A STUDY OF CONFIDENCE AND ATTITUDE IN PROVIDING NUTRITION ADVICE TO CLIENTS IN FITNESS COACHES

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A STUDY OF CONFIDENCE AND ATTITUDE IN PROVIDING NUTRITION ADVICE TO CLIENTS IN FITNESS COACHES

ZHANG HANSHENG

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A STUDY OF CONFIDENCE AND ATTITUDE IN PROVIDING NUTRITION ADVICE TO CLIENTS IN FITNESS COACHES

BY

ZHANG HANSHENG

HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE MASTER OF SCIENCE
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This research aimed to determine the confidence and attitude in providing nutrition advice to clients in male and female fitness coaches, and to evaluate factors influencing such confidence and attitude. Participants were fitness coaches (44 male and 39 female) from a total of 15 fitness clubs and studios in Gansu, Jiuquan City, China. The instrument employed for data collection was an online questionnaire, with a validity of 0.99 and reliability of 0.94. The results showed that the confidence in nutrition-related knowledge, skills, communication, and counselling in most male participants was 4 (very confidence; 52.27±7.54%, 48.41±7.54%, and 46.97±9.99%, respectively) and the female participants was 5 (extremely confidence; 55.33±7.50%, 55.13±7.71%, 51.28±6.51%, respectively). The attitude toward providing nutritional services among most male participants was 4 (somewhat agree; 47.16±9.28%) and of the female participants was 5 (completely agree; 55.77±7.45%). The mean score for all items related to confidence and attitude was significantly lower in male participants than female participants ($p<0.01$). For factor analyses, age, experience in working as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, experience in nutrition training, and satisfaction in their fitness coach jobs could be combined to significantly predict attitude toward providing nutritional services among female participants (39.70%, $p<0.05$). These findings indicate that male fitness coaches have less confidence and a less positive attitude toward providing nutritional services to their clients than female fitness coaches. Providing nutrition trainings that meet their needs is essential to boost confidence and a positive attitude towards fitness coaches' jobs.

Keyword : Self-confidence, Positive attitude, Fitness trainer, Nutrition guidance

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CHAPTER I
INTRODUCTION

Background and rationale

China has been emerging as a Sports Modernization Country where the government focuses on multidimensional national development, including promotion of the public health, fitness, and well-being, through creation of modern environments for more participation in exercise, fitness, and sports activities of its citizen(Li et al., 2023). The government's operations of this policy, along with several other factors, particularly the increased public's health concern, has led to exponential growth in the fitness industry and personal trainer market in the past few years, with substantial increase in the number of Chinese people participating in exercise, fitness, and sports activities, as well as becoming a membership of fitness centers (Deloitte-Touche-Tohmatsu-Limited, 2020). Nevertheless, the fast-paced business development is usually accompanied by a lack of academic information and systematic research (Fiedler et al., 2023). In China, some fitness business statistics at the national level are available (SEO-China-Agency, 2024; Zhang, 2023), but data at the local level is limited. Moreover, there is almost no research among fitness professionals, who are the major workforce in fitness centers. As location and fitness professionals are a crucial factor for economic development and public health system (Kong & Zhang, 2020; Manika et al., 2021), research on fitness professionals at any location is essential.

Jiuquan is a biggest prefecture-level city situated in the northwest of Gansu province of China, with a total area of 192,000 square kilometers and population of 1.132 million. This city is an important ancient cultural landscape (Zhou et al., 2019) that has been integrated into the modern environmental urbanization. Nowadays, the infrastructures and services of this city have been upgrading, such as urban transport and utility facilities, wastewater management, and windbreak plantation (Melton et al.,

2008). The city has become an important business hub in China. Importantly, there are many sports stadiums, fitness centers and fitness and sports activities taking place in the city. People in the city are more interested in exercising, participating in fitness and sports activities and are also more concerned about their diet. More specifically, there are 7 fitness clubs and 8 fitness studios scattered over the city in 2024, with a total fitness professional of 83 (44 men and 39 women). Nevertheless, there is no research related to sports, exercise, fitness center, and fitness professional in this city.

According to Fit Education Ltd (Educate Fitness), a fitness professional is an individual who has dedicated him/herself to help others achieving their fitness goals and improving their overall health and well-being. Based on this definition, a fitness professional may be called interchangeably as personal trainer, exercise instructor, or fitness coach, who is the mainstay of gyms, fitness centers, health care centers, or other settings related to sports and exercise in China. As nutrition is crucial to overall health, fitness, and well-being, one important qualification in which fitness professionals must possess is knowledge, skill, and expertise to design nutrition programs, provide guidance on proper nutrition, and offer support and motivation to his/her clients, who may be healthy individuals, athletes, or individuals with diseases or abnormal medical conditions. Moreover, fitness professionals should have positive attitude and confidence in delivering services, because a positive attitude benefits to fitness professionals' nutritional guidance, as well as leads to more confident in their knowledge and ability to provide nutritional advice (China-Daily, 2023; Penjor, 2011). Nevertheless, limitation exists on the professional standards and accreditation systems related to sports and exercise in China (Penjor, 2011), and the findings obtained from previous researches have raised doubts about knowledge, attitude, and confidence among fitness professionals.

For instance, Almansour et al. (2020) investigated the nutrition knowledge of personal trainers and coaches across various sports disciplines in Kuwait, and

concluded that personal trainers and coaches generally have inadequate nutrition knowledge, although females demonstrated slightly higher understanding than males (Foster, 2024). Maxwell et al. (2017) have revealed that the average sports nutrition knowledge score of CrossFit trainers is lower than the grade the trainers assigned to both their peers and themselves, indicating an overestimation of their own and their peers' sports nutrition knowledge (Almansour et al., 2020). In the aspect of attitude and self-confidence, Barnes et al. (2016) found that attitudes on providing nutrition care in Australian personal trainers are highly favorable. On average, trainers scored 85% (mode = strongly agree) on attitudes related to nutrition care, and nearly all participants (95%, n = 136) agreed or strongly agreed that encouraging clients to eat healthy foods is important and that providing nutrition care is an effective use of their professional time (Maxwell et al., 2017). Jolley (2020) has suggested that personal trainers generally feel confident in their ability to provide nutrition advice, often to a degree that may be overly confident. While trainers can be highly competent, they typically do not possess expertise on par with genuine experts in nutrition (Barnes et al., 2016).

In addition, previous studies have indicated factors related to knowledge, attitude, and confidence in male and female fitness professionals. For instance, Barnes et al. (2016) reported that greater confidence in nutrition knowledge are seen in fitness coaches with greater experience, and education higher than a certificate IV. Greater confidence in nutrition knowledge was also associated with greater confidence in nutrition skills and more favorable attitudes towards providing nutrition care (Maxwell et al., 2017). Moreover, Liu Xiao Wen (2014) has indicated that there is certainly a difference between men and women in fitness club; they have their own advantages and characteristics, and thus are complementary; fitness coaches need to face fitness people from different levels, genders, ages, and characteristics, so the needs of fitness coaches of different genders are also different (D, 2020).

From the information mentioned above, it is interesting to study confidence and

attitude in providing nutrition advice to clients in fitness coaches fitness coaches in Jiuquan city of Gansu province.

Research question

1. How do the confidence and attitude in providing nutrition advice to clients in fitness coaches?

2. Do the confidence and attitude in providing nutrition advice to clients in male and female fitness coaches differ?

3. Do factors (i.e., age, experience as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, fitness coach training qualification currently had, and satisfaction in fitness coach jobs influence confidence and attitude in providing nutrition advice to clients of fitness coaches?

Objectives of the study

1. To study the confidence and attitude in providing nutrition advice to clients in fitness coaches

2. To compare the confidence and attitude in providing nutrition advice to clients between male and female fitness coaches

3. To investigate the influence of age, experience as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, fitness coach training qualification currently had, and satisfaction in fitness coach jobs on confidence and attitude in providing nutrition advice to clients of fitness coaches

Significance of the study

1. Can enhance the general public's understanding and perception of the characteristics of male and female fitness coaches in formulating nutritional

recommendations

2. Can provide information for constructing the training programs for improving the skills of fitness coaches in providing nutritional care to clients

3. Can promote the balanced and sustainable development of the team structure of male and female fitness coaches

Scope of the study Population

Population in this research were 83 fitness coaches (44 male and 39 female) in 15 fitness clubs in Gansu, Jiuquan City.

Participants

Participants of this research were all fitness coaches (44 male and 39 female) in 15 fitness clubs in Gansu, Jiuquan City. All met the criteria for subject selection of the study.

Variables

Independent variables

- Fitness coaches

Dependent variables

- Confidence
- Attitude

Definition of terms

Fitness coach refers to the staff who provide professional fitness guidance, technical professors and knowledge dissemination in the gym (fitness club), provide one-on-one personalized services to meet the diverse needs of fitness users, and are charged by the hour, according to gender standards, male and female fitness coaches.

Nutrition knowledge is defined as awareness of nutrients and their relevance to health and well-being, ability to find reliable information about food and/or how foods fit into a balance diet (SEO-China-Agency, 2024).

Service attitude is defined as whether the fitness coach uses good communication skills, service awareness and responsibility to provide suitable for different groups of students according to their professional knowledge of nutrition, no. A full range of services and support sports nutrition programs for the same physical conditions and needs.

Self-confidence refers to whether the fitness coach can achieve the psychological state of the bodybuilder's expectation after understanding the physical condition and needs of the trainees and tailoring the appropriate diet plan for them.

Conceptual framework

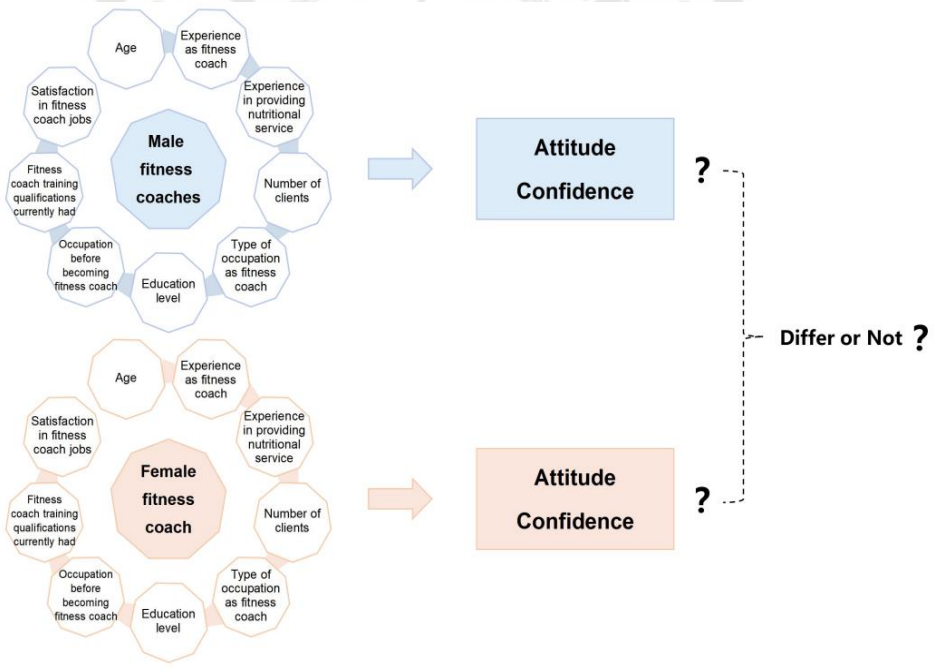

FIGURE 1 Conceptual framework of the research

Hypothesis

1. The confidence and attitude in providing nutrition advice to clients in fitness coaches would be “somewhat confidence” and “neither agree nor disagree”,

respectively

2. The confidence and attitude in providing nutrition advice to clients in male and female fitness coaches would be different

3. The age, experience as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, fitness coach training qualification currently had, and satisfaction in fitness coach jobs would influence confidence and attitude in providing nutrition advice to clients of fitness coaches

CHAPTER II
LITERATUE REVIEW

In this research, relevant documents and researches were studied, and are presented according to the following topics;

1. Domestic research review

Based on the topic of this study, we searched the databases of academic journals such as CNKI and Wanfang from 1990 to 2024 to retrieve papers related to personal fitness trainers, and consulted books on fitness trainers, fitness, bodybuilding, sports nutrition, sports statistics, and professional theories of fitness in the Graphic Information Center of Jiuquan Vocational and Technical College. The search items were entered into the full-text database of CNKI journals: Title: Knowledge, Attitude and Confidence of providing nutrition counseling to clients in male and female personal trainers. A total of 267 papers were searched. After elimination and processing, 120 papers related to the topic were identified, and the representative research directions and contents were classified and summarized. After careful classification, elimination and induction, these literatures can be divided into five directions or levels: 1) There are 30 studies on the professional quality of fitness coaches; 2) 15 research articles on fitness club personal trainer qualification certification system and training; 3) There are 54 studies focusing on the current situation investigation and general analysis of fitness coaches; 4) There are 11 articles on the need, professionalization and coaching course design of personal fitness trainers; 5) 10 studies on sports professional skills of fitness personal trainers.

1.1 Research on the professional quality of private trainers in health clubs

There are great differences in the research perspectives of personal trainers for different purposes. Through the input of "professional quality of personal fitness trainers" in databases such as CNKI, it is found that through the sorting and classification of relevant categories of papers, it is mainly subdivided into three main

research focuses: (1) research on the quality elements of personal fitness trainers, (2) research on the structural form of personal fitness trainers' quality, and (3) research on how to judge and evaluate the quality of personal fitness trainers. As there are a large number of literatures on fitness personal trainers at different levels, but the review length is limited. Therefore, this review selects representative articles at different levels to review on the basis of reading papers at different levels. There are many studies on the professional quality of coaches, among which the representative ones are as follows: Zheng Yanjing pointed out in Research on the Professional Quality of Personal Trainers in Fitness Clubs that the elements of fitness professional quality considered by personal trainers in Harbin City are significantly different from the characteristics of fitness professional quality perceived by bodybuilders; Personal trainers have certain professional ability, but their ability of scientific research innovation and self-learning needs to be improved (Liu, 2014). Personal trainer has a general grasp of professional theoretical knowledge, a low degree of enthusiasm for work, and a lack of professionalism and dedication. Personal trainer should pay attention to the cultivation of personality charm and temperament. There is a certain significance for the research and analysis of fitness coach's professional quality, but with the development of The Times, the structure of fitness coach's professional quality has gradually gained attention. For example, Guan Xingxing constructed the professional quality structure of fitness coaches from the perspective of physical fitness in his Research on the Quality Structure of Fitness Personal Trainers in Beijing Fitness Club (Zheng, 2011). The structure covered different aspects, such as physical, mental and social, etc. He also believed that the work pressure and load of fitness coaches in Beijing Fitness Club were large. Non-intellectual factors play a more critical role in psychological quality. The development of the fitness coach industry is extremely rapid, the subdivision is gradually strict, and the supervision and evaluation of the coach has begun to enter people's vision. For example, Zhang Yu's Research on the Evaluation Index System of

Personal Fitness Trainers pointed out that the professional quality of personal fitness trainers consists of five basic quality levels, including professional knowledge, skills, ethics, physical and mental health, and working conditions, and the sequence of these levels has a decreasing influence on the work of personal fitness trainers, while the guidance and sales ability of personal fitness trainers play an important role in their professional quality (Guan, 2008). It has a certain effect on the ability display, recruitment and comprehensive ability improvement of fitness personal trainers.

As for the above research on professional quality, structural characteristics and evaluation indicators of personal fitness coaches, in the research on professional quality of personal fitness coaches, the researcher takes professional quality as the starting point, investigates and analyzes different people's understanding of professional quality of personal fitness coaches from different levels, expounds the professional quality that personal fitness coaches should possess, and analyzes the weak links in professional quality. Some practical suggestions are put forward, but the research is limited to surface discussion, and the objective and practical questionnaire is insufficient. In the process of studying fitness coaches, their professional quality structure has also been conceived, especially the discussion of non-intellectual elements of personal fitness coaches, which is the highlight of the research, but the level of the constructed fitness coach quality structure is less, which needs to be further explored. By studying the system of supervision and evaluation elements of fitness coaches, this paper sums up the elements of fitness professional quality as a whole, and finds out some quality features of considerable significance to fitness coaches, and the evaluation of coaches is more comprehensive and in-depth. However, there is little space to explore the deep theory of knowledge, attitude and self-confidence of male and female personal trainers in providing nutrition advice to clients, and the research needs to be in-depth, and the research process and methods should be diversified.

1.2 Research on fitness club personal trainer qualification and training

Through the summary and development of literature research contents, the existing literature on the qualification certification system and training of personal fitness trainers is mainly studied from three aspects: the status quo of the qualification certification of personal fitness trainers, the construction of training system, and the feasibility of qualification certification training. Due to the limited length of this review, representative articles are selected below for discussion. Research on the training content of personal trainers in fitness is rare, but the view is relatively novel. For example, in the article "Construction of Fitness Coach Training System with Introduction of Competency Model" by Hu Mi, in order to study the training model of fitness coach's competency, the training of fitness coach is mainly used as the insertion point of the competency model, and on this basis, training needs evaluation, planning, implementation, control and effect evaluation are designed (Zhang, 2010). To overcome the current imbalance and confusion in fitness market training. There are few studies on the status quo of qualification certification and training. Li Hongping and Zhang Yan, in their article Investigation on the Status Quo of Training Methods for Fitness Coaches in China, pointed out the main institutions, main contents and costs of training for fitness coaches in China, and held that the training of fitness coaches lacks a systematic, scientific and unified system (Hu, 2010). Foreign training institutions charge expensive and spoon-fed education. To train specialized and professional fitness instructors through school-enterprise cooperation or other better forms. However, there are not many studies on the qualification certification system and training feasibility. For example, Li Zhi found the relevant problems of qualification certification in the fitness industry through research and investigation in the paper Feasibility Analysis of Establishing China's Professional Qualification Certification System for Coaches, and adopted certain methods to discuss the feasibility of establishing professional qualification certification (Li & Zhang, 2006). To promote the scientific development of

coach qualification certification.

As can be seen from the above literature, the focus is on the study of fitness coach qualification certification and training system, the problems of fitness personal trainer training and the related content of future training are put forward, and the training mode of fitness personal trainer in China is further constructed, providing theoretical reference for the systematic and scientific training of fitness personal trainer. The view is relatively rare, and there is certain reference value. However, it does not deeply analyze the root cause of the problem, and the countermeasures proposed are not specific enough and difficult to operate. In the aspect of fitness personal trainer professional qualification certification, this paper explains the importance of establishing qualification certification, finds out the problems existing in qualification certification, and gives corresponding suggestions. This research result reflects the current training status and interprets the feasibility of establishing the qualification certification system, which has certain practical significance and supports the continuation of this research. However, the quantitative evidence of data is insufficient and only at the conceptual level. In the research on the status quo of the training mode of personal fitness trainers, the training institutions and contents of personal fitness trainers in China are investigated, problems in the training mode are analyzed, and corresponding countermeasures are proposed, which provides a reference for the improvement and perfection of the training of personal fitness trainers. However, the research needs to be further deepened. To explore whether there are differences in knowledge, attitude and self-confidence of male and female personal trainers in providing nutrition advice to clients, and the impact of these differences, in order to make up for the above deficiencies.

1.3 Research on the status quo and development of personal fitness coaches in health clubs

Through searching databases such as CNKI and Wanfang, it is found that there are abundant researches on the status quo of fitness personal trainers,

accounting for 51.09%. Due to the large number of researches, the following mainly summarizes the researches on the status quo of fitness personal trainers from different perspectives and representative ones. In terms of team work, age, culture and other characteristics of fitness coaches, For example, Feng Chunling pointed out in the Investigation and Analysis of the Status Quo of fitness Coaches in Commercial Fitness clubs in Shijiazhuang that most personal trainers in fitness clubs in Shijiazhuang are energetic, young, naturally inexperienced, and not many coaches with high education (Li et al., 2007). According to the ranking of comprehensive professional ability of personal fitness coaches, it is found that fitness, fitness knowledge, fitness teaching and fitness nutrition prescription skills are regarded as highly important, and coaches have the characteristics of low pay, long working hours and large mobility in clubs.

In addition, Wang Ye pointed out in the Investigation and Analysis of the Status Quo of Private Fitness Coaches in Nanjing Large Fitness Clubs that the current fitness industry standards are not standardized and uniform, especially in the qualification certification methods of coaches (Feng, 2010). It is suggested to set up a coach qualification certification system, allow personal coaches to study in higher education institutions and establish a coach evaluation system. Du Xilu, in the Investigation and Analysis of the Status Quo of Personal Trainers in some gyms in Beijing, Shanghai and Guangdong, believes that the current development of fitness coaches is not ideal, and the speed needs to be accelerated, and high-quality coaches need to be cultivated; The lack of training affects the development of fitness industry talents; The barrier to entry into a fitness personal trainer position is low (Wang & Wu, 2005). Moreover, there are also studies on the moral and theoretical qualities of personal trainers and the training of physical education institutions. For example, Zhao Yongjun showed in the Investigation and Research on the Status quo of personal fitness trainers in some gyms in Beijing that the knowledge of fitness trainers in Beijing is not very good, especially the safety protection of members, sports nutrition guidance and the

formulation of sports nutrition plans should be strengthened, more fitness experience should be accumulated, and professional ethics and psychological quality should be good (Du, 2005). At present, the talents trained by sports departments have not yet met the needs of fitness market, especially the lack of professional coach talents. Finally, the research on the status quo of fitness personal trainer's ability. For example, Zhang Liwei's article "Investigation and Analysis of the Current Situation of Personal Trainers in Zhengzhou Fitness Club" investigated the actual situation of fitness trainers in Zhengzhou, and found that coaches are more utilitarian, but their learning attitude is not positive, and their advantages lie in their strong confidence in their abilities (Zhao, 2006). The innovation and formulation of sports nutrition prescriptions and the treatment of fitness emergencies should also be strengthened.

The above articles on the status quo of personal trainers in health clubs are relatively rich. In terms of the structure and work situation of the team of personal trainers, many problems of the team of personal trainers have been found, the characteristics of their work performance and the countermeasures that can be borrowed, but they are limited to a simple investigation of some status quo, and the analysis of current problems is not complete and in-depth. In the field of personal fitness trainer's guidance ability and certification system and assessment, the viewpoint is relatively novel and forward-looking, but it is insufficient to explore whether there is any difference between male and female fitness trainers and what important factors affect the advice given to students in sports nutrition. Many inadequacies in the training of fitness instructors were raised and the reasons were explained. It would be better if more specific programs could be provided. In addition, in the study of the moral quality of personal trainers, it is found that personal trainers have good moral and quality, but lack of professional skills and fail to meet the market demand. The investigation is comprehensive and has some reference value. Unfortunately, the content analysis needs to be further deepened. Finally, in the current situation of fitness club fitness

personal trainer ability, found that fitness personal trainer demonstration, theoretical knowledge and explanation ability is strong, pay attention to economic benefits, innovation and first aid ability is poor. This study has some reference value for the understanding of coach ability. However, the research content is simple and needs to be further explored.

1.4 Study on the status quo, professionalization, demand characteristics and course specification of personal fitness trainer

Career is the carrier of the value realization of fitness personal trainer, which can be described as the foundation of fitness personal trainer. With the help of large multi-database search, it can be seen that the professional needs of fitness coaches and training course norms have become the main research direction. There are few studies on the professionalization of personal fitness coaches. For example, Chen Ping and Xu Wenjuan argued in Discussion on the professionalization of Building Club Personal Trainers in China that personal fitness coaches have the characteristics of providing one-to-one personal personality services, scientific fitness guidance, tracking and monitoring health assessment and health consultation (Zhang, 2011). Personal fitness coaches mainly include implicit and explicit professional qualities, which can be promoted from four ways: regulations, market, colleges and practitioners to form a professional environment for personal fitness coaches." Moreover, there is little research on occupational needs. For example, Lu Qiang pointed out in the Research on the Status Quo of Demand for Sports and Fitness Personal Trainers in Beijing that with the expansion of the team of personal trainers in Beijing, the improvement of academic qualifications and quality, the occupational demand is relatively simple, only recognizing the natural demand, but not paying attention to other needs. In the future, sports nutrition and medical rehabilitation may become a hot field (Chen & Xu, 2009). It is suggested to improve the quality of personal trainers, standardize the training, and pay attention to the development direction of sports nutrition and medical rehabilitation of

personal trainers.

The professional needs of fitness personal trainers are important, and the understanding of the status quo of fitness personal trainers can not be ignored. Wang Tiankui proposed in the Investigation and Research on the Status Quo of Fitness Personal Trainers in Fitness Clubs that the gender ratio of fitness personal trainers is unbalanced, the integrated training system for accompanying examinations cannot guarantee the quality of certification training, and the lack of unification and supervision of professional standards and supporting systems will easily lead to disorderly development (Lu, 2011). The status quo of fitness personal trainer with low autonomy, strong utilitarianism and service to be improved.

The above literature focuses on the research and interpretation of the five aspects of fitness personal trainers, but the number of studies in these five aspects is very limited. In the professionalization discussion, the author objectively analyzes the connotation and status of coach professionalization and the methods to promote the professionalization process. Its viewpoint is relatively novel, which helps the professionalization process of personal fitness coach, but it is too theoretical discussion and lacks practical examples and effective countermeasures. The research on the professional needs of personal fitness coaches mainly investigates and analyzes the professional needs of personal fitness coaches, and puts forward a new direction for the future development of personal fitness coaches. However, the research on professional needs is limited and the content needs to be enriched. In the research on the status quo of the personal fitness coach profession, too much focus on the training of fitness coaches, although certain results have been achieved, but the exploration of the status quo of the profession content is insufficient, and the analysis is superficial. In the process of studying the professional quality characteristics of fitness coaches, the general analysis of professional characteristics, there is a little novelty, but the real practical role is not clear, should strengthen the application of practice. In the research

and development of professional courses for personal fitness trainers, this paper analyzes the problems of professional courses for personal fitness trainers and scientifically constructs vocational courses for personal fitness trainers, which has certain practical value and provides scientific basis for the standardization of professional courses for personal fitness trainers. It is rare in the research field of personal fitness trainers and has certain foresight. However, the feasibility, effectiveness and systematic scientificity of its vocational courses need further research, and whether the theory is consistent with the practice needs to be tested.

1.5 Research on fitness coach and sports vocational skills

Through the input of "vocational skills" in CNKI, Wanfang and other databases, we found that there were few studies on the professional skills of fitness personal trainers, and only two articles were found, which mainly described the on-site reports of the vocational skills competition and the arrangement and setting of the competition. The article holds that the fitness teaching skill is more important among the fitness vocational skills, which can be described as the key factor of the success or failure of the competition. However, it will play a reference and paving role for the development and research of fitness vocational skills in the future. For example, in "Practical Teaching Skills Are the Key to Success for Fitness Coaches", Li Zhaojun discussed the organization, project setting and evaluation of Hangzhou fitness vocational skills Competition, and proposed that fitness teaching skills are the core vocational skills of coaches (Wang, 2010). It is also suggested that in the future, personal trainers should pay attention to the cultivation and training of their own fitness teaching ability and put forward corresponding countermeasures. However, with the rapid development of the fitness industry, the professional skills of fitness personal trainers play a pivotal role in the coaching career of fitness personal trainers and can not be ignored. Tian Tian et al., in a Study on the Status Quo of Professional Skills of Fitness Coaches, argued that the ratio of male and female fitness coaches is unbalanced and

tends to be younger in age (Chen et al., 2011). The number of male fitness coaches is more than that of female fitness coaches, which needs to be improved in terms of fitness theory and skills. The operation skills of fitness equipment are more skilled, but the fitness techniques are not ideal; The status quo of fitness sports nutrition prescription formulation is low, fitness coaches' fitness teaching skills are uneven and their performance is low. This research analysis is more in-depth, from a multi-level discussion of fitness professional skills, in addition, to explain the problems in the fitness personal trainer professional skills, and put forward targeted suggestions to solve the problems, which has a crucial impact on the improvement of fitness personal trainer professional skills. The only drawback is that the research is relatively simple and limited, and can not cover the various occupational composition characteristics of male and female fitness personal trainers.

However, through the search of major databases, it is also known that other relevant literature is mainly on sports vocational skills. It mainly includes the development management and appraisal of sports professional skills. There are relatively few literatures on the development and management of sports vocational skills, which mainly discuss the development and management of the establishment of fitness coach vocational skills qualification certification system, and provide scientific and systematic methods and suggestions for the development and management of sports vocational skills.

In Theory and Method of Sports Vocational Skill Development Management, Ding Tao believes that sports human development is regarded as one of the components of sports management and has a very important position, and a corresponding set of sports vocational skill standards should be formulated, and believes that the implementation of sports vocational skill qualification system is not only beneficial to the development of sports market, but also beneficial to the development of sports market. It is also conducive to the systematization of sports market regulations. It

is suggested to improve the standard of sports professional skills to fill the gap; Relevant departments should strengthen efforts to continuously promote the development of sports vocational skills, and carry out demonstrations in a small area to drive a large scale, so as to accelerate the development of sports vocational skills better and faster (Chen, 2012).

Secondly, the analysis of the identification of sports professional skills. In terms of the number of studies, there are only a few. For example, Ni Huizhong put forward in Theoretical Research and Practical Thinking on the Professional Skills Appraisal in Sports Industry that sports professional skills appraisal is an important strategic content in the development of sports human resources, reflecting the needs and inherent requirements of public services, and suggested that the identification of sports unique jobs should be expanded in the future. Ensure fairness, authority and healthy development (Li, 2013).

As can be seen from the above research literature, the main research function of the research on the professional skills of fitness coaches is mainly to play a link between the past and the future, but the research is not rich enough and is limited to the description and evaluation of the professional skills of fitness coaches. The research on the status quo of fitness coaches' professional skills performance focuses on the deep multidimensional analysis of various fitness skills, but ignores the comparison of fitness professional skills between male and female fitness coaches, and needs to be diversified in the future for the professional skills of male and female fitness personal trainers. In the research of sports vocational skills development management, the researchers explore the current situation and problems of sports vocational skills management in China according to relevant theories and surveys, and give relevant management countermeasures and methods. It has theoretical reference value for the development and management of sports vocational skills, which will help promote the management and development of sports vocational skills in our country. However, due

to the rich theoretical discussion and the lack of practice and fact verification to some extent, the feasibility of the proposed methods for the development and management of sports professional skills needs to be further investigated. At last, the paper discusses that the appraisal of sports professional skills in our country is still in the initial stage of exploration, puts forward some views on the strategy of sports personnel resources, and suggests to expand the fair appraisal and development of sports jobs. This research supports the development of sports professional skill identification to a certain extent, and is of great significance to the future research on fitness professional skill identification and has certain reference value. However, the research is limited to the theoretical level, and the methods to improve the professional identification and development of sports are not clear. If we can reasonably put forward some suggestions specific to the content level according to the status quo of sports professional skill appraisal, then the significance will be richer

2. Review of foreign research

By searching foreign language research papers related to fitness personal trainers, the description of the development and current situation of foreign fitness trainers in domestic fitness coaches was collected and sorted out, and foreign books on fitness coaches, fitness and bodybuilding were consulted in the Graphic Information Center of Jiuquan Vocational and Technical College. In general, the development of fitness coaches in foreign countries is relatively mature and stable, with a long history, and the fitness methods used are relatively scientific and strict. Due to the limitations of human, material and resource research, it is only found that foreign research on fitness coaches is mainly divided into four levels, namely, the research on the status quo and division of fitness personal coaches, and the research on the marketization and quality of fitness personal coaches. Of course, due to the leading and profound development of foreign fitness undertakings, there are more studies on fitness personal trainers. The

following is a review of some representative views.

2.1 Research on the status quo and division of private fitness profession

Foreign research on the status quo of private fitness profession has been relatively perfect, and even the professional quality, professional skills and professional ethics of coaches are the necessary conditions and mandatory standards for coaches to enter the profession or work. Private fitness mainly takes service labor as its working mode, and its service labor has the characteristics of uniqueness, individuation and variability (Li, 2013). In the process of providing fitness services, certain service rules need to be observed. Service labor is clearly defined in foreign countries as paying attention to the differentiation and individuation of service forms, and emphasizing the coordination and standardization of service labor. In Europe and the United States, where the development of fitness personal trainers is relatively mature, the fitness industry qualification certification and vocational skills assessment system is generally implemented, and some areas take it as a means of industry management. To engage in fitness personal trainers, you must obtain personal trainer qualification or participate in vocational skills assessment before you can officially take a job. In some areas, the work content of the fitness coach has different focuses, one is the fitness coach who serves the public and produces, the other is the coach who is specialized for the recovery and health of a certain disease, and the last is the coach staff who is trained for the gold medal or honor, which is competitive and technical. The public fitness club is mainly open to the general public fitness for the object, the main consideration of the needs, interests and regions of the public fitness day. Public health clubs have comprehensive requirements for personal trainers, which require personal trainers to have comprehensive fitness professional skills, marketing and development abilities and interpersonal interaction and communication skills. Because the fitness personal trainer needs to face a variety of different professions and personalities such as fitness, to meet the individual needs of different bodybuilders.

Rehabilitation fitness clubs are mainly for people who need rehabilitation training such as sequelae, chronic diseases and injured hemiplegia. This kind of club generally has a certain connection or cooperative relationship with major hospitals, and some rehabilitation trainers are mainly transferred from hospitals. In the past, Western medical circles paid attention to the treatment of injuries but neglected the rehabilitation training. Many chronic diseases or physical defects can achieve certain therapeutic goals through rehabilitation training, and the function of rehabilitation training is amazing. To some extent, this has created conditions for the development of rehabilitation fitness clubs.

Competitive sports fitness club is mainly for some athletes who need to improve their performance or need systematic training, competitive sports fitness members include professional and amateur sports, the main purpose of these athletes is to improve strength, speed and endurance.

2.2 Research on professional quality and marketization of personal fitness coaches

In some developed countries, fitness is highly valued, and even becomes the most popular in the market, and the scale of fitness is also quite grand. In particular, with the popularization of fitness concepts, the fitness industry in some regions has become the backbone and leading industry in the market. For example, there are 13,300 commercial fitness enterprises in the United States, and the fitness consumer population is as high as 11 million people, and the top 20 fitness enterprises carry out diversification, collectivization and chain operation. There are also many health clubs in France, with more registered members, accounting for a certain proportion in the country. American aerobic fitness training institutions believe that personal trainers must have fitness professional and related, legal norms and coaching qualifications.

Relevant fitness personal trainer website points out: fitness personal trainer must have fitness knowledge and fitness professional skills, mainly divided into

three levels, the first is the basic theoretical knowledge of fitness, the second is the theoretical knowledge of fitness professional skills, and the last is the theoretical implementation of fitness related disciplines (Tian et al., 2013).

To sum up, foreign requirements for the professional quality of personal fitness coaches are relatively standardized, the division is more detailed, and the knowledge and experience of personal fitness coaches themselves are attached great importance. At the same time, the professional status of foreign fitness personal trainer is high, and the teaching place is not limited, emphasizing that every fitness personal trainer must have a fitness personal trainer qualification certificate or obtain the certification of relevant institutions. This not only provides reference and reference for the development of China's fitness industry, but also points out the direction for the development of China's fitness industry. All in all, the foreign research on fitness personal trainer has been relatively comprehensive and in-depth, and the research on fitness personal professional quality is relatively detailed and subdivided. The above research provides reference and reference value for the clarification and in-depth analysis of this paper.

3. Definition of relevant concepts

3.1 Fitness Trainer

Fitness coach refers to the staff who provide professional fitness guidance and technical professors as well as knowledge transmission in the gym (fitness club), provide one-on-one personalized services to meet the diversified needs of bodybuilders, and are charged by the hour. Male and female fitness instructors were divided according to gender criteria.

According to the work nature of fitness coaches, commercial fitness clubs mainly divide fitness coaches into three categories: group gymnastics class fitness coach, tour fitness coach and personal fitness coach. There are many kinds of

group gymnastics, yoga and dance, exercise and other items are collectively referred to as the group exercise coach, when the time is more free, the part-time form is more common, and the collective teaching is relatively easy.

Personal fitness trainers mainly teach fitness methods, guide skills and transfer fitness knowledge in fitness clubs. They usually give priority to equipment guidance to help fitness users develop muscles and shape their bodies, and are responsible for them. They usually adopt one-on-one teaching and provide personalized paid services. Design professional, tailored fitness program, sports nutrition meal formulation and tracking safety assistance and supervision and guidance, with interactive, targeted and adaptive characteristics. Fitness personal trainer according to gender standards, can be divided into two categories of men and women, gender is different, but its professional connotation and work content is not clear difference (Ding, 2005).

Tour fitness coach refers to the trainer who first sees or engages in fitness guidance when the fitness club is working out. Tour coach is mainly around the whole gym to tour, to each member who needs fitness, fitness guidance service and help, the main difference with the fitness personal trainer is that the guidance service object is not targeted, belongs to the primary stage of fitness personal trainer.

The fitness personal trainer has gradually become the economic profit growth point in the sports fitness service market, and the demand for fitness personal trainer in the fitness service market has gradually risen, which attracts many young men and women to join the fitness personal trainer team. The techniques and abilities required and often practiced by the personal trainer in the work of fitness mainly include five aspects: first, the basic characteristics of fitness; Second, the characteristics of fitness theory knowledge; Third, the characteristics of fitness skills; Fourth, physical and mental characteristics of fitness; Fifth, fitness image features. These five generous and almost cover the entire coaching work, related to the development of fitness coaches.

China's fitness coaches need to register and complete relevant training, and get the corresponding level of fitness coach certificate after passing the assessment. The national professional qualification certificate of fitness coach is the proof of the knowledge and professional skills necessary for workers to engage in the profession of fitness coach. It is the qualification certificate for workers to find jobs and hold positions, and the main basis for employers to recruit and employ workers.

A number of provinces and cities have passed the local version of the "National Fitness Regulations", which explicitly stipulates that personnel engaged in paid fitness guidance must hold national professional qualification certificates; Article 33 of the Regulations on National Fitness promulgated by The State Council (draft for comment) stipulates that personnel engaged in professional, high technical requirements, and direct personal safety related to fitness guidance and assistance in national fitness venues or national fitness activities shall pass the corresponding professional qualification evaluation. It has obtained the national vocational qualification certificate issued by the human resources and social security administrative department under The State Council. Article 45 Where, in violation of the provisions of Article 33 of the Regulations, a national fitness venue or a national fitness activity organizer employs a person who has not obtained the national professional qualification certificate issued by the administrative department of human resources and social security under The State Council, the administrative department of sports at or above the county level jointly with the administrative department of human resources and social security shall order a correction, and there are illegal gains. The illegal gains shall be confiscated and a fine of not less than 5,000 yuan but not more than 30,000 yuan shall be imposed; Where personal injury is caused, the person responsible shall bear civil liability for compensation according to law.

The 2010 "National Fitness Program Outline" is about to expire in 2025, before the "National fitness Regulations" will be formally implemented, where the various

coaches engaged in fitness guidance in commercial fitness venues, if there is no national professional qualification certification, the practitioners themselves and venue operators will face the risk of being held legally responsible.

With the rapid development of China's fitness market in recent years, people's demand for fitness coaches is also increasing, a variety of fitness coach training institutions also emerged, there are a variety of domestic institutions, there are a variety of foreign certificates, mainly the following:

1. National professional qualification certification of fitness coach

At present, the most formal, the most legal effect of the necessary work certificate for fitness coaches, by the State General Administration of Sports vocational skills appraisal center comprehensive management. The training of the certificate is implemented by the authorized sports industry-specific vocational training base (with official number), and the sports industry-specific professional skills identification station organizes the identification, strictly implementing the system of separation of training and assessment. The certificate issued after passing the assessment has the seal of the Ministry of Labor and Social Security, the Personnel Department of the General Administration of Sport of the State, and the professional skills identification station of the specific jobs in the sports industry.

2. Grade fitness instructor certificate

A certificate commissioned by the Chinese Bodybuilding Association and issued by various local units.

3. Completion certificates issued by various institutions

The certificates organized by various training institutions at home and abroad and assessed by themselves prove that the certified personnel have participated in certain training programs in a period of time and have met the assessment requirements and standards of the training institutions, such as AASFP, AFAA, IPTI, CAA and the enterprise completion certificates issued by various local

training institutions. How to get the national professional Qualification Certificate of fitness coach?

To obtain the national professional qualification certificate for fitness coaches, you must go to the "sports industry-specific vocational training pilot unit (officially listed, with training institution number, with school-running license certification) authorized by the State General Administration of Sport. And the training unit organized to participate in the provincial sports industry specific professional skills identification station for the identification (by the State General Administration of Sport organization with the evaluation qualification of a number of evaluators jointly), through the public theory, professional theory and practical skills assessment, the qualified person awarded the national professional qualification certificate of fitness coach.

Junior fitness instructor (with one of the following conditions) (1) Through the primary formal training of the occupation to achieve the prescribed standard hours, and obtain a certificate of completion. (2) continuously working in this occupation for more than 1 year, and teaching more than 400 hours. (3) Obtain a college diploma or above in physical education.

Intermediate fitness coach (with one of the following conditions) (1) After obtaining the primary vocational qualification certificate of the occupation, continuously engaged in the occupation for more than 2 years, through the intermediate formal training of the occupation to reach the specified standard number of hours, and obtain the completion certificate. (2) Have been working in this occupation for more than 3 years, and have taught 1,500 classes. (3) Graduates with bachelor's degree or above in physical education from colleges and universities and one year's practical work experience as fitness instructors. (4) to obtain a level (including) above the athlete grade certificate, through the professional intermediate formal training to reach the prescribed standard number of hours, and obtain a certificate of completion.

Senior fitness coach (with one of the following conditions) (1) After

obtaining the intermediate vocational qualification certificate of the occupation, continuously engaged in the occupation for more than 3 years, through the advanced formal training of the occupation to reach the specified standard number of hours, and obtain the completion certificate. (2) After obtaining the intermediate vocational qualification certificate of the occupation, he/she has been engaged in the occupation for more than 5 years continuously.

Instructor level fitness coach (with one of the following conditions) (1) After obtaining the senior professional qualification certificate of this occupation, continuously engaged in this occupation for more than 3 years, through the formal training of the professional instructor to reach the specified standard number of hours, and obtain the completion certificate. (2) After obtaining the advanced professional qualification certificate of the occupation, he/she has been engaged in the occupation for more than 5 years continuously.

3.2 Sports nutrition

The demand for fitness personal trainers in the fitness service market has gradually increased, attracting many young men and women to join the fitness personal trainer team. There is ample evidence that fitness coaches can play an important role in nutrition-related behaviors based on their clients' personalized nutrition-related counseling activities, but there is considerable global concern about their level of knowledge to become a nutrition coach. Worldwide, the number of people in health clubs is on the rise, embarking on a journey to lose weight or improve their figure and health; As a result, the number of gyms and personal trainers is also growing indirectly. The gym is an ideal place to improve your health (Ni, 2007). In addition to exercise, discussing nutrition also plays a high priority role, therefore, fitness enthusiasts seek nutritional advice as it is a beneficial act to establish and identify the best nutritional supplement methods, as well as to dispel nutritional "myths" generated and spread due to the provision of misinformation.

Personal trainers are well suited to provide basic nutritional care while guiding physical activity, as those trying to improve the effectiveness of their workouts are likely to also provide health related nutrition advice to fitness trainers. To change customers' eating habits. In today's increasingly perfect "fitness service" - "diet" and "training" as a long-term plan, must be more in line with the needs of members. This increase in demand has been accompanied by the emergence of more dietary concepts: high-protein diets, low-carb or even no-carb diets, intermittent fasting, Mediterranean diets, etc. Faced with the complexity and confusion of social media messages, personal trainer members believe that their coach is the only expert who can answer the questions. In the future, there will be more and more members with nutritional needs, and the reasons behind this include the gradual increase in health awareness of consumers. There is no doubt that the influence of eating habits is great, and the nourishing culture of China has a profound influence on the Chinese people, and these eating habits have been printed in the memory of the Chinese people. For fitness trainers who want to continue their development, improving their skills related to sports nutrition has become key to their career advancement.

By understanding personal trainers' views on nutritional care, their role and scope of practice, providing nutritional advice to people is a very important project to better develop fitness trainers, and personal trainers can provide nutritional care in a safe and effective way so that people can be healthy and increase the number of people in the club. In order for health clubs to have better economic results, it is very important to provide nutritional advice to different groups. This paper investigates and analyzes the knowledge, attitude and confidence of personal trainers working in health clubs in Jiuquan, Gansu Province, China, in providing nutritional advice to clients.

Sports nutrition is a new science in our country. In 1958, Professor Chen Jidi, the first person in this field in China, established this discipline. After more than 50 years of development and improvement, with the increasing demand of different

populations for sports nutrition, it has developed into an independent discipline and become a research hotspot of sports science. The definition of sports nutrition in China is a science that combines nutrition, physiological biochemistry and kinematics, studies and evaluates the metabolism and physical condition of the moving human body, and provides reasonable nutritional supplement, recovery means and sports guidance. This discipline plays an important role in helping scientific training, improving physical fitness and enhancing competitive athletic performance. It plays a role in promoting health in the national fitness campaign.

The establishment of sports nutrition concept and the development of sports nutrition food began in western countries. In 1994, the U.S. Congress passed the Dietary Supplement Health Education Campaign Act and the formal definition: When a product (other than tobacco) is intended to promote health and contains vitamins, minerals, amino acids, herbs, plant amino acids and other nutrients for health purposes, similar to the form of a drug, such as tablets, capsules, powders, oral liquids, etc., a food is a dietary supplement. This act promoted the rapid development of dietary supplements in the United States, but also increased the market share of sports nutrition foods. In the EU Food Standards Regulation issued on February 15, 2001, the "Guidelines for Added Substances in foods for Special nutritional Purposes" pointed out that dietary supplements for specific medical purposes can add inositol, taurine, glutamine, carnitine, etc. In 2003, the Australian and New Zealand Food Standards Regulation 2.9.4 set maximum daily additions for L-carnitine, choline, inositol, glutamine, taurine and other ingredients. All of these have created a good environment for the development of sports nutrition food, making sports nutrition food in the above-mentioned countries develop faster than other types of food.

In China, the start time of sports nutrition food is 10-15 years later than in Western countries. In 1994, China promulgated the first sports nutrition food standard, "National Standard for Sports Drinks GB15266-94". After two revisions, the national

standard for sports drinks GB 15266-2009 was published in 2009. In 2006, the National Development and Reform Commission issued four industry standards for China's light industry: GB/T 2831-2006 Sports nutrition food energy supplement food, GB/T 2832-2006 Sports nutrition food protein supplement food, GB/T 2833-2006 sports nutrition food energy control food, GB/T 2834-2006 sports nutrition food creatine. In 2007, GB/T 2895-2007 sports nutrition food was officially released. In 2009, the General Administration of Quality Supervision, Inspection and Quarantine and the National Standardization Committee officially issued the "General Rules for Sports Nutrition Food". In the general rules, sports nutrition foods are defined for the first time as "foods that supplement and meet the special needs of human sports nutrients." So far, sports nutrition food has its own status and development space in our country. The establishment of these standards will greatly promote the development of China's sports nutrition food industry.

In our country, not eating enough does not achieve the effect of muscle, and eating too much does not reduce the need for fat." Three points for training and seven points for eating "has always been the golden rule of fitness." But with how we eat, more and more complex nutritional issues arise. If a qualified private tutor is also competent in basic fat loss and muscle building issues, then for more people, they may be more curious about the effects of "cutting carbon and producing ketones" on the body. And those meal replacements that are widely available online, companies can't explain, and members turn to coaches for answers. For example, the recent hot topic of "sugar-free, sugar-free alternatives" drinks, namely aspartame sweetener cancer, has made headlines on multiple online channels. The first outlet members can ask about is their personal trainer. This is not an uncommon problem, you may also encounter questions such as "the difference between plant protein powder and animal protein powder, eating only protein bars for dinner, why I insist on not eating meat for a month or not losing weight" and so on. There are a lot of dietary issues involved. In the

competition with coaches, there are also various training and promotion of nutritious diets on social platforms such as Douyin and Xiaohongshu. However, the popularity of short videos is sometimes not strict, and there are many misleading phenomena in the network.

The process of coach specialization has advanced to today, and China's fitness coaches are developing in a broader direction. On a deeper level, the field of fitness trainers is becoming more vertically segmented. Mass weightlifting, crossfit, powerlifting and body fitness trainers are increasingly appearing on the market to provide more refined training services to different groups, rather than just meeting the traditional needs of the fitness community, such as muscle building and weight loss. From a broader perspective, fitness trainers are getting closer to being healthy lifestyle coaches. Not only is the focus on physical function and athletic ability, but also diet nutrition, sleep quality and mental health are becoming increasingly important components. In the North American coaching system, all-around health coaching and sports nutrition has entered the IHEA (International Federation for Health and Sport) system, which is one of the five authoritative certifications in the world. If the average personal trainer has not taken a professional nutrition course and is not licensed in sports nutrition, then they do not have this ability when it comes to giving detailed nutrition advice and meals. But training and nutrition cannot be separated, and when faced with more members who need to build muscle and lose weight, a lack of adequate nutrition knowledge will cut short a complete training program." For example, when formulating a diet plan, sports dietitians need to consider not only the exercise needs and physical performance, but also the personal preferences of their members and their physical conditions, whether there are chronic diseases and other factors. The regular training diet is a quick search on the fast and easy web. Sports dietitians can develop a more effective plan based on the needs of their clients and their own circumstances. The growth of market demand must be accompanied by a high degree

of fitness services. That's why more and more coaches are learning about sports nutrition.

3.3 Three factors that influence the nutritional advice provided by personal fitness trainers.

The modern Chinese dictionary holds that "theory is a systematic argument about the common sense of nature and society summed up from practice". The explanation of theory in philosophy is that people's abstract and concrete images of nature and society, according to known cognition and knowledge, through systematic reasoning and deduction, and finally draw a logical conclusion. From the above, it can be seen that the theory is all-encompassing, covering different fields and disciplines, and has distinct characteristics of systematic diversification. Through consulting a large number of literature and books, and according to the essence of the work and practical connotation of the fitness coach profession, it is not difficult to know that fitness coaches need to teach general and practical conceptual knowledge and principles (namely, basic theory), teach practical operating techniques (namely, professional theory), and use artistic language and thinking methods (namely, theories related to fitness). By analogy, the characteristics of theoretical knowledge of fitness coaches include: basic theory (sports nutrition, anatomy, sports medicine, etc.); Professional theory (fitness and health club service guide, etc.); Relevant fitness theory (linguistics, marketing, PR etiquette, etc.) (Brien & Mowder, 1993).

Knowledge of sports nutrition:According to the work content and practical nature of the fitness coach, the work content of the fitness coach mainly includes the daily standard and plan for fitness teaching (namely fitness teaching), the formulation of sports nutrition programs and prescriptions according to the different physical and mental conditions of the fitness coach, and the application of assistive technology and emergency ability (auxiliary skills) according to the individual conditions of the fitness coach. It can be seen that the knowledge of sports nutrition of fitness

coaches mainly includes three parts: (1) basic knowledge of sports nutrition; (2) sports nutrition prescription formulation skills; (3) Sports nutrition auxiliary skills. Only by mastering the correct knowledge of sports nutrition, can we provide safe and healthy sports nutrition recommendations according to the different needs of fitness people in different physical conditions.

Attitudes of male and female personal trainers when giving nutritional advice:The trainer is the backbone of the health club. The attitude of providing nutrition advice to students directly affects the teaching strength of health clubs and the improvement of the physical fitness of customers. Customer satisfaction is closely related to the economic benefit, survival rate and development level of the health club.

Fitness instructors are at the heart of the health club and their expertise in sports nutrition has a vital impact on students' fitness grades and health. In the health club, the coaches not only guide the students through various sports training, but also provide personalized nutritional advice according to the students' physical conditions and needs.

Nutritional advice provided by coaches can not only help students better achieve their fitness goals, but also improve their physical fitness and quality of life. If the coach's attitude towards nutritional advice is not serious enough and does not develop a sports nutrition program suitable for students according to different groups, different physical conditions and needs, it may lead to the fitness results of students and may even have a negative impact on the health of students. Therefore, the attitude of fitness coaches to provide sports nutrition programs directly affects the teaching strength and reputation of health clubs. An excellent fitness coach not only needs to have professional knowledge and skills, but also needs to have good communication skills, service awareness and responsibility, and be able to provide students with a full range of services and support. Customer satisfaction is one of the key factors of health club's economic benefit and survival and development. If students are not satisfied with

the teaching and service attitude of the fitness coach, they may choose to leave the club, resulting in a decline in the economic benefits of the club. Therefore, improving the service attitude of fitness coaches and improving customer satisfaction is an issue that health clubs must pay attention to.

In order to improve customer satisfaction, health clubs need to strengthen the training and management of coaches, improve their attitude and service awareness. At the same time, the club also needs to pay attention to the needs and feedback of students, and constantly improve and improve the service attitude and service quality. Only in this way can we attract more students to join the club and maintain their loyalty, thus achieving the long-term stable development of the club. The fitness coach is the core strength of the health club, and its professional knowledge and skills have a crucial impact on the fitness effect and health status of the students. In the health club, the coaches not only guide the students through various sports training, but also provide personalized nutritional advice according to the students' physical conditions and needs. Nutritional advice provided by coaches can not only help students better achieve their fitness goals, but also improve their physical fitness and quality of life. If the coach's attitude towards nutrition advice is not serious enough to make a suitable nutrition plan according to different constitutions and different needs, it may lead to poor health performance of students, and may even have a negative impact on the health of students. Therefore, the attitude of fitness coaches to provide sports nutrition programs is serious or not, which directly affects the teaching strength and reputation of health clubs.

An excellent fitness coach not only needs to have professional knowledge and skills, but also needs to have good communication skills, service awareness and responsibility. They need to understand the needs and goals of their students and provide them with personalized fitness programs and nutrition advice. At the same time, they also need to maintain good communication and interaction with

students, with a good service attitude and a good professional attitude, timely solve students' problems and doubts, and improve students' satisfaction and loyalty. Customer satisfaction is one of the key factors of health club's economic benefit and survival and development. If students are not satisfied with the teaching and service attitude of the fitness coach, they may choose to leave the club, resulting in a decline in the economic benefits of the club. Therefore, improving customer satisfaction is an issue that health clubs must focus on.

In order to improve customer satisfaction, health clubs need to strengthen the training and management of coaches, improve the coach's serious and responsible attitude and good service awareness. At the same time, the club also needs to pay attention to the needs and feedback of students, and constantly improve and improve the service attitude and service quality. Only in this way can we attract more students to join the club and maintain their loyalty, thus achieving the long-term stable development of the club. In addition, health clubs can also improve student satisfaction by offering more services and activities. For example, regular health talks, nutrition counseling and other activities can be held to give students a better understanding of nutrition and health and increase their participation and satisfaction.

In short, fitness instructors are the backbone of a health club. Whether they can seriously use their professional knowledge and skills to develop a more suitable sports nutrition plan for students has an important impact on the health effect and health status of students. Improving customer satisfaction is a problem that health clubs must pay attention to, strengthening the training and management of coaches, improving their service attitude and responsibility, paying attention to the needs and feedback of students, providing more and better service and service attitude is an effective way to achieve this goal.

Self-confidence of male and female fitness trainers in giving sports nutrition programs.

As a fitness instructor, providing nutritional advice to students is an integral part of their job. In this process, confidence is crucial. So where does the confidence of fitness trainers come from?

Barnes' research shows that communication and consultation are the most confident structures for personal trainers. This may be because personal training is a service that requires a strong focus on client-centered care and communication. Or, confidence may come from how often personal trainers are asked and discuss nutrition issues with clients. This high confidence in communication can be used to support the education of private trainers, which can focus on how to communicate the limitations of their scope of practice to clients and increase communication with relevant healthcare professionals. Communication between health professionals and personal trainers may help coordinate care, which may better support positive and sustainable health outcomes for healthy clients (Maxwell et al., 2017; Sports, 2004).

In this study, personal trainers were less confident in their nutrition knowledge than in their nutrition skills and attitudes. While personal trainers did not rate their knowledge low, personal trainers reported low confidence in their knowledge and ability to access up-to-date, evidence-based nutrition information. It is worth noting that the actual knowledge of personal trainers is still unclear. However, previous research has shown that personal trainers may use unreliable sources of information to back up their knowledge, such as textbooks (which may not be up to date), course notes, the Internet, and word of mouth. Interestingly, the study found that participation in nutrition-related professional development did not affect people's confidence in their knowledge of nutrition. It is not clear what all nutrition-related professional development courses cover; However, confidence in the ability to access up-to-date information was low. Therefore, additional education should focus on sources of information and critical analysis of nutritional content, which may help personal trainers feel more confident in obtaining the most up-to-date information to provide nutritional care.

The higher the confidence in nutrition knowledge and the confidence in nutrition skills and the attitude towards nutrition, the better. Providing further nutrition training (leading to increased confidence in nutritional knowledge) may encourage personal trainers to feel empowered to provide nutritional care beyond their recommended practice. Any education aimed at developing personal trainers' nutritional knowledge and skills needs to focus on the limitations of personal trainers' nutritional knowledge, the boundaries of their role and the importance of a multidisciplinary approach to client care. The development of specific competency standards for personal trainers may require the development of nutrition knowledge and skills in basic fitness education and may help guide personal trainers in proper sports nutrition professional development after registration. For example, "Being able to identify and apply appropriate dietary data collection methods (food diaries, food recalls, and food frequency questionnaires) to support client dietary behavior change in line with the National Dietary Guidelines as a competency standard may contribute to achieving the desired nutritional knowledge and skills, supporting personal trainers to provide sports-nutrition-based care," While remaining within safe practice (Lv, 2012).

Personal trainers feel confident in their ability to provide nutritional care and demonstrate a good attitude towards providing nutritional care to patients with or without chronic conditions. Such fitness trainers have the potential to support clients in improving their eating behaviour. To assist personal trainers in providing safe and effective nutritional care within their current practice, regular education in skills such as sports nutrition seminars and new sources of sports nutrition information should be considered. The nutritional capabilities of personal fitness trainers can be further strengthened by providing guidance to personal trainers in order to develop their knowledge and skills while recognizing their professional limitations. To increase fitness trainers' confidence in the nutrition programs they offer their clients.

First of all, the professional quality of fitness instructors is the cornerstone

of their confidence. They have a wealth of nutritional knowledge, understanding the nutritional composition of various foods and the nutrients required by the human body. At the same time, you also need to have a wealth of practical experience, according to the physical condition and needs of students, tailored to the appropriate diet plan. In addition, fitness instructors also need to continue their studies on a regular basis to improve their professional level so as to provide better services to students.

Secondly, understanding the physical condition and needs of the trainees is also key to developing nutritional recommendations for fitness instructors. They assessed the students' nutritional status by measuring their height to weight ratio, body fat percentage and other measures. At the same time, they will also learn about students' exercise, eating habits and other information to provide a basis for personalized meal plans.

In the process of developing nutritional recommendations, the fitness instructor will design a daily meal plan based on the nutritional status and needs of the student. They take into account the nutritional content and calories of various foods to ensure that students are getting enough nutrients such as protein, fat, carbohydrates, vitamins and minerals every day. At the same time, they constantly adjust and optimize the meal plan based on student feedback and evaluation results.

In addition to accumulating professional knowledge and practical experience, feedback and evaluation of students' success is also one of the sources of confidence for fitness coaches. When students adjust their diet according to their suggestions, their physical condition improves and their athletic performance improves, which is undoubtedly the greatest affirmation of the work of fitness instructors. This successful feedback will make them more confident and motivated to provide better services to their students. Finally, the love and dedication to the fitness industry is also a reflection of the confidence of the fitness coach. They know that their work is vital to the health and well-being of their students, so they are committed to it as well. This love and

dedication enables them to face challenges with more confidence and provide more professional and personalized service to students.

In short, the researcher believes that the confidence of fitness coaches in formulating nutrition recommendations for students comes from many factors, such as their professional knowledge, the way to update and accept new knowledge, regular training in nutrition knowledge, rich practical experience, and awareness of their professional limitations and understanding of members' physical conditions and exercise time, the process of formulating nutrition recommendations, and so on. And successful feedback and evaluation. This increased confidence helps them to better serve their participants and help them achieve their own health goals.

As for the influencing factors of the above three aspects, there is no detailed information in books and journals, which are mainly constructed by the researchers themselves and designed questionnaires based on the above indicators for investigation and research. The focus is on the knowledge, attitude and confidence of male and female personal trainers in providing nutritional advice to clients. In order to make a targeted and effective comparative study on the characteristics of male and female fitness personal trainers, better understand the overall appearance of male and female fitness trainers, strengthen the public's cognition of the characteristics and advantages and disadvantages of fitness personal trainers on sports nutrition advice, clarify the difference and influence of different demographic characteristics on sports nutrition advice of fitness personal trainers, and improve the professional skills of fitness personal trainers. It provides more useful reference and inspiration for the career development of male and female fitness coaches.

CHAPTER III
RESEARCH METHODOLOGY

In order to achieve the research objectives as specified, the researcher has proceeded as follows:

1. Population definition and sampling

1.1 Population

Population in this research were 83 fitness coaches (44 male and 39 female) in 15 fitness clubs in Gansu, Jiuquan City.

1.2 Sampling and sample size

Participants of this research were all fitness coaches (44 male and 39 female) in 15 fitness clubs in Gansu, Jiuquan City. This sample size was calculated using Taro Yamane's formula (Barnes et al., 2016), with the addition of 20% of the number obtained from this formula in order to prevent data inadequacy resulted from drop out or incomplete answers to the questions. The calculation of the sample size is illustrated as followed;

Taro Yamane's formula[44] $n = \frac{N}{1+Ne^2}$

where n = the sample size, 1 = the constant value, N = the number of population under the research, and ***e*** = the acceptable sampling error, using 0.05.

The number of participants obtained from this formula was 68.74 (69 subjects). When adding 20% of this number, the total number of participants in this research was 69 + 13.80 = 82.80 (83 participants) as shown in **Table 1**.

TABLE 1 The distribution of participants used in the research

Name of Fitness	Number of fitness coach		
	Total	Male	Female
1. Matrix Fitness Club	8	5	3
2. Yiyang International Fitness Club	5	3	2
3. Dynamic Times Fitness Club	6	3	3
4. Yuedong Fitness Club	5	2	3
5. Noson Fitness Club	8	3	5
6. Light Weight Fitness Studio	4	2	2
7. Muson Fitness Studio	7	3	4
8. Zero Wine Sanqi Fitness Studio	3	2	1
9. Hulk Fitness Studio	5	4	1
10. Light Burning Fitness Studio	4	1	3
11. Shape and Beauty Fitness Studio	6	3	3
12. Henuo Fitness Studio (Yumen)	4	3	1
13. Lekang Fitness Club (Yumen)	3	2	1
14. Hengshu Fitness Club (Jiayuguan)	8	5	3
15. Martin fitness studio (Jiayuguan)	7	3	4
Total	83	44	39

Inclusion criteria

- Male and female fitness coaches working in fitness clubs in Gansu, Jiuquan City
- Volunteer to participate in the study

Exclusion criteria

- Incomplete or incorrect answer to the questions

Termination criteria

- Do not wish to participate in the study

2. Ethical consideration

The data collection of this research was conducted after the approval from the Ethical Committee (serial number JQZY-2024BS-1116), as shown in Appendix III.

3. Materials and methods

3.1 Characteristics of the questionnaire used in the research

The questionnaire entitled "Confidence and attitude in providing nutrition advice to clients in fitness coaches" (Appendix I) was used for data collection. This questionnaire was designed by the research under the guidance of the thesis advisor, consisting of 4 parts as followed:

Part 1 Personal information of respondents (10 items)

Part 2 Confidence in providing services to clients

2.1 Knowledge about nutrition, chronic diseases, exercise, and sports (10 items)

2.2 Nutrition skills (10 items)

2.3 Nutrition communication and counselling (9 items)

Part 3 Nutrition service attitude (8 items)

Part 4 Improving nutrition knowledge and skills (3 items)

The questions in section 2 to 6 were modified from the nutrition competence (NUTCOMP) questionnaire of the Griffith University, Australia. This questionnaire is widely recognized as a validated tool to assess the self-perceived competence of health professionals in providing nutrition-related information , and has been widely applied in international setting (Barnes et al., 2019). The modification of this questionnaire was to correspond with the aims of the research and the context of fitness coaches in China.

3.2 Evaluating the questionnaire's quality

1. The first draft of the questionnaire was evaluated for the content validity using the index of item-objective congruence (IOC) method (Kiss et al., 2020). Briefly, three experts in related fields (Appendix II) were asked to rate individual questions based on the degree to which they measure the objectives of the research. The experts will evaluate each question by giving the question a rating as followed:

1 = clearly measuring

-1 = clearly not measuring

0 = measure of the content area is unclear

The rating of each question from each expert was averaged to provide IOC scores, ranging from -1 to 1. A question having average IOC score of 0.5 or more was kept without correction, but those having average IOC score of less than 0.5 was corrected by the researcher under the thesis advisor's guidance to be inconsistent with the research's objectives.

2. .After correction, the questionnaire draft was evaluated for the internal consistency using the Cronbach's alpha method (Yamane, 1973). For this stage, 30 persons, who have similar characteristics to the subjects, were asked to complete the questionnaire, after which the data obtained were analyzed for alpha coefficient, expressing as a number between 0 (no correlation between the questions) and 1 (perfect correlation between the questions). In this research, the value of alpha coefficient at 0.70 or more was accepted.

3. The results of the Cronbach's alpha analysis were taken into consideration for adjusting the questionnaire (deleting the questions with the alpha coefficient less than 0.7) in order to have the acceptable internal consistency.

4. After the adjustment, a final questionnaire was accomplished, and online version was used for data collection in the participants.

3.3 Data collection processes

The data collection was conducted by the researcher through the following processes:

1. Making an appointment with the manager of each fitness for researcher's explanation of the research details and the manager's permission of the data collection

2. Making an appointment with each participants after the manager's permission for researcher's explanation of the research details and participants's volunteer to participate in the research and signing in the informed consent form

3. Providing the participants with a link to the questionnaire (https://www.wjx.cn/vm/P5GXX6q.aspx#) and allowing them to complete the questionnaire over a period of 2 weeks

4. Checking for the completeness and accuracy of the questionnaires obtained from the participants, and preparing for data analysis

4. Data analysis and statistics

The Statistical Package for the Social Science (SPSS) for Window was employed for the following analyses:

1. Descriptive statistics (i.e., frequency, percentage, mean, and standard deviation) for personal information, confidence, and attitude of the participants

2. Independent t-test for comparison between male and female participants

3. Multiple linear regression for factor analysis of confidence and attitude in the participants

4. Statistical significance was accepted at $p<0.05$

CHAPTER IV
RESULTS

The results of this study are presented in the form of tables, figures, and narratives, arranged according to the research objectives as follows:

1. The quality of the questionnaire

The validity and reliability (the Cronbach's alpha) of the questionnaire used for data collection in this research were 0.99 and 0.94, respectively.

2. Personal information of the participants

Eighty-three fitness coaches (44 men and 39 women) from 15 fitness clubs and studios completed the research questionnaire. This number represents 100% of the sample size calculated in Chapter 3. The personal information of the subjects is shown in Table 1.

As shown in Table 2, the age, experience as a fitness coach, and experience in providing nutrition services of male participants were ranged at 24-28, 3-7, and 2-7 years, respectively, and those of female participants were ranged at 23-26, 2-5, and 1-4 years, respectively. The average age, experience as a fitness coach, and experience in providing nutrition services of male participants were significantly higher than those of female participants (p-value of all comparisons = 0.001).

As shown in Table 2, the majority of participants was full-time fitness coaches (male 93.18%, female 94.87%), had a bachelor's degree as their highest educational attainment (male 59.09%, female 66.67%), was fitness enthusiasts before becoming fitness coaches (male 65.91%, female 64.10), hold certificate issued by the Sports and Fitness Association (male 79.55%, female 58.97%), and had satisfaction with their current jobs at "very good" (male 63.64%, female 71.79%). Female participants also differed from male participants in that they hold master's degree or above (15.38%) and obtained National Fitness Instructor Certificates (5.13%) and International Fitness

Instruction Certificates (12.82%).

TABLE 2 Personal information of the participants (mean±S.D.)

Personal information	Male (N = 44)	Female (N = 39)	Total
1. Age (year)	25.52±0.81	24.51±0.75*	25.05±0.93
2. Experience as fitness coach (year)	4.77±0.76	3.74±0.84*	4.29±0.95
3. Experience in providing nutrition service (year)	4.36±0.91	3.05±0.68*	3.75±1.04
4. Type of occupation as fitness coach (%)			
- Full time	93.18	94.87	93.98
- Part time	6.82	5.13	6.02
5. Highest education level (%)			
- College degree	40.91	17.95	30.12
- Bachelor degree	59.09	66.67	62.65
- Master's degree or above	0	15.38	7.23
6. Occupation before becoming fitness coach (%)			
- Student	11.36	10.26	10.84
- Freelance	22.73	25.64	24.10
- Fitness enthusiast	65.91	64.10	65.06
7. Fitness coach training qualification currently had (%)			
- Certificate issued by the Sports and Fitness Association	79.55	58.97	69.88
- Social Sports Instructor	20.45	25.64	22.89
- Other certifications (National and International Fitness Instruction Certificates)	0	17.95	7.23

Table 2 (Continue)

Personal information	Male (N = 44)	Female (N = 39)	Total
8. Satisfaction with the current fitness coach jobs (%)			
- Very good	63.64	71.79	67.47
- Good	36.36	28.21	32.53

* Significant difference between men and women at $p < 0.01$

3. Confidence in providing nutritional services

3.1 Confidence in knowledge about nutrition, chronic diseases, exercise, and sports

The percentage and average (±S.D.) value of confident scores in knowledge about nutrition, chronic diseases, exercise, and sports of male and female participants are shown in Table 3. From this table, the confident score (corresponding level) in male participants for the 1st, 2nd, 4th, 5th, 7th, 8th, and 10th item were 3-5 (not very confident-extremely confident), and for the 3rd, 6th, and 9th item were 2-5 (somewhat confident-extremely confident), with the majority of the score (corresponding level) for the 1st-10th item at 4 (very confident, 63.64%), 4 (very confident, 56.82%), 5 (extremely confident, 43.18%), 4 (very confident, 54.55%), 4 (very confident, 47.73%), 4 (very confident, 47.73%), 4 (very confident, 56.82%), 4 (very confident, 45.45%), 4 (very confident, 45.45%), and 4 (very confident, 63.64%), respectively, and for all items at 4 (very confident, 52.27±7.54%).

In female participants, the confident score (corresponding level) for the 1st, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th item were 3-5 (not very confident-extremely confident), and for the 2nd item were 4-5 (very confident-extremely confident), with the majority of the

score (corresponding level) for the 1st-10th item at 5 (extremely confident, 66.67%), 4 (very confident, 53.85%), 5 (extremely confident, 58.97%), 5 (extremely confident, 48.72%), 5 (extremely confident, 48.72%), 5 (very confident, 48.72%), 4 (very confident, 51.28%), 5 (extremely confident, 56.41%), 5 (extremely confident, 56.41%), and 5 (extremely confident, 61.54%), respectively, and for all items at 5 (extremely confident, 53.33±7.50%)

In comparison, the mean score of confidence for the 1st-10th item was significantly lower in male participants than female participants, and those for all items in was significantly lower in male participants than female participants (all comparisons; $p<0.01$).

TABLE 3 The percentage and average (±S.D.) value of confident scores in knowledge about nutrition, chronic diseases, exercise, and sports of male (N=44) female (N=39) participants

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
1. The China's healthy eating guideline that recommends food intake and composition for people of different ages, genders, and health status	Male	29.54	63.64	6.82	0	4.23±0.56
	Female	66.67	30.77	2.56	0	4.64±0.53*
	Total	46.99	48.19	4.82		4.42±0.58
2. The influence of foods, nutrients, and dietary supplements on the development and management of chronic	Male	34.09	56.82	9.09	0	4.25±0.61
	Female	46.15	53.85	0	0	4.46±0.50*
	Total	39.76	55.42	4.82	0	4.35±0.57

diseases

Table 3 (Continue)

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
3. The influence of body composition (including size, shape, weight) on a person's health, sports and exercise performance, and development of chronic diseases	Male	43.18	40.91	13.64	2.27	4.25±0.77
	Female	58.97	35.90	5.13	0	4.54±0.59*
	Total	50.60	38.55	9.65	1.20	4.39±0.71
4. The interaction of foods, nutrients, and dietary supplements with medications	Male	31.82	54.55	13.63	0	4.18±0.65
	Female	48.72	38.46	12.82	0	4.36±0.70*
	Total	39.76	46.99	13.25		4.27±0.68
5. Guidelines for the nutrition-related management of specific chronic diseases, such as obesity, type 2 diabetes, and cardiovascular diseases	Male	38.64	47.73	13.63	0	4.25±0.68
	Female	48.72	43.59	7.69	0	4.41±0.63*
	Total	43.37	45.78	10.85	0	4.33±0.66
6. Nutrition for enhancing sports and exercise performance	Male	36.36	47.73	13.64	2.27	4.18±0.75
	Female	48.72	43.59	7.69	0	4.41±0.63*
	Total	42.17	45.78	10.84	1.21	4.29±0.70

Table 3 (Continue)

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
7. Dietary supplements for different types of athletes and those who exercise in general	Male	36.36	56.82	6.82	0	4.30±0.59
	Female	41.03	51.28	7.69	0	4.33±0.61*
	Total	38.55	54.22	7.23		4.31±0.60
8. A drink suitable for different types of athletes and those who exercise in general	Male	40.91	45.45	13.64	0	4.27±0.69
	Female	56.41	28.21	15.38	0	4.41±0.74*
	Total	48.19	37.35	14.46		4.34±0.72
9. The most recently published peer-reviewed evidence regarding nutrition, sports and exercise performance, and chronic diseases	Male	36.36	45.45	15.91	2.28	4.16±0.77
	Female	56.41	35.90	7.69	0	4.49±0.64*
	Total	45.78	40.96	12.05	1.21	4.31±0.73
10. Doping	Male	25.00	63.64	11.36	0	4.14±0.59
	Female	61.54	33.33	5.13	0	4.56±0.59*
	Total	42.17	49.40	8.43		4.34±0.63
Total 1-10	Male	35.23	52.27	11.82	2.27	4.00±0.00
	Female	53.33	39.49	7.98	0	4.30±0.46*
	Total	43.73	46.27	9.64	0.36	4.33±0.66*

* Significant difference between men and women at $p<0.01$

3.2 Confidence in nutritional skills

The percentage and average (±S.D.) value of confident scores in nutritional skills of male and female participants are shown in Table 4. From this table, the confident score (corresponding level) in male participants for the 1st, 3rd, 4th, 6th, 7th, 9th, and 10th item were 3-5 (not very confident-extremely confident), and for the 2nd, 5th, and 8th item were 2-5 (somewhat confident-extremely confident), with the majority of the score (corresponding level) for the 1st-10th item at 5 (extremely confident, 50.00%), 4 (very confident, 47.73%), 4 (very confident, 52.27%), 4 (very confident, 54.55%), 5 (extremely confident, 45.45%), 4 (very confident, 54.55%), 4 (very confident, 45.45%), 4 (very confident, 56.82%), 5 (extremely confident, 47.73%), and 4 (very confident, 54.55%), respectively, and for all items at 4 (very confident, 48.41±6.75%).

In female participants, the confident score (corresponding level) for the 1st-9th item were 3-5 (not very confident-extremely confident), and for the 10th item were 4-5 (very confident-extremely confident), with the majority of the score (corresponding level) for the 1st-10th item at 5 (extremely confident, 58.97%), 5 (extremely confident, 53.85%), 4 (very confident, 53.85%), 5 (extremely confident, 58.97%), 5 (extremely confident, 58.97%), 4 (very confident, 51.28%), 5 (extremely confident, 56.41%), 5 (extremely confident, 56.41%), 5 (extremely confident, 58.97%), and 5 (extremely confident, 66.67%), respectively, and for all items at 5 (extremely confident, 55.13±7.71%)

In comparison, the mean score of confidence for the 1st-10th item was significantly lower in male participants than female participants, and those for all items in was significantly lower in male participants than female participants (all comparisons; $p<0.01$).

TABLE 4 The percentage and average (±S.D.) value of confident scores in knowledge about nutritional skills in male (N=44) and female (N=39) participants

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
1. Interpret data regarding height, weight, and body composition against reference range of Chinese people	Male	50.00	40.91	9.09	0	4.41±0.65
	Female	58.97	38.46	2.57	0	4.56±0.55*
	Total	54.22	39.76	6.02		4.48±0.61
2. Interpret the individual's biological data (e.g., blood pressure, cholesterol levels) against reference range	Male	34.09	47.73	15.91	2.27	4.14±0.76
	Female	53.85	43.59	2.56	0	4.51±0.55*
	Total	43.37	45.78	9.64	1.21	4.31±0.69
3. Collect information about personal eating habits (e.g. diet history, food frequency questionnaire)	Male	36.36	52.27	11.37	0	4.25±0.64
	Female	41.03	53.85	5.12	0	4.36±0.58*
	Total	38.55	53.01	8.44		4.30±0.62
4. Use the Chinese Guidelines for Healthy Eating to assess the appropriateness of an individual's food intake	Male	31.82	54.55	13.63	0	4.18±0.65
	Female	58.97	25.64	15.39	0	4.44±0.74*
	Total	44.58	40.96	14.46		4.30±0.71
5. Determine appropriate food or nutrition goals for an individual	Male	45.45	38.64	13.64	2.27	4.27±0.78
	Female	58.97	38.46	2.57	0	4.56±0.55*
	Total	51.81	38.55	8.43	1.21	4.43±0.69
6. Develop an eating plan, give advice, and recommend change in food choices for an individual	Male	36.36	54.55	9.09	0	4.27±0.62
	Female	41.03	51.28	7.69	0	4.33±0.61*
	Total	38.55	53.01	8.44		4.30±0.62

Table 4 (Continue)

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
7. Monitor and evaluate changes in food choices and the body for an individual over a period of time	Male	34.09	45.45	20.46	0	4.14±0.73
	Female	56.41	35.90	7.69	0	4.49±0.64*
	Total	44.58	40.96	14.46		4.30±0.71
8. Keep clear and concise records of nutrition-related assessment and advice you provide to an individual	Male	34.09	56.82	6.82	2.27	4.22±0.67
	Female	56.41	35.90	7.69	0	4.49±0.64
	Total	44.58	46.99	7.23	1.20	4.35±0.67
9. Access the most recent published peer-reviewed evidence in sports and exercise nutrition	Male	47.73	38.64	13.63	0	4.34±0.71
	Female	58.97	30.77	10.26	0	4.49±0.67*
	Total	53.01	34.94	12.05		4.41±0.69
10. Provide nutrition advice to improve an individual's eating habits	Male	31.82	54.55	13.63	0	4.18±0.65
	Female	66.67	33.33	0	0	4.67±0.47*
	Total	48.19	44.58	7.23		4.41±0.62
Total 1-10	Male	38.18	48.41	12.73	2.27	4.00±0.00
	Female	55.13	38.72	6.15	0.00	4.40±0.49*
	Total	46.14	43.86	9.64	0.36	4.36±0.67

* Significant difference between men and women at $p<0.01$

3.3 Confidence in nutritional communication and counselling

The percentage and average (±S.D.) value of confident scores in nutritional communication and counselling of male and female participants are shown in

Table 5. From this table, the confident score (corresponding level) in male participants for the 2nd, 3rd, 5th, 6th, 8th, and 9th item were 3-5 (not very confident-extremely confident), and for the 1st, 4th, and 7th item were 2-5 (somewhat confident-extremely confident), with the majority of the score (corresponding level) for the 1st item at 4 (very confident, 43.18%) and 5 (extremely confident, 43.18%), the 2nd-9th item at 5 (extremely confident, 50.00%), 4 (very confident, 56.82%), 5 (extremely confident, 47.73%), 4 (very confident, 47.73%), 4 (very confident, 61.36%), 5 (extremely confident, 63.64%), 4 (very confident, 50.00%), and 4 (very confident, 50.00%), respectively, and for all items at 4 (very confident, 46.97±9.99%).

In female participants, the confident score (corresponding level) for the 1st-7th and 9th item were 3-5 (not very confident-extremely confident), and for the 8th item were 4-5 (very confident-extremely confident), with the majority of the score (corresponding level) for the 1st-9th item at 4 (very confident, 51.28%), 5 (extremely confident, 58.97%), 5 (extremely confident, 58.97%), 4 (very confident, 56.41%), 5 (extremely confident, 48.72%), 5 (extremely confident, 56.41%), 5 (extremely confident, 53.85%), 4 (very confident, 53.85%), and 5 (extremely confident, 53.85%), respectively, and for all items at 5 (extremely confident, 51.28±6.51%)

In comparison, the mean score of confidence for the 1st-10th item was significantly lower in male participants than female participants, and those for all items in was significantly lower in male participants than female participants (all comparisons; $p<0.01$).

TABLE 5 The percentage and average (±S.D.) value of confident scores in nutritional communication and counselling in male (N=44) and female (N=39) participants

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
1. Clearly describe what the client needs and expects when discussing nutrition or food issues with you	Male	43.18	43.18	11.36	2.28	4.27±0.75
	Female	46.15	51.28	2.57	0	4.44±0.55*
	Total	44.58	46.99	7.23	1.2	4.35±0.67
2. Check a client's understanding of the influence of food and nutrients on their health and performance	Male	40.91	50.00	9.09	0	4.32±0.63
	Female	58.97	38.46	2.57	0	4.56±0.55*
	Total	49.40	44.58	6.02		4.43±0.61
3. Work with the client to identify possible dietary improvements and types of food	Male	40.91	56.82	2.27	0	4.39±0.53
	Female	58.97	38.46	2.57	0	4.56±0.55*
	Total	49.40	48.19	2.41		4.47±0.55
4. Have real empathy based on the food-related experience and what the client is hoping to achieve	Male	47.73	38.64	11.36	2.27	4.32±0.76
	Female	38.46	56.41	5.13	0	4.33±0.57*
	Total	43.37	46.99	8.43	1.21	4.33±0.68
5. Maintain a non-judgmental attitude when discussing the food eaten with the clients	Male	38.64	47.73	13.63	0	4.25±0.68
	Female	48.72	43.59	7.69	0	4.41±0.63*
	Total	43.37	45.78	10.85		4.33±0.66

Table 5 (Continue)

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
6. When communicating with customers about food and nutrient intake, use language that clients can understand	Male	27.27	61.36	11.37	0	4.16±0.60
	Female	56.41	35.90	7.69	0	4.49±0.64*
	Total	40.96	49.40	9.64		4.31±0.64
7. Consider the client's impact on dietary intake due to personal, social, cultural, psychological, and economic factors	Male	63.64	25.00	9.09	2.27	4.50±0.75
	Female	53.85	38.46	7.69	0	4.46±0.63*
	Total	59.04	31.33	8.43	1.2	4.48±0.70
8. Identify clients who need additional support from other health care professional, expert, or services regarding their food eaten	Male	43.18	50.00	6.82	0	4.36±0.61
	Female	46.15	53.85	0	0	4.46±0.50*
	Total	44.58	51.81	3.61		4.41±0.56
9. Communicate with a health care professional or expert to plan meals for clients with special medical conditions and special needs	Male	43.18	50.00	6.82	0	4.36±0.61
	Female	53.85	38.46	7.69	0	4.46±0.63*
	Total	48.19	44.58	7.23		4.41±0.62
Total 1-9	Male	43.18	46.97	9.09	0.76	4.11±0.31
	Female	51.28	43.87	4.84	0	4.22±0.42*
	Total	46.99	45.52	7.10	0.39	4.39±0.64

* Significant difference between men and women at $p<0.01$

4. Attitude in providing nutritional services

The percentage and average (±S.D.) value of confident scores in knowledge about nutrition, chronic diseases, exercise, and sports of male and female participants are shown in Table 6. From this table, the confident score (corresponding level) in male participants for the 2nd, 3rd, 5th, 6th, and 8th item were 3-5 (neither agree nor disagree-completely agree), and for the 1st, 4th, and 7th item were 2-5 (somewhat agree-completely agree), with the majority of the score (corresponding level) for the 1st-8th item at 4 (somewhat agree, 47.73%), 4 (somewhat agree, 56.82%), 5 (completely agree, 56.82%), 4 (somewhat agree, 52.27%), 5 (completely agree, 50.00%), 5 (completely agree, 45.45%), 5 (completely agree, 56.82%), and 4 (somewhat agree, 63.64%), respectively, and for all items at 4 (somewhat agree, 47.16±9.28%).

In female participants, the confident score (corresponding level) for the 1st and 2nd item were 4-5 (somewhat agree-completely agree), and for the 3rd-8th item were 3-5 (neither agree nor disagree-completely agree), with the majority of the score (corresponding level) for the 1st-8th item at 5 (completely agree, 58.97%), 5 (completely agree, 51.28%), 5 (completely agree, 53.85%), 5 (completely agree, 66.67%), 5 (completely agree, 51.28%), 4 (somewhat agree, 51.28%), 5 (completely agree, 66.67%), and 5 (completely agree, 53.85%), respectively, and for all items at 5 (completely agree, 55.57±7.45%)

In comparison, the mean score of confidence for the 1st-10th item was significantly lower in male participants than female participants, and those for all items in was significantly lower in male participants than female participants (all comparisons; $p<0.01$).

TABLE 6 The percentage and average (±S.D.) value of attitude scores in providing nutritional services in male (N=44) and female (N=39) participants

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
1. It is important that all individuals usually eat healthy foods regardless of age, body weight and physical activity levels	Male	38.64	47.73	11.36	2.27	4.23±0.73
	Female	58.97	41.03	0	0	4.59±0.49*
	Total	48.19	44.58	6.02	1.21	4.40±0.66
2. If the topic arises, it is important that I encourage my clients to eat healthy foods	Male	38.64	56.82	4.54	0	4.34±0.56
	Female	51.28	48.72	0	0	4.51±0.50*
	Total	44.58	53.01	2.41		4.42±0.54
3. It is important that I take every opportunity possible to encourage my patients/clients to eat healthy foods	Male	56.82	34.09	9.09	0	4.48±0.66
	Female	53.85	35.90	10.25	0	4.44±0.67*
	Total	55.42	34.94	9.64		4.46±0.66
4. Encouraging my clients to eat healthy foods is an effective use of my professional time	Male	34.09	52.27	11.36	2.28	4.18±0.72
	Female	66.67	28.21	5.12	0	4.62±0.58*
	Total	49.40	40.96	8.43	1.21	4.39±0.69
5. Providing specific nutrition recommendations to my clients that can assist with managing their chronic disease is an effective use of	Male	50.00	40.91	9.09	0	4.41±0.65
	Female	51.28	46.15	2.57	0	4.49±0.55*
	Total	50.60	43.37	6.02		4.45±0.61

my professional time

Table 6 (Continue)

Knowledge	Gender	Confident score (%)				$\bar{x}$±S.D.
		5	4	3	2	
6. Encouraging my clients to eat healthy foods is within my scope of practice	Male	45.45	43.18	11.37	0	4.34±0.67
	Female	43.59	51.28	5.13	0	4.38±0.58*
	Total	44.58	46.99	8.43		4.36±0.63
7. Providing specific nutrition recommendations to my clients that can assist with managing their chronic disease is within my scope of practice	Male	56.82	38.64	2.27	2.27	4.50±0.66
	Female	66.67	30.77	2.56	0	4.64±0.53*
	Total	61.45	34.94	2.41	1.2	4.57±0.61
8. It is important that I encourage my patients/clients to seek support from other health professionals if I am unable to meet their nutrition-related needs	Male	27.27	63.64	9.09	0	4.18±0.57
	Female	53.85	38.46	7.69	0	4.46±0.63*
	Total	39.76	51.81	8.43		4.31±0.62
Total 1-8	Male	43.47	47.16	8.52	0	4.13±0.33
	Female	55.77	40.07	4.17	0	4.50±0.50*
	Total	49.25	43.82	6.48	0	4.42±0.63

* Significant difference between men and women at $p<0.01$

5. Factors influencing the confidence and attitude in providing nutritional services

5.1 Factors influencing the confidence in knowledge about nutrition, chronic diseases, exercise, and sports

The results of the multiple linear regression analysis for the factors influencing the confidence in knowledge about nutrition, chronic diseases, exercise, and sports are shown in Table 7. From this table, the 9 factors could not be combined to significantly predict confidence in knowledge about nutrition, chronic diseases, exercise, and sports in male and female participants (p=0.685 and 0.226, respectively). The relationship of these factors to the confidence in knowledge about nutrition, chronic diseases, exercise, and sports in male and female participants was at "low" (R=0.372) and "moderate" (R=0.525), with the standard error of the estimate at ±1.102 and 1.373, respectively.

TABLE 7 Regression analysis to predict factors affecting the confidence in knowledge about nutrition, chronic diseases, exercise, and sports

Constant/Factor	Male					Female					Total				
	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.
Age	-0.281	0.147	-0.51	-1.915	0.064	0.171	0.197	0.254	0.865	0.394	-.016	.055	-.037	-.284	.777
Experience as fitness coach	0.175	0.113	0.412	1.548	0.131	-0.165	0.210	-0.246	-0.788	0.437	-.090	.106	-.197	-.846	.400
Experience in providing nutritional service	0.003	0.019	0.028	0.167	0.869	-0.017	0.016	-0.184	-1.029	0.312	.020	.100	.047	.205	.838
Number of clients	0.169	0.242	0.135	0.70	0.488	0.120	0.341	0.062	0.351	0.728	-.020	.011	-.197	-1.735	.087
Type of occupation as fitness coach	0.041	0.11	0.063	0.372	0.712	0.209	0.201	0.282	1.043	0.305	.036	.192	.022	.186	.853
Education level	-0.013	0.082	-0.029	-0.163	0.871	0.141	0.112	0.221	1.261	0.217	.122	.090	.177	1.357	.179
Occupation before becoming fitness coach	0.13	0.129	0.165	1.009	0.320	0.165	0.121	0.267	1.362	0.183	.090	.065	.157	1.396	.167
Fitness coach training qualifications currently had	-0.117	0.112	-0.178	-1.043	0.304	0.066	0.239	0.069	0.277	0.784	.163	.081	.233	2.008	.048
Satisfaction in fitness coach jobs	-0.281	0.147	-0.51	-1.915	0.064	0.171	0.197	0.254	0.865	0.394	-.030	.100	-.036	-.301	.765
	Constant=3.947, $SE_{Estimate}$=±1.012 R=0.372, R^2=0.139, F=0.705, Sig.=0.685					Constant=2.349, $SE_{Estimate}$=±1.373 R=0.525, R^2=0.276, F=1.427, Sig.=0.226					Constant =3.788, $SE_{Estimate}$ = 1.490 R=0.416, R^2=0.173, F =1.693, Sig.=0.106				

Abbreviation: B = Unstandardized B; Beta = Standardized Coefficients Beta; F = F-test; R = Multiple Regression; R^2 = R Square; SE_B = Coefficients Standard

Error; $SE_{Estimate}$ = Standard Error of the Estimate; Sig. = Significance; t = Statistical Test

5.2 Factors influencing the confidence in knowledge about nutritional skills

The results of the multiple linear regression analysis for the factors influencing the confidence in knowledge about nutritional skills are shown in Table 8. From this table, the 9 factors could not be combined to significantly predict confidence in knowledge about nutrition skills in male and female participants (p=0.771 and 0.228, respectively). The relationship of these factors to the confidence in knowledge about nutrition skills in male and female participants was at “low” (R=0.347) and “moderate” (R=0.524), with the standard error of the estimate at ±0.162 and 1.271, respectively.

TABLE 8 Regression analysis to predict factors affecting the confidence in knowledge about nutritional skills

Constant/Factor	Male					Female					Total				
	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.
Age	-0.219	0.162	-0.364	-1.353	0.185	0.26	0.183	0.419	1.425	0.164	-.022	.057	-.053	-.387	.700
Experience as fitness coach	0.106	0.124	0.229	0.851	0.401	-0.23	0.194	-0.37	-1.184	0.246	-.058	.109	-.129	-.532	.596
Experience in providing nutritional service	0.006	0.021	0.046	0.273	0.787	-0.013	0.015	-0.158	-0.885	0.383	-.024	.103	-.056	-.232	.817
Number of clients	-0.003	0.266	-0.002	-0.011	0.991	0.265	0.315	0.147	0.84	0.408	-.016	.012	-.165	-1.400	.166
Type of occupation as fitness coach	-0.122	0.121	-0.174	-1.012	0.319	0.107	0.186	0.155	0.574	0.57	.022	.198	.013	.111	.912
Education level	0.008	0.09	0.015	0.084	0.934	0.104	0.103	0.177	1.009	0.321	.028	.093	.040	.298	.766
Occupation before becoming fitness coach	-0.005	0.142	-0.006	-0.033	0.974	0.115	0.112	0.202	1.025	0.313	.078	.067	.137	1.174	.244
Fitness coach training qualifications currently had	-0.092	0.123	-0.128	-0.746	0.461	-0.016	0.221	-0.018	-0.072	0.943	.100	.084	.143	1.189	.238
Satisfaction in fitness coach jobs	-0.219	0.162	-0.364	-1.353	0.185	0.26	0.183	0.419	1.425	0.164	-.056	.103	-.067	-.543	.588
	Constant=5.35, $SE_{Estimate}$=±0.162 R=0.347, R^2=0.121, F=0.600, Sig.=0.771					Constant=3.004, $SE_{Estimate}$=±1.271 R=0.524, R^2=0.275, F=1.421, Sig.=0.228					Constant = 4.743, $SE_{Estimate}$ = 1.538 R =0.331,R^2 =0.110, F =0.998, Sig. =0.449				

Abbreviation: B = Unstandardized B; Beta = Standardized Coefficients Beta; F = F-test; R = Multiple Regression; R^2 = R Square; SE_B = Coefficients Standard Error; $SE_{Estimate}$ = Standard Error of the Estimate; Sig. = Significance; t = Statistical Test

5.3 Factors influencing the confidence in nutritional communication and counselling

The results of the multiple linear regression analysis for the factors influencing the confidence in nutritional communication and counselling are shown in Table 9. From this table, the 9 factors could not be combined to significantly predict confidence in nutritional communication and counselling in male and female participants (p=0.814 and 0.198, respectively). The relationship of these factors to the confidence in knowledge about nutrition skills in male and female participants was at "low" (R=0.333) and "moderate" (R=0.535), with the standard error of the estimate at ±1.030 and 1.174, respectively.

TABLE 9 Regression analysis to predict factors affecting the confidence in nutritional communication and counselling

Constant/Factor	Male					Female					Total				
	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.
Age	-0.218	0.149	-0.395	-1.459	0.154	0.282	0.169	0.488	1.672	0.105	-.018	.052	-.046	-.342	.733
Experience as fitness coach	0.123	0.115	0.288	1.066	0.294	-0.243	0.18	-0.421	-1.355	0.185	-.035	.099	-.085	-.352	.726
Experience in providing nutritional service	0.008	0.019	0.071	0.417	0.679	-0.015	0.014	-0.198	-1.117	0.273	-.024	.094	-.062	-.257	.798
Number of clients	0.126	0.246	0.100	0.511	0.612	0.273	0.291	0.163	0.938	0.356	-.016	.011	-.180	-1.535	.129
Type of occupation as fitness coach	-0.052	0.112	-0.081	-0.469	0.642	0.051	0.172	0.08	0.299	0.767	.072	.180	.048	.400	.691
Education level	0.033	0.084	0.072	0.397	0.694	0.092	0.095	0.167	0.959	0.345	.037	.085	.059	.438	.663
Occupation before becoming fitness coach	0.057	0.131	0.072	0.434	0.667	0.079	0.104	0.148	0.757	0.455	.092	.061	.176	1.516	.134
Fitness coach training qualifications currently had	-0.079	0.114	-0.119	-0.69	0.495	-0.051	0.204	-0.063	-0.251	0.803	.082	.076	.130	1.079	.284
Satisfaction in fitness coach jobs	-0.218	0.149	-0.395	-1.459	0.154	0.282	0.169	0.488	1.672	0.105	-.039	.094	-.052	-.421	.675
	Constant=4.485, $SE_{Estimate}$=±1.030 R=0.333, R^2=0.111, F=0.546, Sig.=0.814					Constant=3.486,$SE_{Estimate}$=±1.174 R=0.535, R^2=0.286, F=1.502, Sig.=0.198					Constant =4.485 , $SE_{Estimate}$= 1.399 R=0.341, R^2=0.116, F=1.065, Sig.=0.398				

Abbreviation: B = Unstandardized B; Beta = Standardized Coefficients Beta; F = F-test; R = Multiple Regression; R^2 = R Square; SE_B = Coefficients Standard Error; $SE_{Estimate}$ = Standard Error of the Estimate; Sig. = Significance; t = Statistical Test

5.4 Factors influencing the attitude in providing nutritional services

The results of the multiple linear regression analysis for the factors influencing the attitude in providing nutritional services are shown in Table 10. From this table, the 9 factors could not be combined to significantly predict attitude in providing nutritional services in male participants (p=0.814), with the relationship at “low” (R=0.308) and the standard error of the estimate at ±1.122.

In female participants, the 9 factors could be combined to significantly predict attitude in providing nutritional services by 39.70% (p=0.035), with the relationship at “high” (R=0.630) and the standard error of the estimate at ±0.999. When considering the unstandardized B value, the experience in providing nutritional service could significantly predict confidence in nutritional communication and counselling (p=0.003).

TABLE 10 Regression analysis to predict factors affecting the attitude in providing nutritional services

Constant/Factor	Male					Female					Total				
	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.	B	SE_B	Beta	t	Sig.
Age	-0.188	0.163	-0.315	-1.152	0.257	0.093	0.144	0.174	0.649	0.521	-.052	.050	-.138	-1.048	.298
Experience as fitness coach	0.186	0.125	0.404	1.483	0.147	-0.045	0.153	-0.084	-0.296	0.769	-.090	.096	-.219	-.938	.351
Experience in providing nutritional service	0.005	0.021	0.039	0.23	0.82	-0.038	0.012	-0.532	-3.259	0.003	.090	.091	.230	.993	.324
Number of clients	0.182	0.268	0.134	0.68	0.501	0.179	0.248	0.115	0.722	0.476	-.030	.010	-.338	-2.964	.004
Type of occupation as fitness coach	-0.031	0.122	-0.045	-0.257	0.799	0.049	0.146	0.083	0.337	0.739	.114	.174	.076	.656	.514
Education level	0.028	0.091	0.056	0.306	0.761	0.078	0.081	0.153	0.957	0.346	.040	.082	.065	.496	.622
Occupation before becoming fitness coach	0.11	0.143	0.13	0.772	0.445	0.053	0.088	0.108	0.603	0.551	.080	.059	.154	1.366	.176
Fitness coach training qualifications currently had	-0.001	0.124	-0.001	-0.008	0.994	-0.101	0.174	-0.133	-0.581	0.566	.061	.074	.097	.831	.408
Satisfaction in fitness coach jobs	-0.188	0.163	-0.315	-1.152	0.257	0.093	0.144	0.174	0.649	0.521	-.007	.090	-.010	-.080	.936
	Constant=3.721, $SE_{Estimate}$=±1.122 R=0.308, R^2=0.095, F=0.459, Sig.=0.876					Constant=4.153,$SE_{Estimate}$=±0.999 R=0.630, R^2=0.397, F=2.470, Sig.=0.035					Constant =5.421 , $SE_{Estimate}$= +1.351 R =0.411, R^2=0.169, F=1.645, Sig.=0.119				

Abbreviation: B = Unstandardized B; Beta = Standardized Coefficients Beta; F = F-test; R = Multiple Regression; R^2 = R Square; SE_B = Coefficients Standard

Error; $SE_{Estimate}$ = Standard Error of the Estimate; Sig. = Significance; t = Statistical Test

6. The need to develop nutritional knowledge and skills

The needs to develop nutritional knowledge of male and female participants are shown in Table 11. From this table, 72.73% of male and 53.85% of female participants had attended 1–5 nutrition training courses, although a higher proportion of female participants (46.15%) than male participants (27.27%) had completed more than 5 training courses. All participants need to increase nutritional knowledge to meet the demands of their jobs. The majority of them (male 81.82%, female 71.79%) needed onsite training.

TABLE 11 The need to develop nutritional knowledge of male and female participants

Item	Male (N = 44)	Female (N = 39)	Total
1. The number of nutrition training courses attended (%)			
- 1-5 times	72.73	53.85	63.86
- More than 5 times	27.27	46.15	36.14
2. The need to increase nutritional knowledge to meet the demands of the job (%)	100	100	100
3. The channel desired for training (%)			
- Online	18.18	28.21	22.89
- Onsite	81.82	71.79	77.11

CHAPTER V
SUMMARY, DISCUSSION AND SUGGESTION

In the research, entitled “Knowledge, attitude, and self-confidence in providing nutritional advice to clients in male and female fitness coaches” that aimed to (1) study the confidence and attitude in providing nutrition advice to clients in fitness coaches, (2) compare the confidence and attitude in providing nutrition advice to clients between male and female fitness coaches, and (3) determine factors influencing the confidence and attitude in providing nutritional advice to clients in fitness coaches, the researcher were able to summarize the results of the work according to the following topics.

1. Summary of the research results

1.1 Confidence and attitude in providing nutritional services

1.1.1 The confidence in knowledge about nutrition, chronic diseases, exercise, and sports in most of the participants was 4 (very confidence; 46.27%), and the mean for the confidence in all items was significantly lower in male participants than female participants (4.00±0.00 vs. 4.30±0.46, $p<0.01$).

1.1.2 The confidence in nutritional skills in most of the participants was 5 (extremely confidence; 46.14%), and the mean for the confidence in all items was significantly lower in male participants than female participants (4.00±0.00 vs. 4.40±0.49, $p<0.01$).

1.1.3 The confidence in nutritional communication and counselling in most of the male participants was 5 (extremely confidence; 46.99%), and the mean for the confidence in all items was significantly lower in male participants than female participants (4.11±0.31 vs. .22±0.42, $p<0.01$).

1.1.4 The attitude in providing nutritional services in most of the participants was 5 (Completely agree; 49.25%) and the mean for the attitude in all items was significantly lower in male participants than female participants (4.13±0.33 vs. 4.50±0.50, $p<0.01$).

1.2 Factors influencing the confidence and attitude in providing nutritional services

1.2.1 The 9 factors (i.e., age, experience in working as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, experience in nutrition training, and satisfaction in fitness coach jobs) could not be combined to significantly predict the confidence in knowledge about nutrition, chronic diseases, exercise, and sports, in nutritional skills, and in nutritional communication and counselling in male and female participants.

1.2.2 The 9 factors (i.e., age, experience in working as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, experience in nutrition training, and satisfaction in fitness coach jobs) could not be combined to significantly predict attitude in providing nutritional services in male participants, but they could be combined to significantly predict attitude in providing nutritional services in female participants by 39.70% (p=0.035).

1.3 The needs to develop nutritional knowledge

The majority of male (72.73%) and female (53.85%) participants had attended 1–5 nutrition training courses, and a higher proportion of female (46.15%) than male participants (27.27%) had completed more than 5 training courses. All participants need to improve nutritional knowledge to meet the demands of their jobs, and most of them (male 81.82%, female 71.79%) needed onsite training.

2. Discussion of the research results

2.1 The confidence in providing nutrition advice to clients in fitness coaches

The results of this research indicate that fitness coaches in Gansu, Jiuquan City of China are confident in their nutrition knowledge, skills, communication, and counselling in providing advice to clients, and the level of confidence in female is

greater.

The research results of this paper are consistent with the following research results: Liu Xiaowen's (2014) research results indicated that male fitness coaches have a stronger theoretical foundation in fitness than female fitness coaches, while female fitness coaches have a better grasp of fitness specialties and related theories than male fitness coaches. The fitness teaching skills and related theories of female fitness coaches are stronger than those of male coaches, but the fitness training skills of male coaches are relatively excellent. Gender and age have a significant impact on the professional skills performance of fitness coaches. In the comparison between men and women, most male coaches consider their fitness assistance skills to be rather average. However, female coaches generally believe that their fitness assistance skills are more prominent. From the perspective of the proportion of the population, female fitness trainers have relatively ideal confidence in their fitness-related skills (D, 2020)

Barnes et al. (2016) examined the self-perceived competence of Australian personal trainers in providing nutrition care and found that they feel confident in their ability and exhibit positive attitudes toward offering nutrition care to clients. Trainers reported feeling highly confident in providing nutrition care to all clients (mean score 76%; very confident). Those with more experience and education beyond a certificate demonstrated greater confidence in their nutrition knowledge (Maxwell et al., 2017).

The above research results are consistent with those of this study. The survey results in Table 1 of this article show that the highest educational attainment and the qualifications for fitness coaching training of female fitness coaches are both higher than those of male coaches, which leads to the female fitness coaches having greater confidence in providing sports nutrition services than male fitness coaches.

2.2 The attitude in providing nutrition advice to clients in fitness coaches

The results of this research indicate that fitness coaches in Gansu, Jiuquan City of China have positive attitudes towards providing nutritional advice to their

clients, and the level of attitudes in female is greater.

The research results of this paper are consistent with the following research results. Wu Ye's (2009) research results suggested that each employee has an 'account' in their mind, which details the content and quantity they should contribute to the organization, as well as the content and amount the organization should return to them. This kind of contract is called a "psychological contract" because it exists in people's hearts rather than being presented in a formal form. The psychological contract serves as a psychological bond connecting employees and the organization, and it is also an important factor influencing employees' behaviors and attitudes. The type of coaching, nature of work and years of experience of fitness coaches have a significant impact on psychological contracts, while gender, age and educational level also affect certain aspects of psychological contracts (Ball & Leveritt, 2015). Gender and the level of education affect the attitude of fitness coaches in providing services, which is consistent with the research results of this paper.

Barnes et al. (2016) studied the self-perception ability of Australian personal trainers in providing nutritional care and evaluated the confidence of 142 Australian personal trainers in providing nutritional care. It was found that personal trainers felt confident to provide nutrition care for all clients (mean score ‘very confident’). Greater confidence in nutrition knowledge was seen in personal trainers with greater experience and education higher than a certificate IV. Greater confidence in nutrition knowledge was also associated with greater confidence in nutrition skills and more favorable attitudes towards providing nutrition care (Maxwell et al., 2017).Consistent with the research results of this article, female fitness coaches are more confident when providing sports nutrition services and have a better attitude when offering such services

Barnes et al. (2016) interviewed 15 personal trainers in Australia to explore their perceptions of providing nutrition care within their role and scope of practice. They found that personal trainers reported actively providing nutrition care and emphasized

that it was an integral part of their role. Many trainers perceived their role as encompassing a holistic approach to lifestyle change and expressed a strong sense of responsibility to educate their clients about nutrition. And also considered providing nutrition care as an essential service to attract clients and maintain businesses. Nutrition was considered crucial in personal training due to its direct impact on client goals. Australian personal trainers have a very favorable attitude towards providing nutritional care. The average score of trainers' attitudes towards nutritional care was 85% (model = strong agreement). Almost all participants (95%, n = 136) agreed or strongly agreed that it is important to encourage customers to consume healthy food and that providing nutritional care is an effective way to utilize their professional time (Kiss A, 2020). Consistent with the findings of this study, all fitness trainers have a positive attitude towards providing sports nutrition services.

2.3 Factors influencing confidence and attitude in fitness coaches

The results of this research indicate that age, experience in working as a fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness coach, experience in nutrition training, and satisfaction in fitness coach jobs) could not be combined to predict the confidence in providing nutrition service to clients (in the aspect of knowledge, skills, communication, and counselling) in both male and female participants, but these factors could be combined to influence the attitude in female participants.

In the American Psychological Association Dictionary of Psychology, attitudes provide summary evaluations of target objects and are often assumed to be derived from specific beliefs, emotions, and past behaviors associated with those objects (VandenBos, 2007). It can be seen by referring to Table 10 that age, experience as fitness coach, experience in providing nutritional service, number of clients, type of occupation as fitness coach, education level, occupation before becoming fitness

coach, fitness coach training qualifications currently had. Satisfaction in fitness coach jobs has no impact on the attitude of male fitness coaches towards sports nutrition services, but it does have an impact on female fitness coaches (sig < 0.05). The study indicates that the experience of providing services has an impact on women. The longer the service duration and the more experienced one is, the better the attitude.

The above nine factors have no impact on the attitude of male fitness coaches in providing sports nutrition services. Relevant research in China indicated that gender and age have a huge impact on the fitness coach vocational skills performance of coaches, region has a certain impact on the fitness theory performance of coaches, and different previous industry experiences, educational levels and monthly income levels have relatively less impact on the fitness vocational skills of coaches (D, 2020). In China, the factors influencing the attitude of male fitness coaches towards sports nutrition services may also include different regions, pre-employment experiences, and the level of salary income.

2.4 The need to improve nutrition knowledge

Skopinceva (2017) studied 50 fitness professionals recruited via social media, assessing their nutrition knowledge and practices. On average, they scored 81% in nutrition knowledge, ranging from 53% to 100%. Many held a 4-year college degree or higher, often in nutrition or personal training. Despite lacking formal nutrition education, 79% offered nutrition advice, and 70% were confident in its suitability. Overconfidence was noted, particularly among less educated trainers. It emphasized the importance of enhancing nutrition knowledge among fitness professionals to better support clients in addressing obesity and promoting healthier lifestyles (Cronbach, 1951).

Almansour et al. (2020) investigated the nutrition knowledge of personal trainers (PTs) and coaches across various sports disciplines in Kuwait. They gathered data from 100 participants (50 males, 50 females) in different gyms, who completed

questions assessing their nutritional knowledge. Adequate nutrition knowledge was defined as achieving at least 75% across all domains; however, participants averaged 56% overall. Specifically, male participants averaged 55%, while females averaged 56.8%. The study concluded that PTs and coaches generally have inadequate nutrition knowledge, although females demonstrated slightly higher understanding than males. These findings underscore the urgent need for tailored nutrition education programs, such as courses and workshops, to enhance PTs' and coaches' ability to provide accurate nutritional guidance to clients. Furthermore, the study suggests implementing periodic follow-up exams or certifications every two years to ensure PTs and coaches maintain current and comprehensive nutrition knowledge (Elias et al., 2018).

Barnes et al. (2016) found that personal trainers reported a gap between the nutrition knowledge acquired through their formal education (Certificate III and IV in fitness education) and the knowledge required to effectively assist clients in adopting healthy dietary behaviors. Trainers expressed dissatisfaction with the adequacy of their nutrition education for their role and unanimously expressed a desire for additional knowledge in nutrition (Kiss A, 2020).

The results of the above research indicate that all participants need to enhance their nutritional knowledge to meet the demands of their work. This study reveals that the majority of them require on-site training.

3. Suggestions from the research

1. This research was conducted on male and female fitness coaches in fourth-tier cities in the northern region of China. Due to the differences in climate, dietary habits, local customs, etc. between the southern and northern regions of China, as well as the different living habits and demands of people in the first - and second-tier cities from those in the third - and fourth-tier cities, in the future, the confidence and attitude of fitness coaches in the southern region towards sports nutrition knowledge can be

studied, as well as those of male and female fitness coaches in the first - and second-tier cities regarding sports nutrition.

2. This research has found that both male and female fitness coaches have a demand for training in nutrition knowledge and skills. In the future, it can be considered to conduct research on methods on how to enhance knowledge of sports nutrition. In the questionnaire (Do you need to learn more about nutrition to meet the demands of your job?), most fitness coaches hoped to adopt more offline training models. On-site training and guidance better meet their needs. Clubs can understand the training requirements, formulate reasonable training plans, and regularly organize sports nutrition training with different contents. To enhance the sports nutrition knowledge level of fitness coaches, strengthen the competitiveness of clubs in the market, and contribute to the physical health of the entire population.

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Appendix A

QUESTIONNAIRE : CONFIDENCE AND ATTITUDE IN PROVIDING NUTRITION ADVICE TO CLIENTS IN FITNESS COACHES

Description

I am a postgraduate student in the Master of Science (M.Sc.) program in Sports and Exercise Science, Faculty of Physical Education, Sports and Health, Srinakharinwirot University, Thailand. I have developed this questionnaire as a part of my thesis aimed to assess the knowledge, attitude, and self-confident in providing nutritional advice to clients in male and female fitness coaches. The questionnaire comprises 4 parts as follows:

PART 1 Personal information of respondents (10 items)

PART 2 Confidence in providing services to clients

2.2 Knowledge about nutrition, chronic diseases, exercise, and sports (10 items)

2.2 Nutrition skills (10 items)

2.3 Nutrition communication and counseling (9 items)

PART 3 Nutrition service attitude (8 items)

PART 4 Improving nutrition knowledge and skills (3 items)

I would like to ask for the kindness of all respondents to answer all questions truthfully. This questionnaire is filled in anonymously, and your information and answers are confidential. The results are used for academic purpose only, and will not bring any negative impact on your work and unit.

Thank you for your support and help! I wish you a happy life and a smooth work!

PART 1 Personal information of respondents

Instructions: Please fill in the blank (……) or put the check mark "√" in the square

1. Name of your health club or unit

☐ Matrix Fitness Club ☐ Yiyang International Fitness Club

☐ Dynamic Times Fitness Club ☐ Yuedong Fitness Club

☐ Noson Fitness Club ☐ Light Weight Fitness Studio

☐ Muson Fitness Studio ☐ Zero Wine Sanqi Fitness Studio

☐ Hulk Fitness Studio ☐ Light Burning Fitness Studio

☐ Shape and Beauty Fitness Studio ☐ Henuo Fitness Studio (Yumen)

☐ Lekang Fitness Club (Yumen) ☐ Hengshu Fitness Club (Jiayuguan)

☐ Martin fitness studio(Jiayuguan)

2.Your gender ☐ Male ☐ Female ☐ LGBTQ+

3.Your age ……year

4.Your experience as fitness coach ……year ……month

5.Type of your occupation as fitness coach ☐ Full-time ☐ Part-time

6.Your highest education level

☐ Below high school ☐ High school

☐ Vocational education ☐ College degree

☐ Bachelor degree ☐ Master's degree or above

7.Your occupation before becoming fitness coach

☐ Student ☐ Freelance

☐ Fitness enthusiast ☐ Retired athlete

☐ Other (please specify) ……

8. Fitness coach training qualifications you currently have

☐ There is no ☐ National fitness instructor

☐ Asian Physical ☐ Fitness Olympic

☐Social Instructor ☐ Other (please specify) ……..

9. From starting to work as fitness coach until now, how long have you had experience in providing nutritional services? (Providing nutrition services means giving advice on food or supplement consumption, prescribing food or supplement consumption programs, or establishing menus for clients who are healthy or have illness)

……year ……month

10. How satisfied are you with your current fitness coach jobs?

☐ Very good ☐ Good ☐ Average ☐ Not ideal

PART 2 Confidence in providing services to clients

2.1 Confidence in knowledge about nutrition, chronic diseases, exercise, and sports

Instruction : Please read and consider each question carefully to determine your level of confidence

Please rate how confident you are in your knowledge of…	Not confident at all (1 point)	Not very confident (2 points)	Somewhat confident (3 points)	Very confident (4 points)	Extremely confident (5 points)
1. The China's healthy eating guideline that recommends food intake and composition for people of different ages, genders, and health status					
2. The influence of foods, nutrients, and dietary supplements on the development and management of chronic diseases					
3. The influence of body composition (including size, shape, weight) on a person's health, sports and exercise					

performance, and development of chronic diseases					
4. The interaction of foods, nutrients, and dietary supplements with medications					
5. Guidelines for the nutrition-related management of specific chronic diseases, such as obesity, type 2 diabetes, and cardiovascular diseases					
6. Nutrition for enhancing sports and exercise performance					
7. Dietary supplements for different types of athletes and those who exercise in general					
8. A drink suitable for different types of athletes and those who exercise in general					
9. The most recently published peer-reviewed evidence regarding nutrition, sports and exercise					

performance, and chronic diseases					
10. Doping					

2.2 Confidence in nutrition skills

Instruction : Please read and consider each question carefully to determine your level of confidence

Please rate how confident you are in your ability to…	Not confident at all (1 point)	Not very confident (2 points)	Somewhat confident (3 points)	Very confident (4 points)	Extremely confident (5 points)
1. Interpret data regarding height, weight, and body composition against reference range of Chinese people					
2. Interpret the individual's biological data (e.g., blood pressure, cholesterol levels) against reference range					
3. Collect information about personal eating habits (e.g. diet history, food frequency questionnaire)					
4. Use the Chinese Guidelines for Healthy Eating to assess the appropriateness of an individual's food intake					

5. Determine appropriate food or nutrition goals for an individual					
6. Develop an eating plan, give advice, and recommend change in food choices for an individual					
7. Monitor and evaluate changes in food choices and the body for an individual over a period of time					
8. Keep clear and concise records of nutrition-related assessment and advice you provide to an individual					
9. Access the most recent published peer-reviewed evidence in sports and exercise nutrition					
10. Provide nutrition advice to improve an individual's eating habits					

2.3 Nutrition communication and counseling

Instruction : Please read and consider each question carefully to determine your level of confidence

Please rate how confident you are in your ability to…	Not confident at all (1 point)	Not very confident (2 points)	Somewhat confident (3 points)	Very confident (4 points)	Extremely confident (5 points)
1. Clearly describe what the client needs and expects when discussing nutrition or food issues with you					
2. Check a client's understanding of the influence of food and nutrients on their health and performance					
3. Work with the client to identify possible dietary improvements and types of food					
4. Have real empathy based on the food-related experience and what the client is hoping to achieve					
5. Maintain a non-judgmental attitude when discussing the food eaten with the clients					

6. When communicating with customers about food and nutrient intake, use language that clients can understand					
7. Consider the client's impact on dietary intake due to personal, social, cultural, psychological, and economic factors					
8. Identify clients who need additional support from other health care professional, expert, or services regarding their food eaten					
9. Communicate with a health care professional or expert to plan meals for clients with special medical conditions and special needs					

PART 3 Nutrition service attitude

Instruction : Please read and consider each question carefully to determine your level of agreement

Please rate how confident you are in	Completely disagree	Somewhat disagree	Neither agree nor	Somewhat agree	Completely agree

your ability to…	(1 point)	(2 points)	disagree (3 points)	(4 points)	(5 points)
1. It is important that all individuals usually eat healthy foods regardless of age, body weight and physical activity levels					
2. If the topic arises, it is important that I encourage my clients to eat healthy foods					
3. It is important that I take every opportunity possible to encourage my patients/clients to eat healthy foods					
4. Encouraging my clients to eat healthy foods is an effective use of my professional time					
5. Providing specific nutrition recommendations to my clients that can assist with managing their chronic disease is an					

effective use of my professional time					
6. Encouraging my clients to eat healthy foods is within my scope of practice					
7. Providing specific nutrition recommendations to my clients that can assist with managing their chronic disease is within my scope of practice					
8. It is important that I encourage my patients/clients to seek support from other health professionals if I am unable to meet their nutrition-related needs					

PART 4 Improving nutrition knowledge and skills

Instruction : Please select or fill in the answer or information that best suits your reality

1. How many nutrition training courses have you had so far?

☐ No ☐ once ☐ 2-3 times ☐ 3-4 times

☐ 4-5 times ☐ 6-10 times ☐ more than 10 times

2. Do you need to learn more about nutrition to meet the demands of your job?

☐ No.

☐ Yes (please specify the topic or what you need)……

3. In what ways do you think fitness coaches have made progress in developing nutrition programs for their clients? What are the shortcomings?

Appendix B

EXPERTS FOR QUESTIONNAIR ASSESSMENT

1. Zhang Shide (Professor)

College of Physical Education and Health, Jiuquan Vocational University, China

2. Zhang Mingquan (Associate Professor)

School of Physical Education and Health, Jiuquan Vocational University, China

3. Zhou Xiaogang (Associate Professor)

School of Physical Education and Health, Jiuquan Vocational University, China

Appendix C

ETHICAL APPROVAL

酒泉职业学院科研实验伦理审查审批表

编号：JQZY-2024BS-1116

项目名称	男、女健身教练为客户提供营养建议时的知识、态度和自信		
项目来源	无		
项目负责人	张翰笙	所在学院	体育与健康学院
审查类别	☐申请动物实验　☐科研课题申报　☑其他		

（主要研究内容及设计的伦理实验方案，包括动物实验目的，实验方法、观测指标、实验后动物的处置方法等）

内容概述：健身教练为客户提供营养建议时，知识、态度和自信三方面做比较分析，并得出结论。从而增强公众在制定营养建议时对男女健身教练特征的理解和感知，为教练在制订营养计划时提供信息，提高健身教练为客户提供营养护理的水平。以及促进男女健身教练团队结构的平衡和可持续发展提供参考和帮助。

伦理对象：甘肃省酒泉市 **15** 家健身俱乐部的 **83** 名健身教练（**44** 名男性、**39** 名女性）

试验方案：在实验开始前，被选中的受试者均为自愿参加，了解实验过程，保证其充分知情并尊重其意愿；询问和调查受试者的健康状况，确定受试者心理健康。所有受试者均未接受任何类型的威胁、强迫、引诱，受试者的分组过程具有客观性和随机性，申请人及相关研究人员在前期已经积累丰富的实验经验，会严格保护个人隐私并杜绝相关信息泄露。

申请人（项目负责人）承诺：

以上所填内容均属实，如获批准，我将严格按照提供的方案进行研究，并遵守科研实验伦理规范及相关规定，自愿接受学校学术委员会的监督与检查，如违反规定，自愿接受相应的处罚。

申请人（项目负责人）签字：张翰笙　　2024 年 11月16 日

学院学术委员会审查意见：

经体育与健康学院学术委员会审查，该项目设计规范、研究内容和过程符合国家颁布的有关科研实验的伦理要求，同意该项目按计划执行。

学术委员会（盖章）
2024年11月16日

校学术委员会审查意见：

1、申请人资格：☑符合要求　☐不符合要求

2、实验方案：☑恰当　☐不恰当

3、审查结论：☑同意　☐修改后再讨论　☐不同意

学术委员会（盖章）
2024年11月16日

Approval Form for Ethical Review of Research Experiments

serial number: JQZY-2024BS-1116

Project Title	KNOWLEDGE, ATTITUDE, AND SELF-CONFIDENCE IN PROVIDING NUTRITIONAL ADVICE TO CLIENTS IN MALE AND FEMALE FITNESS COACHES		
Project source	not have		
Project Leader	Zhang hansheng	College	Faculty of physical Education and Health
Review category	☐Apply for animal experimentation research projects		☐Declaration of scientific ☑Other

(The main researeh content and the ethical experimental program involved, including the purpose of animal experiments, experimental methods, observation indexes, and methods of disposing of animals after the experiments)

Overview: When male and female fitness coaches provide nutritional advice to clients, the knowledge, attitude and self-confidence are compared and analyzed, and the conclusion is drawn. In order to enhance the public's understanding and perception of the characteristics of male and female fitness coaches in the formulation of nutrition recommendations, provide information for coaches in the formulation of nutrition plans, and improve the level of nutrition care provided by fitness coaches to clients. And to promote the balance and sustainable development of male and female fitness coach team structure to provide reference and help.

Erhical Target: 83 fitness instructors (44 male, 39 female) from 15 health clubs in Jiuquan City, Gansu Province.

Experimental Protocol: The subjects of this study were 83 fitness instructors (44 male, 39 female) with more than 2 years of working experience in 15 health clubs in Jiuquan City. Before the start of the experiment, the selected subjects will participate voluntarily, understand the experiment process, ensure that they are fully informed and respect their wishes; Inquire and investigate the health status of the subjects and determine the mental health status of the subjects. The applicant and relevant researchers have accumulated rich experimental experience in the early stage, and will strictly protect personal privacy and prevent the disclosure of relevant information.

Applicant (project leader) commitment:

The above information is true. If approved, I will conduct research in strict accordance with the provided program, abide by the ethical code of scientific research and experiment and relevant regulations, and voluntarily accept the supervision and inspection of the academic committee of the university. If I violate the regulations, I will voluntarily accept the corresponding punishment.

Signature of applicant (project leader): Zhang Hansheng Date: 2024.11.16

Faculty Academic Council review comments:

After review by the Academic Committee of the School of Physical Education, the design specifications, research content and process of the project are in line with the ethical requirements of scientific research experiments promulgated by the state, and it is agreed that the project will be implemented as planned.

Academic Council of the Faculty

Date: 2024.11.16

University Academic Council review comments:

1. Applicant qualification: ☑meet the requirements ☐do not meet the requments
2. Experimental program: ☑Appropriate ☐Inappropriate
3. Conclusion of the review: ☑Agree ☐Discuss after modifition ☐Disagree

Academic Committee of College

Date: 2024.11.16

兰州职业技术学院 学术委员会

VITA