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Designing a SAQ Physical Fitness Program for Football Athletes of Guangzhou Sport University

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Abstract

Background and Aim: SAQ training is a training method that integrates speed, agility, and quick start training, and is widely used in ball sports training in Europe and the United States. This study explores whether the experimental comparison between SAQ training and traditional training methods is conducive to improving the ball control skills and agility of college football players, to effectively carry out SAQ training in my country, and to provide new ideas and suggestions for college football training courses. This study aims to design a SAQ physical training program for football players at the Guangzhou Sports Institute.

Materials and Methods: The experimenters of this study are all college athletes majoring in football at Guangzhou Sport University in the 2023 academic year. The population is 80 people. These 80 college athletes majoring in football will participate in 8 physical fitness tests for football in this study. After passing 8 kinds of physical fitness tests for football. 40 samples were selected to complete this test. The researchers will use a simple random sampling method to select 20 college athletes majoring in football as the experimental group. The remaining 20 people will serve as the control group of this experiment. In this experiment, the experimental group will use the SAQ football-specific physical fitness training of this research project for physical fitness training. In contrast, the control group will mainly use traditional physical training programs. The experimental time of the athletes is 8 weeks, including 3 training sessions per week, each training for 1 hour. In addition, 8 kinds of football-specific physical fitness tests will be conducted again before training and after 8 weeks of training to evaluate the effects of SAQ football-specific physical fitness training on athletes. In this study, the mean, standard deviation, and related t-tests were used to analyze the data.

Results: After the scientific and targeted SAQ football-specific physical fitness training, the P value of the 8 football-specific physical fitness test scores before the experimental training and after 8 weeks of experimental training was lower than 0.01, indicating that this study has a significant effect.

Conclusion: The scientific data obtained from the experimental sequence in the SAQ football-specific physical training plan has a great help and effect on improving the physical fitness of Guangzhou Sport Institute football team players in football matches.

Keywords: Football; Football-specific Physical Training; SAQ-specific Physical Training; Guangzhou Sport Institute Football Major

Introduction

SAQ physical training is a modern physical training method popular in the United States, Europe, and Australia. It is used in most professional ball clubs and is designed directly for the physical training of high-level ball sports athletes. S-speed, A-agility, Q-quickness, the SAQ physical training method is flexible and multi-faceted, combined with ball sports specialties, and at the same time, full of fun training methods to quickly improve the most needed physical qualities of athletes in the game. The core concept of SAQ is "to make the boring and rigid physical training in the past become enthusiastic and energetic, to make the passion of every athlete participating in the training burn, and to make both the instructor and the athlete experience endless fun from this training method!"

What is SAQ Soccer Training? The SAQ program is an effort to develop the comprehensive aspects of speed fully, especially for a team sport like soccer. The SAQ program breaks down speed into three areas: speed, agility, and quick reaction skills. Although these three areas are very similar, they are very different in how they are trained, developed, and integrated into the game. The successful combination of these skills, coupled with the special SAQ training equipment, will provide coaches with the tools to train an excellent player. The results achieved by athletes using the SAQ program are very significant.

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SAQ physical training is speed, agility, and quick response training. Speed training mainly includes the training of straight sprint speed and short-distance acceleration ability. This is crucial for football players to quickly get rid of the defense, attack forward, and chase back defense in the game. For example, short-distance sprint running exercises set different sprint distances, such as 30 meters, 50 meters, etc., and improve the maximum speed and acceleration ability of athletes through repeated practice. Agility training aims to improve athletes' ability to quickly change direction, turn, and adjust body posture. In football games, players need to frequently change direction quickly according to the position of the ball and the actions of opponents. Rope ladder training is a common agility training method. Athletes move quickly up the rope ladder, including forward, backward, sideways, and other directions, to improve the flexibility and coordination of their feet. In addition, the flag-coiling pole exercise can also effectively train the agility of players. Players need to quickly bypass multiple flag discs and constantly change direction and speed. Quick response training focuses on cultivating athletes' ability to respond quickly to various stimuli. In a football match, players need to react quickly to the movement of the ball, the opponent's actions, and the referee's whistle. Reaction ball training can be used to improve quick reaction ability. The coach randomly throws the reaction ball to the athlete, and the athlete needs to react quickly and catch the ball. In addition, training to follow commands is also very effective. The coach issues different commands, such as "forward", "backward", "turn left", "turn right", etc., and the athlete quickly makes the corresponding actions according to the commands.

SAQ physical training can comprehensively improve the athletic performance of football players in the game, making them more flexible and quick to respond to various game situations. The training is a comprehensive physical training concept and method designed specifically for the key abilities required by football players, namely speed, agility, and balance required in football games. SAQ training organically integrates the three relatively independent and interdependent abilities of speed, agility, and quick start to form a unique and effective coordination effect with sports events. SAQ training has become the daily training of many top European teams, especially for young people in Europe. It is a very effective training method. At present, most domestic coaches have not formed a unified understanding and understanding of this. Through investigation, it was found that the cultivation of basic physical fitness in the preparatory stage of youth lacks scientificity and does not pay enough attention to the cultivation of physical fitness. Abroad, due to the excellent training effect of SAQ training, it has been included in every stage and every age group of high-level football training programs (Wang Shuai, 2023)

Currently, football training is increasingly emphasizing the importance of overall technical and tactical level, and high-level technical and tactical coordination requires athletes to have excellent physical fitness and personal technical skills. The ability to control the ball is an important manifestation of a football player's technical ability, and similarly, agility is also an important component of an athlete's physical fitness. Both play an important role in the athlete's performance on the field. SAQ training is a training method that combines speed, agility, and quick start training, widely used in ball sports training in European and American countries. This study aims to explore whether the experimental comparison between SAQ training and traditional training methods is beneficial for improving the ball control skills and agility of college football players, to effectively carry out SAQ training in China, and provide new ideas and suggestions for college football training courses (Zhou, 2022)

Research Objectives

Main Objective

Design of SAQ Physical Fitness Training Program for Football Players at Guangzhou Sport University

Subsidiary Objectives

1. To implement measures for SAQ football-specific physical training for the Guangzhou Sport Institute football team athletes.
2. To improve the agility of Guangzhou Sport University football team players when they are without the ball.
3. To improve the agility of Guangzhou Sport University football team players when they are dribbling the ball.

Literature Review

1. The historical development and current situation of Chinese football

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1.1 The historical development and current situation of Chinese football

Modern football originated in the UK, but Chinese football developed relatively late. Football has developed in China for 60 years, with ups and downs. During this period, it has achieved remarkable results and experienced lows in development. Until now, Chinese football is still in the exploratory stage. The league is not perfect yet, and various systems and management systems need to be further improved. My country's socialist market economic system is still in the primary development stage, and there is no precedent for the reform of various undertakings. The relevant laws, systems, and market environment are still being gradually improved and perfected. (Zhao & Xu, 2009) The historical evolution of early Chinese football can be traced back to the early 20th century. In the 1910s, football emerged in schools in coastal cities such as Shanghai and Tianjin in my country and gradually became one of the mass sports. In the 1920s and 1930s, the social status of football in China rose significantly, and it began to participate in international competitions. At the East Asian Games from 1913 to 1934, the Chinese football team won a total of 9 championships, becoming the unshakable overlord of Asian football, showing the world the competitive style and level of Chinese football. At the 1936 Berlin Olympics, China first appeared on the world stage. During this period, Chinese football also produced internationally influential football players such as "Asian Football King" Li Huitang. (Liu. 2011)

1.2 The impact of the training model of the world's football powers on physical fitness

The speed training of the world's football powers is mainly to provide conditions for athletes to conduct various speed training by adjusting the training space. Under such speed training, the speed of athletes is more closely combined with football specialties. My country has always used the 100-meter run as the main standard for measuring speed. The world's football powers rarely conduct absolute speed training in pure track and field sprint events. The speed training of athletes is completed with the ball, so whether it is reaction speed, movement speed, or displacement speed, it is closely combined with football games. (Chen, 2008) (Wang and Wu, 2006)

1.3 Chinese football training course

The Chinese football training course model mainly follows the former Soviet Union's training course model and gradually forms its own characteristics based on its own experience. The structure of my country's traditional football training course model is generally divided into three parts: preparation, basic, and finishing. The three parts of my country's traditional football training model are relatively independent. The training course is mainly to complete the training content, and the content selection of the training course usually strictly follows the training outline. Special emphasis is placed on technical and physical exercises. Among them, there is a separate physical training, which is the content involved in almost every training course. In terms of the organization and control of the training course, collective unified movements are usually adopted, emphasizing the neatness of the appearance. (He, 2000)

1.4 Football-specific physical training course

Teaching objectives: Football is a highly confrontational sport that requires high physical fitness. It is one of the comprehensive sports that requires speed, agility, flexibility, strength, endurance, explosive power, etc. In a game, high-level athletes can run about 14,000 meters, and at the same time frequently accelerate, decelerate, change direction, jump, and perform other actions. Charles Hughes, former head of the training group of the British Football Association, once defined football-specific physical fitness as football-specific physical fitness is the physical ability to complete and realize technology, tactics, or games, and the ability to decide the outcome of the game at any time. (Yang, 2004);

2. SAQ physical training

SAQ training was proposed by Alan Pearson (2004) in the book "Physical Training for Football Players". S, A, and Q stand for "Speed", which refers to the displacement speed of the athlete's body during the entire movement; "Agility", which refers to the ability to control the body's balance and change the direction of the body by changing the body posture quickly, accurately and coordinately during exercise; "Quick start", which can also be understood as explosive power, specifically refers to the series of changes that athletes bring to the body when they change their body state instantly during exercise. This quality plays an important role in the competition. SAQ training, a new type of physical training method,

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is mainly popular in the United States, Europe, and Australia. SAQ training is welcomed by many overseas ball coaches. It can be used as a training method for high-level athletes to improve their sports performance, and can also be used in training plans for groups such as teenagers, the general public, and ordinary athletes to improve their sports ability. "SAQ training" is a flexible and changeable training method, which is equipped with SAQ special training equipment to break the traditional boring and rigid training form. SAQ training is a comprehensive training method based on sports training. Wang (2023)

SAQ: Alan Pearson emphasized that SAQ training is a combination of speed, agility, and quick start technology, combined with SAQ training equipment for continuous and unified training, which can significantly improve the performance of football players. SAO training is to decompose the overall movement and deepen it one by one, improve the overall coordination of athletes through various forms, and promote the development of athletes' multi-dimensional qualities. SAQ training is a relatively multifunctional training method. In training, SAQ training can not only carry out basic training such as speed, sensitivity, and quick response ability, but also combine the characteristics of various ball sports to design vivid and interesting training content that conforms to the laws of various sports (Pearson, 2004).

SAQ embodies systematic thinking in training, which is different from traditional conventional training methods. SAQ training adopts combined training and intersperses multiple ability elements in the training content; the training equipment is richer and more diverse, and the training scenes are more practical. Therefore, it is considered to be a unique, innovative, and efficient comprehensive physical training method that can improve athletes' training interest while tapping their maximum athletic ability (Qi, 2022)

3. SAQ football-specific physical training

Rajkovic et al. conducted an SAQ training experiment on several Croatian U15 youth football players. He divided these athletes into an experimental group and a control group and conducted a 6-month experimental study. The test data after the experiment showed that SAQ training had a certain improvement in the acceleration ability of the experimental group. He also found that the test results of the experimental group's squat vertical jump, static jump, and vertical jump were significantly improved, indicating that this method effectively improved the jumping ability and explosive power of football players. Zhou Xusheng (2022)

SAQ football-specific training, a new type of physical training method, is mainly popular in the United States, Europe, and other places. SAQ training is welcomed by many overseas ball coaches. It can be used as a training method for high-level athletes to improve their sports performance, and can also be used in training plans for groups such as teenagers, the general public, and ordinary athletes to improve their sports ability. "SAQ football training" is a flexible and changeable training method, and it is a comprehensive training method. Wang (2023)

In the relevant research on the SAQ training method, domestic scholars believe that the introduction of the SAQ training method in football training is a new attempt. This training method uses physical fitness exercises and special training combined with the ball and pays special attention to the state adjustment and fatigue recovery of athletes after physical training, which is of great help to the improvement of football players' performance. Some scholars have also found through investigation and research that the SAQ training method plays an important role in improving sports skills, preventing and reducing sports injuries, and maintaining a good sports competitive state. Other scholars have found through comparison that SAQ training can effectively improve the anaerobic capacity of male football players, develop athletes' ability to run continuously and quickly, and improve speed endurance. The SAQ training method was used to test the comprehensive ability of 20 male football players in domestic universities. The experiment proved that the SAQ training method can significantly improve related qualities such as agility and speed. This is a scientific and effective training method. Chen (2020)

4. Related research

A review of domestic SAQ training research

In the Experimental Study on SAQ Training to Improve the Anaerobic Endurance of Football Players, Zhao Quan et al. divided 16 professional football players into two groups for a controlled

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experimental study. The players in the experimental group underwent SAQ training for three months. After analyzing the experimental data obtained, it was found that in the 10-second anaerobic capacity test results, the maximum power and average power of the experimental group were higher than those of the control group. In the 60-second anaerobic capacity test, the average value of the experimental group far exceeded that of the control group. This shows that compared with traditional training methods, athletes trained with SAO have more significant improvements in anaerobic capacity, such as ATP-CP metabolism and glycolysis metabolism energy supply. He also pointed out that SAO training can enhance athletes' speed endurance and rapid start-up ability, and significantly improve athletes' explosive power and endurance qualities. Therefore, accurately understanding the particularity and essential laws of sports is the key to the development of sports. The main connotation of the particularity of a project is the perfect combination of the external kinematic mechanism and the internal biological mechanism of the human body shown by athletes in training or competition, which reflects the characteristics of the project's competitive ability and is the main sign that distinguishes it from the special attributes of other sports. The most important significance of deeply understanding the particularity of sports lies in identifying the core elements that affect the performance of this sport and improve the competitive ability of athletes, and effectively coordinating and integrating the internal connections between these elements, to improve the guiding role of sports training and competition. Zhao (2009)

Tan Caiyan concluded through comparative experimental research in the article "An Empirical Study on the Impact of SAQ Training Method on the 100-meter Training of the College Entrance Examination Project" that the experimental group can effectively improve the athletes' acceleration, absolute speed, and speed endurance test levels after 8 weeks of SAQ training. The improvement of acceleration and absolute speed is better than conventional training methods, but the ability of SAO training to maintain speed in speed endurance training decreases. Tan (2021)

Ning Yanqing selected 16 male volleyball players for a control experiment in "An Experimental Study on the Impact of SAO Training Method on the Rapid Change Movement Ability of Volleyball Players". By analyzing the experimental data, she proposed that SAQ training has a significant effect on improving the five rapid change movement abilities of volleyball players, especially in acceleration, sudden stop, and change of direction, and rapid decision-making ability in the face of emergencies in the field. It is better than conventional training methods. Ning (2020)

Duanmu Guojie proposed in the article "Application of SAQ Training in Children's Track and Field Training" that SAQ training can stimulate athletes' desire to practice and improve their physical fitness, special skills, and sports performance. He believes that children can improve their special skills and abilities through SAQ training. He also summarized several points to pay attention to when conducting SAQ training. First, athletes should not be too stiff when conducting SAO training. They should relax their bodies appropriately to maximize the effect of SAO training. Secondly, SAO training can be combined with proprioceptive neuromuscular facilitation, focusing on the cultivation of perception and reaction ability, so that athletes can learn to exert force correctly. Duanmu (2010)

Shi Jianyu found through experimental research that the effect of SAQ training on basketball players' ability to change movements is not significantly different from that of traditional training methods. Compared with traditional training methods, SAQ training has a more significant effect on improving the flexibility and directionality of basketball players, and pointed out that both training methods can improve the agility of basketball players. Shi (2021)

Huang Gaosong and Zheng Xiao surveyed in the article "A Brief Discussion on the Issues to be Noted in Conventional Physical Training in Professional Football Training - The Positive Significance of Introducing SAQ Physical Training to Improve the Training Level and Sports Performance of Players". Almost all players responded positively to the newly introduced SAQ physical training. The survey also found that SAQ training can not only enhance the physical fitness of football players but also has a significant effect on improving their technical and tactical abilities. However, the survey and inquiry methods lack experimental data support, and the scientificity and reference value are not strong. Specific comparative experiments are needed to confirm this statement. Huang and Zheng (2007)

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Liu Yawei explained the role and influence of SAQ training on youth football training through research and analyzed and summarized the specific components of SAO training. He believes that after a period of SAO training, football players can improve their agility, flexibility, explosive power, etc. At the same time, he believes that SAO training has a certain effect on improving the speed and endurance of football players. Liu (2009)

A review of SAQ training research abroad

Christopher Y proposed that SAQ training can improve movement speed. Traditional training methods can easily make athletes feel physically and mentally exhausted during training. It is recommended that athletes should choose fresh and flexible training methods when conducting sensitive quality training, emphasize the principle of gradual training, oppose the behavior of quick success and instant benefits, and point out that any training should follow the objective laws and specific characteristics of sports. (Christopher, 2000)

Milanovic et al. conducted an experimental study on 40 young football players. The results showed that SAQ training can effectively improve the basic and special agility of young football players. SAQ training can also improve players' ball control proficiency and ball movement speed, and pointed out that SAQ training is conducive to improving the coordination, balance, and quick start ability of young football players (Milanovic, 2013)

Rajkovic et al. conducted SAQ training experiments on several Croatian U15 young football players. He divided these players into an experimental group and a control group and conducted a 6-month experimental study. Through the test data after the experiment, it was found that SAQ training had a certain improvement on the acceleration ability of the experimental group, and the test results of squatting, vertical jumping, static jumping, and vertical jumping of the experimental group subjects were significantly improved, indicating that this method effectively improved the jumping ability and explosive power of football players (Rajkovic, 2014)

Mohammed Safwt Abbas conducted an experimental study on the SAQ training method for Egyptian fencers. 20 high-level fencers were divided into two groups. The experimental group received SAQ training, and the other group received traditional training methods. After three months of experiments, it was concluded that SAQ training can improve the flexibility, quick response-ability, and overall competitive level of the experimental group (Abbas & Alin, 2018)

5. Literature review and research review

The development of Chinese football has a certain historical significance. There are many challenges and deficiencies in the current status of traditional Chinese football teaching, which need to be improved. At present, there is no specific targeted training in the traditional Chinese football training course, including regular training of players and football-specific physical training. Traditional physical training is often not closely integrated with football-specific skills. For example, although simple long-distance running training can improve the endurance of athletes, it cannot be directly converted into efficient running ability on the football field, such as the physical fitness required for special movements such as variable speed running, sprinting, sudden stops, and turns. This training method, which lacks a special combination, makes it possible for athletes to still not fully play at their due level in actual competitions after their physical fitness is improved. Football-specific physical training courses are crucial to improving players' performance in football matches. From a global perspective, the football-specific physical training models of countries around the world have shown a high degree of professionalism and are worth learning from. At the same time, studying concepts such as physical fitness, special physical fitness, and football-specific physical fitness will help find better, more scientific, and more appropriate special training programs for the development of Chinese football. By reading specific relevant literature, we can find that good agility and ball control play an important role in the competitive performance of football players. Advanced and effective training methods can greatly improve training efficiency and achieve twice the result with half the effort. Studies have shown that compared with traditional training methods, SAQ training has a significant improvement effect on athletes' speed, agility, and quick response

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ability, especially on the physical fitness of young athletes. SAQ's special physical training has a positive impact on the improvement of football skills in many aspects.

In terms of speed improvement, various short-distance sprints and quick response start exercises in SAQ training can effectively improve the starting speed of football players. In football games, a quick start can help players get rid of defensive players in an instant and get a favorable position to receive, control, or shoot the ball. For example, when taking a free kick or a corner kick, players need to start quickly and rush to the landing point of the ball to seize the initiative.

Running speed through repeated speed training, the players' straight-line running speed can be improved, which makes them more advantageous when dribbling, chasing back to defend, or attacking forward. For example, in the process of counterattack, the players' fast running can quickly advance the team's offense and create pressure on the opponent's defense.

Enhanced agility and change of direction: In football games, players need to change direction frequently to avoid the opponent's defense or find offensive space. SAQ training, such as agility ladder training and obstacle running, can improve players' physical coordination and change-of-direction ability. Players constantly adjust their body posture and movement direction in this training, which can better adapt to various changes of direction requirements in the game, such as breaking through the penalty area or turning quickly to keep up with the opponent when defending.

Reaction speed, SAQ training focuses on the cultivation of players' reaction ability, including rapid response to visual signals, auditory signals, etc. On the football field, players need to react quickly to the opponent's actions, teammates' passes, and referees' penalties. For example, when defending, players need to react quickly to the opponent's passing route and offensive intentions to make defensive actions in time.

Decision-making speed, SAQ training can help players make correct decisions quickly in a short time. In high-intensity games, players often do not have enough time to think and need to react based on instinct and experience. Through SAQ training, players' thinking and reaction speed are accelerated, and they can judge the situation on the field more quickly and make decisions such as passing, shooting, or defending. For example, after receiving a pass from a teammate, a player needs to quickly decide whether to shoot directly, pass the ball to other teammates, or continue to dribble.

Speed of action connection. The development of football skills requires a fast connection between various actions. Various combination exercises in SAQ training, such as the combination of dribbling and changing direction, the coordination of passing and running, etc., can improve the speed of connection between players' actions and make their technical movements smoother. In the game, players can complete the action from receiving the ball to passing or shooting faster, reducing the opponent's defensive interference. It is conducive to promoting the development of Chinese football and enabling Chinese football to achieve better results in the future.

Summary

Football is a competitive sport that is loved by people all over the world. In the fierce confrontation, good physical fitness is necessary to support it. The special physical training of football is an indispensable part of this factor. Physical fitness is also one of the most basic and important guarantees in football games. The quality of physical fitness is related to the embodiment of the state and even the display of ability. What is more important is to suppress the opponent in the game and defeat the opponent to win the final victory. Among colleges and universities, college athletes specializing in football at the Guangzhou Sports Institute lack training and cognition in this area. Scientific and professional training will surely help the team and even the athletes themselves. In daily training, while maintaining technical and tactical training, special physical training for football is also an indispensable training item. Modern football attaches great importance to targeted training methods. After continuous development, the rhythm and fierce confrontation in football games have fully demonstrated physical fitness.

This study provides an answer to football-specific physical training. SAQ football-specific physical training can effectively improve the physical fitness of college football players, and motivate football players to maintain their physical fitness advantages in high-quality training, thereby improving the competitive level of football players in high-intensity confrontation and high-level competitions, and

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playing better in strong confrontation and high-level competitions, and truly helping football players achieve good results in the competition.

The study on the SAQ football-specific physical training plan showed a very significant difference between the use of SAQ football-specific physical training and traditional physical training in the pre-test and post-test results. The SAQ football-specific physical training plan effectively improved the physical fitness of college athletes in the Guangzhou Sports Institute's football special.

The test results of this study show that the SAQ football-specific physical training plan, which has been formulated, shows that the conclusion drawn from the experimental data is that it has a positive effect on physical fitness in football games.

Conceptual Framework

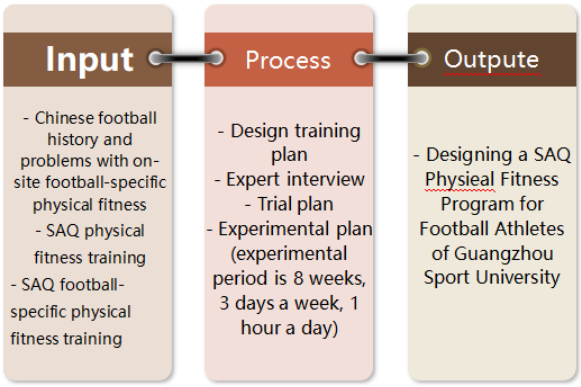

Figure 1 Conceptual Framework

Methodology

1. Research Tools

1.1 Interview Form

During the expert interview process, an interview form will be prepared to gather insights on the SAQ football-specific physical training. The form will also help to build a framework of questions for focus group discussions. Once the questionnaire is created, it will be submitted to three experts to assess the alignment of the questions with the research objectives (IOC).

1.2 SAQ football-specific physical training program

The SAQ football-specific physical training program was developed through focus group discussions with 9 experts. The program was implemented for 8 weeks, 3 times a week, 1 hour each time. Before implementation, the program was tested with 5 students to assess its feasibility.

1.3 Football-specific ball test

Dribbling test: (1) square dribble; (2) 15-meter zigzag dribble running line dribble; (3) straight dribble; (4) DAT non-directional dribble.

1.4 Football-specific off-ball test

Agility test: (1) Cross jump; (2) Illinois test jump; (3) Change of direction and speed running; (4)Nebraska test

2. Population and Sample

Population specification and size

The research subjects are 400 students majoring in football at Guangzhou Sport University in the 2023 academic year. Professional teachers from the Football Teaching and Research Section of Guangzhou Sport University selected 80 football students who met the requirements of the school team through competitions and individual tests. These 80 players belong to the Guangzhou Sport University football

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team, have received professional football training, have good football literacy, and are between 19 and 21 years old.

Samples

A pre-experimental test was conducted on 80 players of the Guangzhou Sport University football team. The test also sampled suitable samples in the form of competitions and personal physical fitness tests. The sample standards were mainly based on SAQ physical training-related tests. Finally, 40 subjects were selected through sports tests as the final sample for this study.

3. Data Collection

1. Develop a questionnaire, review the questionnaire by 3 experts, and assess its consistency with the research objectives using the item-objective consistency (IOC) method. (Appendix 3)

2. Develop an interview form for expert interviews, and evaluate the questions on the interview form by using the item-objective consistency (IOC) index to check the consistency of the content with its objectives with the 3 experts.

3. Draft the questions to be asked of the experts in the focus group by consulting 5 experts through interviews.

4. Develop a SAQ physical training plan for Guangzhou Sport University football players through focus group discussions with 10 experts.

5. Trial the SAQ physical training plan for Guangzhou Sport University football players on 5 Guangzhou Sport University football athletes to assess whether it is suitable for Guangzhou Sport University football athletes and whether the training intensity is appropriate. These 5 Guangzhou Sport University football athletes are not included in the sample group.

6. Conduct SAQ football-specific physical training for a total of 8 weeks, 3 days a week, and 1 hour a day.

7. Conduct comprehensive physical fitness tests before and after 8 weeks of training. The obtained test data were analyzed and compared to study the effect of SAQ football-specific physical training on the physical fitness of football players at Guangzhou Sport Institute.

Data analysis

1. Form a summary of the effect evaluation of the SAQ football-specific physical training program and calculate the IOC value.

2. Use statistical software to calculate the mean and standard deviation of the basic information of the physical characteristics of the experimental group and the control group, expressed as M±SD. Use statistical software to calculate the mean and standard deviation of the football-specific physical fitness test of the experimental group and the control group, expressed as M±SD. Use statistical software to calculate the mean and standard deviation of the football-specific physical fitness test of the experimental group and the control group, expressed as M±SD.

3. Before the experiment, the results of the football-specific physical fitness test of the experimental group and the control group were compared by a t-test. After the experiment, the results of the football-specific physical fitness test of the experimental group and the control group were compared by a t-test.

4. The experimental group football-specific physical fitness test was compared within the group using variance analysis.

Results

Table 1 Results of football-specific physical fitness tests of Guangzhou Sport University football players before and after 8 weeks of training. Before the experiment, the test scores of 4 ball-handling ability indicators (including square dribbling, straight-line dribbling around the barrel, 15-meter Z-shaped dribbling, and DAT non-directional dribbling, a total of 4 ball-handling ability test indicators) of 20 experimental subjects in the experimental group and the control group were sorted out. To make a scientific comparison between the pre-experimental test data of the experimental group and the control

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group, an independent sample T-test was performed on the two groups of data. The specific test results are shown in Table 1.

Table 1 Independent sample test of ball handling ability test indexes of experimental group and control group before the experiment. Test Table-1

Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
Experimental group	16.90±0.50	12.91±0.53	7.10±0.30	14.83±0.39
Control group	16.85±0.41	12.91±0.49	7.10±0.31	14.84±0.32
T-value	0.153	0.003	0.165	0.072
P-value	0.879	0.998	0.870	0.943

As can be seen from Table 1, after the independent sample T test using SPSS software, the P value of the square dribbling test before the experiment was 0.879 for the experimental group and the control group. The P value of the 15-meter Z-shaped dribbling test was 0.998. The P value of the straight-line dribbling around the barrel test was 0.870. The P value of the DAT non-directional dribbling test was 0.943. The P values of the test data of these four dribbling abilities were all greater than 0.05, indicating that there was no significant difference in the dribbling abilities of the experimental group and the control group before the experiment, and the players were relatively close in the various dribbling levels, ensuring the feasibility of training and experimental testing.

Table 2 Before the experiment, the test scores of 4 agility ability indicators (including cross quadrant jump, Illinois test, cross disguised run, Nebraska test, a total of 4 agility ability test indicators) of 20 experimental subjects in the experimental group and the control group were sorted out. To make a scientific comparison between the pre-experimental test data of the experimental group and the control group, an independent sample T-test was performed on the two groups of data. The specific test results are shown in Table 2.

Table 2 Independent sample test of agility ability test indicators of experimental group and control group before the experiment Test Table 2

Project	Cross jump	illinois test	Change of direction and speed	Nebraska test
Experimental group	10.06±0.30	22.99±0.47	13.66±1.05	22.85±0.53
Control group	10.08±0.26	22.99±0.47	14.22±0.96	23.04±0.51
T-value	0.291	0.001	1.789	1.136
P-value	0.773	1.000	0.820	0.263

As can be seen from the Table, after the independent sample T test using SPSS software, the P value of the cross-quadrant jump test before the experiment was 0.773 for the experimental group and the control group. The P value of the Illinois test was 1.000. The P value of the cross-phase run was 0.820. The P value of the Nebraska test was 0.263. The P values of the four agility quality test data after the test were all greater than 0.05, indicating that there was no significant difference in the agility test between the experimental group and the control group before the experiment, and the levels of the two groups were roughly the same, which provided feasibility proof for the implementation of the experiment and training.

Table 3 shows the test scores of 4 ball handling ability indicators (including square dribbling, straight line dribbling around the barrel, 15-meter Z-shaped dribbling, and DAT non-directional dribbling, a total of 4 ball handling ability test indicators) of 20 experimental subjects in the experimental group and the control group after 4 weeks of experimental training. To make a scientific comparison between the

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pre-experimental test data of the experimental group and the control group, an independent sample T-test was performed on the two groups of data. The specific test results are shown in Table 3.

Table 3 Four-week test: Independent sample test of ball handling ability test indexes of experimental group and control group. Test table-3

Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
Experimental group	16.75±0.58	12.85±0.56	7.07±0.30	14.72±0.43
Control group	16.69±0.61	12.93±0.50	7.10±0.29	14.87±0.33
T-value	0.325	0.465	0.368	1.216
P-value	0.747	0.645	0.715	0.232

As can be seen in Table 3, after 4 weeks of football-specific physical training, the experimental group and the control group used SPSS software to conduct independent sample T-tests. The P value of the square dribbling test after 4 weeks of the experiment was 0.747. The P value of the 15-meter Z-shaped dribbling test was 0.645. The P value of the straight-line dribbling around the barrel test was 0.715. The P value of the DAT non-directional dribbling test was 0.232. The P values of the test data of these four dribbling abilities were all greater than 0.05 but showed a downward trend, which shows that there are certain differences in the experimental group after 4 weeks of experimental football-specific training, and the players have gradually differentiated in the various dribbling levels.

Table 4 summarizes the test scores of 4 agility ability indicators (including cross quadrant jump, Illinois test, cross disguised run, Nebraska test, a total of 4 agility ability test indicators) of 20 experimental subjects in the experimental group and the control group after 4 weeks of experimental training. To make a scientific comparison between the pre-experimental test data of the experimental group and the control group, an independent sample T-test was performed on the two groups of data. The specific test results are shown in Table 4.

Table 4 Four Four-week test: Experimental and control groups' agility ability test index, independent sample test table-4

Project	Cross jump	illinois test	Change of direction and speed	Nebraska test
Experimental group	9.71±0.38	22.58±0.64	13.69±0.86	22.43±0.46
Control group	10.08±0.26	22.99±0.47	14.23±0.96	23.04±0.51
T-value	3.635	2.246	1.831	3.997
P-value	0.007	0.052	0.463	0.646

As can be seen in Table 4, after 4 weeks of football-specific physical training, the experimental group and the control group were tested using SPSS software for independent sample T-tests. The P value of the cross-quadrant jump test in the experimental group and the control group was 0.007. The P value of the Illinois test was 0.052. The P value of the cross-phase run was 0.463. The P value of the Nebraska test was 0.646. The P values of the four agility test data after testing were all greater than 0.05 but showed a clear downward trend, which shows that there were certain differences in the experimental group after 4 weeks of experimental football-specific training, and the players gradually differentiated in their ability levels in various physical training.

Table 5 After 8 weeks of SAQ training, the test scores of the experimental group's 4 ball handling ability test indicators after the experiment and the test scores before the experiment were sorted and summarized. The average scores of the 4 ball-handling ability tests were improved. To more intuitively

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feel the changes in the test scores of the experimental group's dribbling ability before and after the experiment, the paired sample T-test was used to test the differences between the 4 ball handling ability test scores of the experimental group before and after the experiment. The results are shown in Table 5.

Table 5 Independent sample test of the test index of ball handling ability before and after the experiment in the experimental group. Test Table-5

Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
Before the experiment	16.90±0.50	12.91±0.53	7.10±0.30	14.83±0.39
After the experiment	13.88±0.27	10.73±0.39	6.10±0.28	12.77±0.31
T-value	23.542	14.850	11.435	18.566
P-value	0.01	0.01	0.01	0.01

The paired sample T-test of the experimental group's dribbling ability test data before and after the experiment using SPSS software showed that after 8 weeks of training, the P values of the experimental group players in the square dribbling, 15-meter Z-dribbling, straight dribbling, and DAT non-directional dribbling test scores were all less than 0.01, indicating a very significant difference, indicating that the average test scores of the experimental group after the experiment were significantly improved.

Table 6 After 8 weeks of traditional training, the test scores of the 4 ball handling ability test indicators of the control group after the experiment were sorted and summarized with the scores before the experiment. The average scores of the 4 ball-handling ability tests were improved. To more intuitively feel the changes in the control group's ball handling ability test scores before and after the experiment, the paired sample T-test was used to test the differences between the 4 ball handling ability test scores of the control group before and after the experiment. The results are shown in Table 6.

Table 6 Independent sample test of the control group's ball handling ability test index before and after the experiment. Test Table-6

Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
Before the experiment	16.85±0.41	12.91±0.49	7.10±0.31	14.84±0.32
After the experiment	16.66±0.58	12.82±0.53	7.08±0.32	14.76±0.44
T-value	0.773	0.753	0.978	0.180
P-value	0.844	0.504	0.783	0.358

The paired sample T-test of the control group's dribbling ability test data before and after the experiment using SPSS software showed that after 8 weeks of training, the average test scores of the control group players in square dribbling, 15-meter Z-shaped dribbling, straight barrel test, and DAT non-directional dribbling were all P values 0.05, indicating that there were no significant differences before and after these tests.

Table 7 After 8 weeks of SAQ training, the test scores of the experimental group's 4 agility test indicators after the experiment and the scores before the experiment were sorted and summarized. It can be seen that the average scores of the 4 agility tests of the experimental group have improved after SAQ football-specific physical training. The paired sample T-test was used to test the difference between the 4 agility test scores of the experimental group before and after the experiment. The results are shown in Table 7

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Table 7 Experimental Group Post-Test Sample T-Test Table 7

Project	Cross jump	illinois test	Change of direction and speed	Nebraska test
Before the experiment	10.06±0.30	22.99±0.47	13.66±1.05	22.85±0.53
After the experiment	7.10±0.29	18.38±2.86	10.82±0.48	18.76±2.13
T-value	31.194	7.088	10.924	8.336
P-value	0. 01	0. 01	0. 01	0. 01

The data were analyzed using the SPSS paired sample T-test and showed that after 8 weeks of SAQ training, the P values of the cross-type limited jump, Illinois test, cross-disguised running test, Nebraska test, and inter-group test in the experimental group were less than 0.01, indicating that there were very significant differences in these four tests before and after the experiment.

Table 8 After 8 weeks of traditional physical training, the test scores of the control group's agility test indicators were sorted and analyzed with the scores of the pre-experimental test. The comparison of the test data shows that the average scores of the four agility tests of the control group did not improve after 8 weeks of traditional training. To more scientifically compare the test scores of the control group before and after the experiment, the paired sample T test was performed on the data of the control group before and after the experiment, and the results were tabulated as shown in Table 8.

Table 8 Sample T-test of pre-test and post-test data of control group Table 8

Project	Cross jump	illinois test	Change of direction and speed	Nebraska test
Before the experiment	10.08±0.26	22.99±0.47	14.22±0.96	23.04±0.51
After the experiment	10.08±0.26	22.95±0.61	14.12±0.87	22.64±0.58
T-value	0.098	0.180	0.359	2.317
P-value	0.923	0.858	0.722	0.260

It can be seen that after 8 weeks of traditional training, the average data of the control group's cross-shaped running test, Illinois test, cross-shaped limited jump, and Nebraska test have improved slightly, but the P values are all greater than 0.05, indicating that there is no significant difference in the average scores of these three tests before and after the test.

Table 9 After 8 weeks of SAQ football-specific physical training, the experimental group and the control group underwent 8 weeks of traditional physical training. The scores of the 4 ball-handling ability tests were collated and summarized with the pre-test scores. The average scores of the 4 ball-handling ability tests were significantly improved. To more intuitively feel the changes in the ball-handling ability scores of the experimental group and the control group before and after the test, the paired sample T-test was used to test the differences in the test scores of the 4 ball-handling ability indicators before and after the experiment. The results are shown in Table 9

Table 9 T-test table of the experimental group and the control group before and after the test. The results are shown in Table 9.

Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
Experimental group	13.88±0.27	10.73±0.39	6.10±0.28	12.77±0.31
Control group	16.66±0.58	12.82±0.53	7.08±0.32	14.76±0.44
T-value	19.483	14.132	10.808	16.618

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Project	Square dribbling,	15-meter Z-shaped dribbling,	Straight-line dribbling around the barre	DAT non-directional dribbling
P-value	0.01	0.01	0.01	0.01

SPSS software was used to conduct a paired sample T-test on the experimental group after SAQ special physical training and the control group after traditional training. The results showed that after 8 weeks of training, the P values of the experimental group players in square dribbling, 15-meter Z-shaped dribbling, straight dribbling, and DAT non-directional dribbling test were all less than 0.01, indicating a very significant difference, indicating that the average test scores of the experimental group after the experiment were significantly improved.

Table 10 The experimental group was compared with the control group after 8 weeks of SAQ football-specific physical training and traditional physical training. The agility test index scores of the experimental group and the control group were sorted and analyzed. The test data were compared, and it can be seen that the experimental group had a significant improvement in the scores of the four agility tests after 8 weeks of SAQ-specific training. To more scientifically compare the test scores of the experimental group and the control group after the experiment, the paired sample T-test was performed on the post-test data of the experimental group and the control group, and the results were tabulated. Table 10

Table 10 Paired sample T-test of the post-test data of agility of the experimental group and the control group, Table 10

Project	Cross jump	illinois test	Change of direction and speed	Nebraska test
Experimental group	7.10±0.30	18.38±2.87	10.83±0.49	18.76±2.13
Control group	10.07±0.26	22.96±0.61	14.12±0.87	22.64±0.58
T-value	16.765	0.980	14,721	7.862
P-value	0.01	0.01	0.01	0.01

After the experimental group received SAQ special physical training and the control group received traditional training, they took the final agility test. The paired sample T-test showed that after 8 weeks of training, the P values of the experimental group members in the cross-shaped limited jump, Illinois test, cross-shaped running test, Nebraska test, and inter-group test were less than 0.01, indicating that there were very significant differences in these four tests before and after the experiment. It means that the average test scores of the experimental group after the experiment have been significantly improved.

Conclusion

The experimental research data showed that the 20 subjects who received traditional physical training had no significant improvement in physical fitness after 8 weeks of experimental training, 3 days a week, and 24 classes, as well as pre- and post-tests. Under the same conditions, after 8 weeks of SAQ football-specific physical training, 3 days a week, and 24 classes, as well as pre- and post-tests, the 20 football-specific athletes who received the experiment, through scientific data system analysis, can be seen that the 20 subjects who received SAQ football-specific physical training had a significant improvement in physical fitness for football.
Therefore, this study shows that athletes who receive SAQ football-specific physical training have a very significant effect on comprehensive physical fitness.

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Discussion

SAQ football-specific physical training

1. Physical fitness and football-specific physical fitness

Physical fitness is an important part of sports training. In the physical training of football players, a variety of scientific and effective training methods and means should be used to improve the physical quality, physical fitness, and sports quality of athletes. SAQ football-specific physical training is a comprehensive training method widely used in the training of football teams in Europe and the United States.

2. The Importance of SAQ Football-Specific Physical Training

SAQ (Speed, Agility, Quickness) training is a comprehensive physical training concept and method specifically for football players, which is designed for the key abilities required by football players, namely the speed, agility, and quickness required in football matches. At present, it has been valued and recognized by more and more people. It has become one of the daily training items for top European teams, and it is a very effective training method for teenagers aged 19- 21. At present, most coaches in my country have not formed a unified cognition and understanding of this. There is a lack of physical-quality training. In football-developed countries, SAQ training has a very good training effect, so it is included in every period and every age group of high-level football training plans.

3. SAQ Comprehensive Physical Training

With the understanding and importance of special physical fitness, many coaches have now integrated SAQ special football physical fitness training into various sports other than football, and have even achieved good results in the field of rehabilitation. If the SAQ training model can be further adjusted in a more targeted manner, I believe it will develop into a training method that suits the various sports in my country and has the characteristics of each project. I believe that the integrated training concept of "SAQ" will provide inspiration and help for our coaches and athletes.

Recommendations

1. SAQ training applies to many sports.

This study only conducted experimental research on the SAQ football-specific physical training project, but through research, it was found that SAQ physical training can be applied to various sports for research and analysis, which has a good breadth for SAQ physical training and can help improve the level of various sports in my country.

2. Special program setting

The SAQ training program for improving the agility of football players should focus on combining it with the special program to avoid athletes having difficulty in fully exerting their athletic level in the game, thereby hindering the coordinated development of physical fitness and technical tactics.

3. Set up the SAQ physical training plan according to the player's position on the field

SAQ football-specific physical training mode should be used in training according to the different positions of football players on the field, and different SAQ-specific training should be carried out. At the same time, it is best to add combined physical training and targeted and confrontational physical training to SAQ football-specific physical training, so that the authenticity of the game can be better reflected, to achieve the set goals in the game.

Further Research

1. Optimization of training methods

Combined with new technological means: Research on how to use virtual reality, motion sensors, and other technologies to more accurately monitor and adjust SAQ training and improve training effects. Personalized training programs: Develop personalized SAQ training plans for players in different positions (such as forwards, defenders, midfielders, etc.), players of different ages and levels.

2. Evaluation of training effects

Long-term effect tracking: Track players' long-term SAQ training, evaluate their psychological state and psychological factors, study the impact of SAQ training on players' psychological state (such as self-confidence, game pressure response, etc.), and incorporate psychological indicators into the training effect evaluation system.

3. Correlation with game performance

Data analysis game: Through the analysis of a large amount of game data, determine the specific contribution of SAQ ability to the game results in different game scenarios (such as offense, defense,

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transition moments, etc.). Simulate game situation training, design SAQ training scenarios that are closer to actual games, and improve players' adaptability and performance in games.

4. Sports rehabilitation loss and rehabilitation

Rehabilitation and prevention: Explore the role and methods of SAQ training in preventing common injuries in football and post-injury rehabilitation. Promote players' physical recovery and improve training effects through the combination of nutrition and SAQ training

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