowledge of nutrition understanding at an average level (167 people, 77.40%).

From the [Table 3](#), the chi-square test between the athlete samples of the endurance, power, and mixed sport and believing in the food selection before the competition found that the food selection was related to the sports categories by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 1241.381, DF=32, and the p-value were 0.01 which found that the food selection for the mixed sport was Bread / Sandwich (31 people, 26.7%), the power sport was Fried rice with pork/ Chicken/ meat (21 people, 39.6%), and the endurance sport was Boiled Egg/ Fried Egg/ Soft-boiled egg/ Omelet (12 people, 25.5%).

From the chi-square test between the athlete samples of the endurance, power, and mixed sport and believing in the food selection during the competition found that the food selection was related to the sports categories by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 485.438, DF=26, and the p-value were 0.01 which found that the food selection for the mixed sport and the power sport was Beverage/ Milk (56 people, 48.3% and 24 people, 45.3%), the endurance sport was Fruit/ Juice/ Banana (17 people, 36.2%).

From the chi-square test between the athlete samples of the endurance, power, and mixed sport

and believing in the food selection after the competition found that the food selection was related to the sports categories by having the correlation efficiency (Chi-Square:  $\chi^2$ ) = 718.997, DF=30, and the p-value were 0.01 which found that

the food selection for the mixed sport was Beverage/ Milk (26 people, 22.4%), the power sport was Grilled meat/ Steak/ Pork/ Chicken/ Meat/ Fish (16 people, 30.2%), and the endurance sport was Fried rice with pork/ Chicken/ meat (11 people, 23.4%).

**Table 1. The demographic characteristics of the respondents**

The personal characteristics	Number (N=216)	Percentage
<b>The sport category</b>		
The endurance sport	47	21.75
The power sport	53	24.53
The mix sport	116	53.70
<b>Sex</b>		
Male	90	90
Female	126	58
<b>Age</b>		
Less than 20 years old	147	68.05
20-30 years old	31	14.35
31-40 years old	18	8.33
41-50 years old	13	6.01
51-60 years old	7	3.24
<b>Weight</b>		
Lower than 20 Kg	5	2.04
20-40 Kg	34	15.30
41-60 Kg	97	44.89
61-80 Kg	67	31.29
81-100 Kg	13	6.12
More than 100 Kg	1	0.34
<b>Height</b>		
Lower than 120 Cm	8	3.69
121-140 Cm	24	10.73
141-160 Cm	68	31.87
161-180 Cm	104	48.32
More than 180 Cm	12	5.36

**Table 2. The sports nutrition understanding of the respondents**

The sports nutrition understanding	Number (N=216)	Percentage
The food is provided		
By the food providers	110	51.00
By yourself	106	49.00
The meal that was arranged by the food providers		
Breakfast	87	40.19
Lunch	49	22.92
Dinner	80	36.87
The knowledge of the food providers		
Good	6	3.02
Average	127	58.72
Bad	27	12.41
Not sure	56	25.83
The knowledge of your sports nutrition understanding		
Good	3	1.32
Average	167	77.40
Bad	17	7.97
Not sure	29	13.28

**Table 3-1. The result of studying the relation between endurance, power, and mixed sport and believing in the food selection before the competition**

The food selection	The sport categories			Total	$\chi^2$	P
	The endurance sport	The power sport	The mix sports			
Noodle	2 (4.3%)	0 (0.0%)	4 (3.4%)	6 (2.8%)	1241.381***	<0.001
Bread / Sandwich	2 (4.3%)	0 (0.0%)	31 (26.7%)	33 (15.3%)		
Fried rice with pork/ Chicken/ meat	0 (0.0%)	21 (39.6%)	11 (9.5%)	32 (14.8%)		
Rice topped with stir-fried pork/ Chicken/ Meat and basil	1(2.1%)	0(0.0%)	1(0.9%)	2(0.9%)		
Fried meat/ Pork/ Chicken/ fish	1(2.1%)	0(0.0%)	0(0.0%)	1(0.5%)		
Grilled meat/ Steak/ Pork/ Chicken/ Meat/ Fish	3(6.4%)	1(1.9%)	1(0.9%)	5(2.3%)		
Steamed rice topped with chicken, a serving of rice with roasted pork on top, fresh ham on rice	0(0.0%)	2(3.8%)	0(0.0%)	2(0.9%)		
Boiled and curry food	1(2.1%)	0(0.0%)	3(2.6%)	4(1.9%)		
Fried food and stir-fried vegetables	3(6.4%)	1(1.9%)	15(12.9%)	19(8.8%)		
Stir-fried Rice Noodles with Soy Sauce and Pork, Stir-fried glass noodles	0(0.0%)	0(0.0%)	1(0.9%)	1(0.5%)		
Boiled Egg/ Fried Egg/ Soft-boiled egg/Omelet	12(25.5%)	4(7.5%)	4(3.4%)	20(9.3%)		
Fruit/Juice/Banana	2(4.3%)	1(1.9%)	14(12.1%)	17(7.9%)		
Beverage/ Milk	6(12.8%)	9(17.0%)	12(10.3%)	27(12.5%)		
Local food/ Chili sauce/ Papaya salad/ Fermented Rice Flour Noodles	0(0.0%)	0(0.0%)	4(3.4%)	4(1.9%)		
Rice porridge/ Soft-boiled rice	11(23.4%)	4(7.5%)	2(1.7%)	17(7.9%)		
Spaghetti, Pizza, Burger, French fries, Sushi	1(2.1%)	0(0.0%)	10(8.6%)	11(5.1%)		
Others	2(4.3%)	10(18.9%)	3(2.6%)	15(6.9%)		
	47	53	116	216		
	(21.8%)	(24.5%)	(53.7%)	(100.0%)		
Total	100.0%	100.0%	100.0%	100.0%		

\*\*\*: significant at  $p < 0.01$ .

## DISCUSSION

The findings of this study are consistent with the previous research which was as follows:

**The food and beverage selection before the competition for the athlete.** Most of the respondents in the mixed sport selected bread/sandwich before the competition which is in line with the work of Martin. The results revealed that tennis players should be consuming carbohydrates before, during, and post competition (11). Most of the respondents in the power sport selected Fried rice with pork/ chicken/ meat which is in line with the work of Slater et al. The findings indicated that sprint athletes should consume meals containing ~0.4 g/kg high biological value protein (i.e., easily digested, rich in essential amino acids) every 3-5 hr (12). Most of the respondents in the endurance sport selected Boiled Egg/ Fried Egg/ Soft-boiled Egg/ Omelet which is in line with the work of Costa et al. For consecutive days of prolonged

endurance running, achieving energy balance is recommended, alongside the provision of sufficient carbohydrate to meet exercise load demands (i.e., up to 12 g·kg<sup>-1</sup>·day<sup>-1</sup>, total running load dependent), and consumption of sufficient protein to meet daily nitrogen balance (i.e., 1.2–2.0 g·kg<sup>-1</sup>·day<sup>-1</sup>), to support tissue recovery and adaptations (13).

**The food and beverage selection during the competition for the athlete.** Most of the respondents in the mixed sport and the power sport selected Beverage/ Milk during the competition which is in line with the work of Adegbe et al. The findings indicated that milk provides nutrition for athletes both during training and during competition. The results of this study show that milk can improve the performance of athletes both during matches and training. By consuming milk, the body's health can improve and the body's condition is more prime (14). Most of the respondents in endurance sports selected

Fruit/Juice/ Banana which is in line with the work of Nieman et al. The results revealed that in general, ingestion of bananas before and during

prolonged and intense exercise is an effective strategy, both in terms of fuel substrate utilization and cost, for supporting performance (15).

**3-2. The result of the chi-square test between the athlete samples of the endurance, power, and mixed sport and believing in the food selection during the competition**

The food selection	The sport categories			Total	$\chi^2$	p
	The endurance sport	The power sport	The mix sport			
Noodle	0(0.0%)	0(0.0%)	1(0.9%)	1(0.5%)	718.997***	<0.001
Bread / Sandwich	0(0.0%)	0(0.0%)	2(1.7%)	2(0.9%)		
Fried rice with pork/ Chicken/ meat	11(23.4%)	4(7.5%)	15(12.9%)	30(13.9%)		
Rice topped with stir-fried pork/Chicken/ Meat and basil	0(0.0%)	0(0.0%)	2(1.7%)	2(0.9%)		
Fried meat/ Pork/ Chicken/ fish	0(0.0%)	2(3.8%)	12(10.3%)	14(6.5%)		
Grilled meat/ Steak/ Pork/ Chicken/ Meat/ Fish	5(10.6%)	16(30.2%)	2(1.7%)	23(10.6%)		
Steamed rice topped with chicken, a serving of rice with roasted pork on top, fresh ham on rice	2(4.3%)	1(1.9%)	6(5.2%)	9(4.2%)		
Boiled and curry food	1(2.1%)	2(3.8%)	2(1.7%)	5(2.3%)		
Fried food and stir-fried vegetables	4(8.5%)	1(1.9%)	19(16.4%)	24(11.1%)		
Stir-fried Rice Noodles with Soy Sauce and Pork, Stir-fried glass noodles	0(0.0%)	0(0.0%)	1(0.9%)	1(0.5%)		
Boiled Egg/ Fried Egg/ Soft-boiled egg/ Omelet	3(6.4%)	1(1.9%)	1(0.9%)	5(2.3%)		
Fruit/ Juice/ Banana	0(0.0%)	2(3.8%)	1(0.9%)	3(1.4%)		
Beverage/ Milk	8(17.0%)	12(22.6%)	26(22.4%)	46(21.3%)		
Local food/ Chili sauce/ Papaya salad/ Fermented Rice Flour Noodles	0(0.0%)	0(0.0%)	3(2.6%)	3(1.4%)		
Spaghetti, Pizza, Burger, French fries, Sushi	0(0.0%)	0(0.0%)	4(3.4%)	4(1.9%)		
Others	13(27.7%)	12(22.6%)	19(16.4%)	44(20.4%)		
Total	47	53	116	216		
	21.8%	24.5%	53.7%	100.0%		
	100.0%	100.0%	100.0%	100.0%		

\*\*\*: significant at p<0.01.

**The food and beverage selection after the competition for the athlete.** Most of the respondents in the mixed sport selected Beverage/ Milk after the competition which is in line with the work of Wadey et al. The results showed that after 24-hour recovery. There was a significant difference in time to exhaustion between water (466±201 seconds) and chocolate milk (CM) (660±125 seconds) in the consecutive bout (p=0.002). Blood glucose levels were significantly elevated post-CM consumption (p≤0.001). This indicated CM had ergogenic effects on tennis performance over a consecutive day, which is potentially beneficial in a tournament (16). Most of the respondents in the power sport selected Grilled meat/ Steak/

Pork/ Chicken/ Meat/ Fish which is in line with the work of Jäger et al. It was found that an acute exercise stimulus, particularly resistance exercise, and protein ingestion both stimulate muscle protein synthesis (MPS) and are synergistic when protein consumption occurs before or after resistance exercise (17). Most of the respondents in the endurance sport selected pork/ Chicken/ meat which is in line with the work of Sollie et al. Results indicate that intake of carbohydrate plus protein after exhaustive endurance exercise more rapidly converts the body from a catabolic to an anabolic state than carbohydrate alone, thus speeding recovery and improving subsequent cycling performance (18).

### 3-3. The result of the chi-square test between the athlete samples of the endurance, power, and mixed sport and believing in the food selection after the competition

The food selection	The sport categories			Total	$\chi^2$	p
	The endurance sport	The power sport	The mix sports			
Noodle	0(0.0%)	0(0.0%)	1(0.9%)	1(0.5%)	718.997***	<0.001
Bread / Sandwich	0(0.0%)	0(0.0%)	2(1.7%)	2(0.9%)		
Fried rice with pork/ Chicken/ meat	11(23.4%)	4(7.5%)	15(12.9%)	30(13.9%)		
Rice topped with stir-fried pork/ Chicken/ Meat and basil	0(0.0%)	0(0.0%)	2(1.7%)	2(0.9%)		
Fried meat/ Pork/ Chicken/ fish	0(0.0%)	2(3.8%)	12(10.3%)	14(6.5%)		
Grilled meat/ Steak/ Pork/ Chicken/ Meat/ Fish	5(10.6%)	16(30.2%)	2(1.7%)	23(10.6%)		
Steamed rice topped with chicken, a serving of rice with roasted pork on top, fresh ham on rice	2(4.3%)	1(1.9%)	6(5.2%)	9(4.2%)		
Boiled and curry food	1(2.1%)	2(3.8%)	2(1.7%)	5(2.3%)		
Fried food and stir-fried vegetables	4(8.5%)	1(1.9%)	19(16.4%)	24(11.1%)		
Stir-fried Rice Noodles with Soy Sauce and Pork, Stir-fried glass noodles	0(0.0%)	0(0.0%)	1(0.9%)	1(0.5%)		
Boiled Egg/ Fried Egg/ Soft-boiled egg/ Omelet	3(6.4%)	1(1.9%)	1(0.9%)	5(2.3%)		
Fruit/Juice/Banana	0(0.0%)	2(3.8%)	1(0.9%)	3(1.4%)		
Beverage/ Milk	8(17.0%)	12(22.6%)	26(22.4%)	46(21.3%)		
Local food/ Chili sauce/ Papaya salad/ Fermented Rice Flour Noodles	0(0.0%)	0(0.0%)	3(2.6%)	3(1.4%)		
Spaghetti, Pizza, Burger, French fries, Sushi	0(0.0%)	0(0.0%)	4(3.4%)	4(1.9%)		
Others	13(27.7%)	12(22.6%)	19(16.4%)	44(20.4%)		
Total	47	53	116	216		
	21.8%	24.5%	53.7%	100.0%		
	100.0%	100.0%	100.0%	100.0%		

\*\*\*: significant at  $p < 0.01$ .

## CONCLUSION

The result from the chi-square test between the athlete samples of the endurance, the power, and the mixed sport and believing in the food selection before, during, and after the competition found that the food selection was related to the sports categories by having the correlation efficiency, and the study found that the athletes from all categories of sport (The power sport, the endurance sport, and the mixed sport) focused on having Protein and Carbohydrate as their food selection in all period of the competition.

## APPLICABLE REMARKS

- The perception of the Thai national youth athlete in nutrition issues shall be the fundamental information that all stakeholders should be aware of to improve their performance and ability.
- The result of this research may be applied as important information for developing an effective guideline for Thai national youth athletes in the future.

- Protein and Carbohydrates were considered the favorite food selection for those national youth athletes for their performance at every stage of the competition.

## AUTHORS' CONTRIBUTIONS

Study concept and design: Saowalee Kaewchua, Anantachai Inthiraj, Oam To-aj. Acquisition of data: Anantachai Inthiraj. Analysis and interpretation of data: Oam To-aj. Drafting the manuscript: Oam To-aj. Critical revision of the manuscript for important intellectual content: Saowalee Kaewchua, Anantachai Inthiraj, Oam To-aj. Statistical analysis: Oam To-aj. Administrative, technical, and material support: Saowalee Kaewchua, Anantachai Inthiraj. Study supervision: Saowalee Kaewchua, Anantachai Inthiraj.

## CONFLICT OF INTEREST

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report.



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