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INDIVIDUAL ATHLETE DIETARY AND NUTRITION KAB METHODS RESEARCH

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ABSTRACT
In this paper, the integrated use of expert interviews, literature review, questionnaires, mathematical statistics, methods and means was discussed. On the part of nutrition education and nutrition status, college athletes KAB investigation was analysis. Athletes lack of proper nutrition concept, low nutrition knowledge, which exist more errors. There is eat animal meat that is nutritional supplements, it can enhance physical fitness. Before the game gluttony assault nutritional supplement, it can improve physical fitness. Some knowledge of science or even less than ordinary people. Survey results showed poor results that athletes nutrition education method is not standardized. 43.8% think athletes sports performance nutrition awareness of no effect, 40.6% of the athletes are not interested in nutrition knowledge, the data indicate a great need for athletes exhibition effective nutrition education and established the correct concept of nutrition.

1. Introduction

Athlete nutrition has two basic characteristics: first, its unique characteristics of vocational training and competition, leading to energy and nutritional needs of athletes, which is different from the general population. The second is due to the different sports are engaged, resulting in a certain sport athlete nutrition items group and special features(Brown, 2012;Roseman, 2011). Characteristics determine the athlete nutrition, which is not a general pattern in the general population nutrition "quality" and "quantity" on the simple increase or decrease, but it has a lot of own characteristics (Jitomir, 2008; Zhang, 2015; Qu, 2015; Stevens, 1999). Athlete's athletic ability, the skill ability, physical ability, tactical ability, intelligence and other mental capacities, of which the relationship between physical ability and dietary most closely (Volpe, 2007). Physical ability is the human body morphology, functional capacity, organic combination of athletic ability and coordination of comprehensive ability to interact formed an important part of sports ability. Scientific training, nutrition reasonable diet, good competitive state and psychological quality of athletes achieved outstanding competition results of an important guarantee(Herzman-Harari, 2013).

Athletes are a special group, always to deal with the increasingly fierce various types of athletic tasks. Under the premise of prohibiting the use of stimulants to maintain a strong physical and intense athletic resume as soon as possible after regeneration to fight another day, a great need for reasonable and effective nutrition interventions (Wagenmakers, 2015; Justin, 2013). Players eliminate fatigue after training means doping-free nutritional

supplement the diet than before is an important part of the best state of motion arise (Griffin, 2016). At present, China's athletes diet and long-term existence of protein, fat and carbohydrate intake disorders, these three pyrogen metabolism in the body is using each other, mutual restraint, in a dynamic equilibrium, so they must have an appropriate ratio, in order to have conducive to the normal physiological function and increase metabolism, and improve exercise capacity (Wessels, 2016). Too fat for energy, low carbohydrate, and with the increasing problem of economic development, which is no doubt the health of athletes and athletic ability are very unfavorable, especially adolescent athletes is an important period of growth and development, it is a reasonable and balanced diet the material basis for growth and development, but also for lay a solid foundation movement (Wroblesk, 2010; Swinbourne, 2015; Sedeaud, 2014; Walle, 2007). Studies have shown that nutrition for disease occurrence, development and prognosis have a great impact. With economic development and living standards improve, more and more people pay attention to proper nutrition, eager to gain more knowledge of nutrition (Cadzow, 2015). However, in real life, there are still a lot of malnutrition and nutrition problems, serious harm to human health, its main causes is the lack of proper nutrition knowledge, can not reasonably choose and match food caused. Students are in the shape of growth period, there is great plasticity, health education for college students to correct poor eating behavior will play a multiplier effect (Helzberg, 2010). Especially medical students, because of their special nature of work undertaken after graduation, improve their nutritional knowledge is essential capabilities and a reasonable choice of food.

Nutrition education is by changing people's eating behavior and achieve a change in the nutritional status of the purpose of planned behavior. As a convenience, economic interventions, governments and nutritionists have been one of the main effective means of improving people's nutritional status. Nutrition education as a "bridge" that allows players more effectively and quickly understood that the application of various benefit their nutritional knowledge. In this paper, nutrition education and nutrition portion of professional athletes and college athletes know the knowledge, Attitude, Behavior status of a preliminary investigation, to carry out teaching nutrition to provide scientific ideas to keep the sports system and reference.

2. Materials and methods

2.1. Athlete's nutrition cognitive status

As can be seen in Table 1, two groups of athletes majority (68.1%, 55.2%), "do not know" and "well aware" of the athletes were only 5.4 %, 9.8%. Situation two are basically the same, no significant difference (P> 0.05). Since most athletes completely unknown or just little understanding, meal tower five-layer structure of the food, so there are a great misunderstanding on food, that an increase in nutrition is to eat more meat and protein, while ignoring the meal pagoda bottom of whole grains and fruits and vegetables of the second layer, resulting in unreasonable athletes diet, protein, fat and carbohydrates three pyrogen imbalance (Adams, 2008; Gibala, 2016).

Table 1. The realization to nutritional knowledge of the athletes

Item	Province Team			P. E. College	
	Familiar	Little	Blind	Familiar	Little
Dietary guidelines	4.8%	27%	68.2%	9.1%	36.9%
Poisoned food	10.2%	50.1%	38.1%	7.9%	64%
Overeating	17.2%	63.5%	19.5%	12.4%	75.9%

Good nutrition knowledge can guide the selection of athletes scientific and reasonable balanced diet and a healthy lifestyle, the formation of physical fitness, enhance physical fitness, in order to improve training and competition results. Nutrition KAB connotations are interrelated and influence each other. Provincial team Athletes 25.9% believe that very effect, 66.5% think that some action, and that there is no effect of 7.6%, the institute Athletes 48.5% believe that very effect, 49.5% think that some action. Only 2.1% believe there is no memory effect.

Medical students understand the current level of understanding and knowledge of nutritional eating behavior, provide a reference for future conduct nutrition health education. According to Health Education Knowledge - - line model theory, the process of health behavior change is a change of attitude by the knowledge to behavior, and only have a certain knowledge and a good attitude to education, be possible to achieve this transformation. Nutrition and nutrition knowledge attitude and behavior is positively related to improve the nutritional knowledge can affect nutrition attitude, and then guide them to take the correct eating behavior, correct nutrition attitude, help to improve the nutritional health of the entire population.

2.2. Statistical analysis

Based nutrition KAB questionnaire model and the specific circumstances of the students design their own questionnaires, pre-survey, to discuss revisions, including an analysis of the project and checked for the project. Unified training for investigators, who pass as an official investigators. Investigation by the method according to the class cluster sampling, the questionnaire valid numbers through questionnaires filled out by the ombudsman after the respondents to explain himself, after questionnaires were collected by investigators for review, excluding invalid questionnaires.

Establish Epidata database, after checking data entered into the computer, use SPSS12.0 to organize and analyze data. The data were the variables descriptive analysis, $\chi 2$ test and logistic regression analysis. With $\alpha = 0.05$ as the test standard.

In regression problems if the response y is binary in nature, it actually becomes classification, the so-called binary classification. To make the problem more intuitive analysis of some argument assumes y is 0 or 1. Logistic regression is an effective way to solve this binary classification problem. The law is also under some assumed probability model launch. First examine the function:

$$h_w(x) = g\left(w^T x\right) = \frac{1}{1+e^{-w^T x}} \quad (1)$$

In it:

$$g(s) = \frac{1}{1+e^{-z}} \quad (2)$$

Called Logistic function or sigmoid function. Assume that a given x; conditions under w, y = probability of 1 obey Bernoulli distribution, and can be expressed as:

$$p\left(y=1|x,w\right) = h_w(x) \quad (3)$$

$$p\left(y=0|x,w\right) = 1-h_w(x) \quad (4)$$

Above two equations can be combined into a compact form:

$$p\left(y|x,w\right) = h_w(x)^y \left(1-h_w(x)\right)^{1-y} \quad (5)$$

Wherein y∈ {0,1}. M in the number of samples for independent case, sample data likelihood function is:

$$\begin{aligned} L(w) &= p\left(Y|X,w\right) \\ &= \prod_{i=1}^{n} p\left(y^{(i)}|x^{(i)},w\right) \\ &= \prod_{i=1}^{n} \left(h_w\left(x^{(i)}\right)\right)^{y^{(i)}} \left(1-h_w\left(x^{(i)}\right)\right)^{1-y^{(i)}} \end{aligned} \quad (6)$$

Another easy way to express the value of the function y Release index is {1,1} when:

$$J(w) = -\sum_{i=1}^{n} \frac{1+y_i}{2} \log p_i + \frac{1-y_i}{2} \log\left(1-p_i\right) \quad (7)$$

To make the process clear and concise derivation, we only consider the case of a single variable x is x, and without loss of generality, the results can be generalized to the case of vector x.

Linear regression model assumes that the probability of:

$$p(x,\theta) \sim N(\mu,\sigma^2) \quad (8)$$

In binary logistic regression, it is assumed probability model:

$$p(x,\theta) \sim \text{Bernoulli}(\phi) \quad (9)$$

The fact that these models can be generalized into a class of model families, known as generalized linear models.

3. Results and discussions

3.1. Drinks drunk in training rehydration

Figure 1 shows that the majority of athletes (72%) choose rehydration aspect of water, purified water, mineral water, into the rehydration misunderstanding, did not understand the purpose of not only the movement of fluid replenishment, but also to supplement the loss of movement, fatigue useful energy source. Only 12 % of the athletes: do choose the fruit and vegetable drinks. Athletes in training lost large amounts of water and electrolytes, rehydration for athletes to restore volume and penetration Kivu, supplementary energy source, eliminating fatigue is very important. Cola and other carbonated beverages containing CO_2, could easily lead to stomach discomfort, and the inorganic salt content of cola towel may not be able to meet replenish lost salts motion needs, not suitable for use as a post-exercise rehydration.

Drinking water and other materials as a supplementary energy of little significance, and fruit and vegetable drinks rich in vitamins, carbohydrates, trace elements, is a complement both the vertical movement of water and salts lost, but also to supplement the energy consumption of drinks. Therefore, athletes should be reasonable nutrition education rehydration. In training, the race to promote a scientific and reasonable formula supplemented sports drinks.

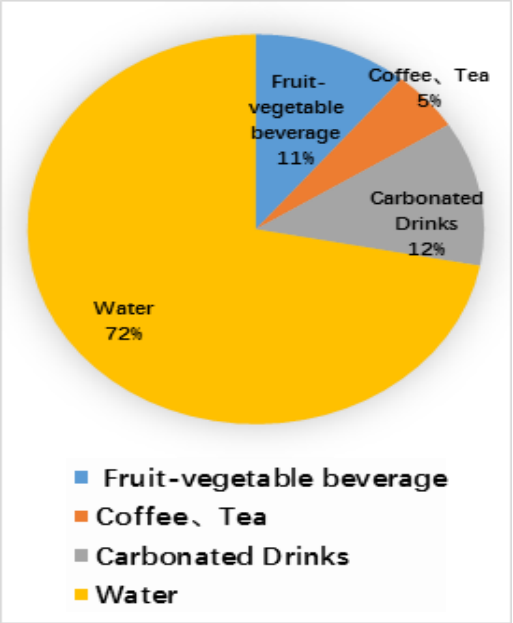

Figure 1. Drinks drunk in training rehydration

Universal acceptance of nutritional knowledge of a good attitude, in the 603 survey respondents, most athletes believe that nutrition is important, 88.7% of the athletes are willing to change their eating habits to their health, 94.7% of athletes want to make their diet more in line with nutritional requirements. 78.4% of the athletes against smoking, 90.7% of the athletes never smoked; 52.9% of the athletes against drinking and 62.5% of the athletes never drinking. 60.7% of the athletes say that physical exercise is the best way to lose weight.

3.2. Nutritional supplements inappropriate drawbacks

Improper anti-nutritional supplements can harm the body. Athletes' heat comes mainly from within the egg, fat, carbohydrates. Since these three metabolism in the body with relative valley, phase watt constraints in dynamic equilibrium, so they must have an appropriate ratio, to improve and benefit the normal physiological function, exercise capacity and increase metabolism. Disproportionate influenced not only physiological function, but also reduced exercise capacity and cause certain diseases. Such as: too much fat is not only to increase metabolic oxygen consumption, but also

impede the metabolism of carbohydrates, acidic metabolites increased, affecting exercise capacity. Long-term intake of too much fat can lead to coronary heart disease.

Multi-body exercise in a hypoxic state, a high intake of fat and carbohydrates and less fat is not easy to be fully oxidized to produce bodies, blood accumulation of acidic substances, pH values decrease, prompting athletes fatigue, reduced exercise capacity. At the same time elevated blood lipids, blood viscosity tone, blood flow slowed down, the body more oxygen, absorb too much cholesterol, can easily lead to coronary heart disease. Prisoners should be appropriate for this limit fat intake, and depending on the item for energy characteristics, heat the fat ratio is controlled at about 25%, while increasing carbohydrate intake.

3.3. Athlete's physical

Based on interviews understood that during the two most high school athletes namely began receiving special training, mainly in the sports school time with coaches, teammates life, some athletes through sports talented students into the provincial team selection procedures or universities, with a small number of athletes in the experience general school students like learning, examination into the college.

Ideal physique is the body in full, based on the potential of innate endowment, acquired by actively cultivate, so that the body morphological structure, physiological function and psychological state of the environment, ability to adapt to the overall development, with relatively good physical condition.

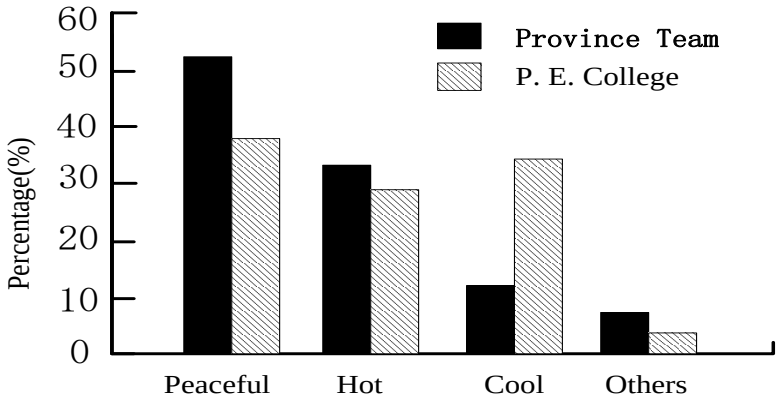

Figure 2. Compare two athletes physique type

Figure 2 show two sets of data, the provincial team group level and type accounted for 50.3%, compared with a significant difference ($P < 0.01$) Partial cold type. Since the street team group training, sports-based, supplemented by theoretical study, reflecting the movement of the body to promote the quality of health.

The survey also found that the way athletes nutrition knowledge of newspapers and books in descending order of 83.4%, TV 54.9%, 44.6% and other schools, school classroom education only ranked No. 3. Classification of eating behavior score (Y) long on logistic regression analysis showed that: the attitude of nutritional knowledge (X1), nutrition knowledge score (X2), father's education are protective factors of eating behavior, indicating knowledge about nutrition deeper level, the better the attitude of acceptance of nutritional knowledge, the higher the father's education level, the more healthy eating behaviors. Colleges and universities are education, life and job skills to master an important place in education and health plans to play a larger role in place. Therefore, the school should play to their strengths in education, increase nutrition knowledge and education efforts through the classroom, combined with newspapers, books, television, blackboard newspaper and other forms, there are plans to athletes preach health-related knowledge,

training athletes good health awareness improve the ability to adapt and self-care ability, to develop good habits, to guide the behavior of athletes out of the diet misunderstanding.

3.4. Athletes taking nutritional supplements

To accommodate the large amount of specialized training and high-strength, balanced diet alone can not meet a lot of energy substances and other nutrients consumed by professional training, must be functional sports nutrition supplements to help athletes improve athletic endurance and stamina and recovery ability to help athletes under more pressure training and additional training to adapt to greater stress, create a better athletic performance. Nutritional supplements improve Athletes huge role in promoting, it has gradually attracted the attention of people in the field of exercise science.

Figure 3 shows that the group most provincial team athletes recognize that the appropriate use of nutritional supplements can be beneficial to training and competition, taking the rate of 4%; the institute group took 40.2% rate compared very significant difference between two groups (P <0.01). Institute group athletes did not participate in athletic competition, so 59.8% of the athletes nutritional supplements not know the place.

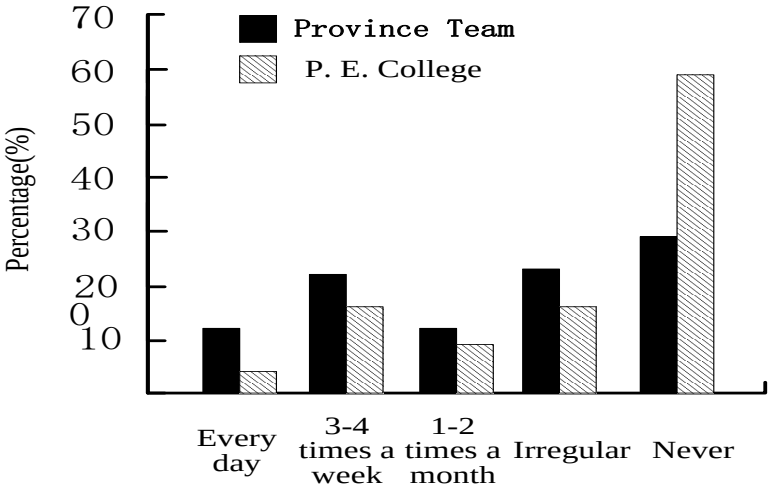

Figure 3. Athlete taking nutritional supplements

3.5. Nutrition K, A, B scores and total scores

K Score: nutrition knowledge score; A point: knowledge of nutrition and healthy attitude score; B point: reasonable dietary behavior score) (Table 2).

Table 2. Result of K, A, B score and total score

Item	K	A	B	Total
Full Score	40.00	10.00	21.00	71.00
Mean Score	21.73	7.87	11.17	40.78
STD	6.62	1.54	3.20	8.58

Nutrition knowledge at the middle level (low accounted for 56.1%, moderate share of 36.2%); poor nutrition behavior at level (low accounted for 63.7%, moderate share of 30.3%; but showed better nutritional attitudes (score of 66%); out of lower middle (low 59.0%) , which was shown in Table 3.

Table 3. Distribution of K,A,B score and Total score

Level	K(ratio)	A(ratio)	B(ratio)
<60	338(56.1)	45(8.0)	388(63.7)
60-80	316(36.2)	188(28.5)	156(30.8)
>80	44(7.8)	420(66.0)	32(5.2)

By K, A, B method, it found that the majority of players to score a reasonable diet, vitamins and trace elements in food sources, diet and disease (such as diabetes, hypertension, high cholesterol) relationship, Formaldehyde, clenbuterol, phytochemicals alerted rate relatively low. Athletes surveyed general lack of nutritional knowledge. Nutritional behavior scores are lower, but most athletes are interested in nutrition knowledge, nutrition attitude is better, indicating a strong desire for knowledge athletes, hoping to get more nutrition knowledge to change their bad eating habits, improve their quality of life. Instructions to carry out knowledge of nutrition education in athletes is necessary, urgent and possible. From the nutritional point of view, the gap is appropriate to eat two meals a higher nutritional value of fruit snacks, milk, it can compensate for the lack of meals, the body is beneficial. Conversely, if a large number of meals to eat some high energy content and low content of other nutrients snacks, such as chocolate candy, puffed food, instant noodles, will affect the appetite dinner time, resulting in inadequate food intake dinner. So snack time snack type, amount of snacks to make a rational choice.

Survey data show that the health of athletes were majority (73.0%, 72.7%), common symptoms of sub-health state: colds, insomnia, bad stomach. Account for a minority. Description This two athletes most in good health. Athletes by interview survey found that healthy athletes training, the law of life, dietary diversification, pay more attention to the therapeutic application of health knowledge.

3.6. Multivariate logistic regression analysis

The eating behavior score divided by the median high and low two kinds of eating behavior score classification (Y) long on logistic regression analysis showed that: the attitude of nutritional knowledge (X1), nutrition knowledge score (X2) father cultural grade level (X3) is closely related to eating behavior (Table 4).

Table 4. Logistic regression of correlated factors of dietary behavior

Variable	B	S.E.	Wald Value	P Value	Exp(B)
Constant	-1.219	0.344	12.527	0.000	0.296
Attitude	0.828	0.201	17.026	0.000	1.437
Knowledge	0.044	0.014	9.848	0.002	1.045
Education level	0.432	0.182	5.634	0.018	1.540

With economic development and people's living standards improve, unhealthy lifestyle has become a hazard to people's health an important factor, especially with nutrition and diet-related cardiovascular disease has topped the cause of death, the people in order to adapt to the fast pace of work and the pursuit of quality of life, reduction and control of chronic diseases and reduce costs of medical expenses, eager to get medical nutrition knowledge to reduce disease and promote health. Clients are people of all communities, their nutritional knowledge, attitude and behavior, not only affect their own growth and development and health, but also

directly affect the health of the communities they serve people, affecting the patient's recovery and rehabilitation. Therefore, improving medical students' knowledge of nutrition class, correct nutrition attitudes, changing dietary behavior, proper arrangements for meals, will be beneficial to its own population and health services.

4. Conclusions

Athletes physical health, physical fitness can form strong than short-term, long-term need for a reasonable and balanced diet. In order to allow the athletes come out of nutrition misunderstanding, we establish the correct concept of nutrition as soon as possible. It should be widely carried out in the athletes early groups, efficient sports nutrition knowledge and improve athletes overall understanding of nutrition science from the breadth depth. Players only through correct nutrition taught in various forms to understand the relevant knowledge of nutrition, and establish a positive, correct beliefs and attitudes, will it be possible to integrate the formation of the active feel good for their own healthy eating behavior. In this paper, the integrated use of expert interviews, literature review, questionnaires, mathematical statistics, methods and means, on the part of nutrition education and nutrition status of college athletes KAB investigation and analysis.

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