

Investigation on Teaching Methods of American Football Course

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Abstract: With the development of the economy, people are increasingly paying attention to their physical fitness. Football is a sport that places great emphasis on sprinting, quick stops, quick starts, directional changes, explosive power, and more. It emphasizes the comprehensive ability of the whole body, requiring a coordinated combination of speed, strength, flexibility, and endurance. Among them, American football is a type of football that is a highly competitive and engaging sport. It originated from the changing rules of English football and is the most popular sport in the United States today, ranking first among the four major professional sports in North America. American football is very popular among both amateur and professional groups and has many games. For example, Super Bol is the annual championship of the National Football League (NFL), and the winner is referred to as the “world champion”. People want to win honors, so the planning of skills, physical fitness, and tactical strategies is very important. To win games, good strategic and tactical skills, as well as excellent physical fitness and skills, are necessary. Therefore, teaching and training team members is essential. During training, high-intensity training can easily lead to athlete injuries and the trainer may also have safety issues with the use of equipment. This article used literature review, logical analysis, and other methods to study how to attend a good American football course, sorted out the key points of this course in teaching practice, and started from practice to teach students. Continuously improving teaching methods during the teaching process aimed to reform teaching, and ensured the safety of athletes during training, so as to provide a theoretical basis for efficient training of American football players, and provide a blueprint for how to train American football players. Experiments showed that the reformed teaching method could effectively improve students’ sports performance, with improvements in speed, flexibility, strength, and explosive power. It was recognized by most students and could enhance their love for football. Among them, the average progress of the 100 meter run and touch turn back run was 0.047 seconds and 1.035 seconds; deep squatting and hard pulling increased by 7kg and 8kg respectively; the Standing long jump and the standing high jump improved 1.1cm and 1.4cm respectively.

1. Introduction

Sports have a great impact on everyone's physical and mental health. Sports can enhance people's physical fitness and relax their body and mind. American football, as a highly competitive sport in sports, requires high levels of physical fitness and mental willpower. An excellent American football player requires excellent overall physical fitness and a high level of focused attention. However, human energy is limited and cannot achieve the highest level of strength, speed, endurance, and other abilities. Moreover, each person's talents and preferred positions are different, so their suitable positions would also be different. Therefore, in order to better cultivate athletes, they should be taught according to their aptitude and undergo targeted training based on their talents and hobbies.

In order to better cultivate athletes, it is necessary to reform teaching. Regarding teaching reform, many scholars have conducted research on it. Scholars Zhao Yalan, Guo Hongbing analyzed the current situation, advantages, and existing problems of ideological and political construction in professional courses in vocational colleges, conducted research and practice on teaching objectives and implementation, and reformed teaching methods [1]. Scholars Yang Rong, Deng Shuwen, Wang Dianhua elaborated on the reform and innovation of "Software Engineering" course teaching from seven perspectives to improve the efficiency of software talent cultivation, and confirmed its effectiveness [2]. Scholar Ji Z reformed teaching and proposed micro course teaching methods, making learning easier and overcoming the drawbacks of long project learning cycles and small scales [3]. Research has been conducted on teaching reforms in various fields around the world, and significant results have been achieved.

This article reformed the teaching of American football courses and improves its teaching methods, aiming to efficiently cultivate American football players while ensuring their physical health and safety, so that professional players do not lose their professional lifespan due to injuries and illnesses, and amateur players have better physical and mental health. This allows more people to love this sport, allowing those who love it to better utilize their talents and obtain satisfactory positions. The experiment has proven that the reformed teaching method can effectively improve students' sports performance, making progress in terms of speed, flexibility, strength, and explosiveness. It can also deepen students' love for this sport and enhance their subjective initiative.

2. Overview of American Football

American football originated from English football, and the purpose of the sport is to push the ball into the defense's end zone to score. There are many scoring methods, including holding the ball over the baseline, throwing the ball to a teammate behind the baseline, or kicking a ball placed on the ground between two goalposts [4].

2.1 Competition Rules

American football matches are played between two teams, with a maximum of 53 players. Each team sends 11 players to play and players can be changed at any time. The attacker gains control of the ball, while the defender gains control. The attacking team tries to push the ball towards the defensive team as much as possible, while the defensive team prevents the attacking team from scoring. If the ball enters the end zone and scores 6 points, it is called a touchdown. If it scores the goal post, it scores 3 points and is called a free kick score. The competition consists of 4 sections, totaling 60 minutes. The first and second quarters are the first half. The third and fourth quarters are the second half, and there are 12 minutes of rest between the halves. The attacking party must restart the next attack within 40 seconds after the end of each attack, otherwise they would be

punished [5-6].

2.2 Player Position

2.2.1 Offender

Quarterback: This is usually for the team's mind. This is a leading figure and mainly responsible for the offensive tactical planning of the game.

Center: This is the starting line located in the middle and is responsible for starting the ball and launching an attack.

Guard: These are two sides of a center forward, and each team would be equipped with two guards.

Interceptor: This is located on the outer side of the guard, and each team would be equipped with two interceptors.

Tight end: This is near or close to the cutting front and is located on its outside.

Outside receiver: This is 10-15 yards from the starting line, and is responsible for receiving the Quarterback's air pass.

Running guard: This usually stands behind the quarterback, and is responsible for running with the ball, or stopping the other player from attacking the quarterback and receiving the quarterback's pass.

2.2.2 Defender

The defensive player is responsible for preventing the attacking player from reaching the first down or causing the attacking player to concede a goal, thereby preventing the opponent from scoring and regaining attacking power. The defensive positions are divided into the following:

Defensive interceptor: This is located on the defensive line and is responsible for resisting the attacker's charge, with one or more assigned depending on the situation.

Defensive end forward: this is located on the defensive line and is responsible for attacking the Quarterback. If the Quarterback is successfully captured behind the starting line, it is called a captor or a player who stops the outside attack with the ball. Usually, two defensive end forwards are arranged.

Line guard: This is 2-3 yards behind the defensive interceptor and the defensive end front. The main responsibilities are to raid the quarterback, intercept the other side's running guard, and mark the other side's receiver.

Corner guard: This is located opposite the catcher, and its main responsibilities include marking the catcher, assisting in intercepting runners and attacking players with the ball, and arranging the number of players according to the situation.

Center back: This is located 8-10 yards from the starting line and is mainly responsible for coordinating with the opponent's passing, usually with two center backs [7-8].

2.2.3 Special Teams

Special Teams are an important part of the team. The Secret Service team is a collection of team members responsible for handling special game situations and special tasks. The secret Service team is responsible for performing the tasks of kicking and catching the ball, including kicking out, kicking in, kicking high balls, kicking players and catching the ball. They are responsible for implementing various types of kicking and catching tactics in the game, such as kick-off, penalties, possession and return of the ball. They are also responsible for protecting and blocking the team's kickers and receivers to ensure that they can perform their tasks smoothly. They need to use skills

and strategies to protect their teammates from blocking and attacks by the opposing team. The secret service may also perform some special tasks, such as the protection of the ball bearer, special offensive or defensive tactics, feints, and special organizations. They need to be flexible and adaptable, and make corresponding adjustments and reactions according to the game situation. The members of the secret service team are usually players with speed, agility and special skills in the team. They need to have excellent running ability, coordination and tactical awareness to adapt to the fast-paced and high-intensity competition environment. In short, the Secret Service plays an important role in American football games, responsible for handling special game situations such as kicking, catching and special tasks. Their performance directly affects the team's tactical execution and performance in the game.

3. Evaluation of Teaching American Football Courses

3.1 Evaluation of Traditional Teaching Methods

Teaching methods are an important factor affecting the quality of teaching. Traditional teaching methods do not pay attention to individual differences, which can lead to insufficient training for individuals with excellent basic physical fitness, and excessive training for individuals with poor physical fitness, resulting in slow progress and even injury; It does not pay attention to students' talents, uses a training method that remains unchanged for thousands of years, lacks flexibility, and wastes talent; it does not consider students' interests and feelings, and does not fully utilize human subjective initiative; the teaching method is single and cannot arouse students' interest; it is spiritualism and voluntarism, unaware of the use of scientific training methods, and often leads to injuries and illnesses for students [9-10].

3.2 Evaluation of Difficulties in Reforming Teaching Methods

The first difficulty in teaching lies in teaching students according to their aptitude. Human energy is limited and cannot achieve excellent and perfect integration of strength, endurance, speed, agility, explosive power, grasping techniques, and so on [11]. Therefore, it is necessary to arrange training based on athletes' talents, hobbies, and basic physical fitness. It is very difficult to discover athletes' talents and coordinate their hobbies well.

The second difficulty lies in safety hazards. Athletes have safety hazards during training, and it is very important to effectively prevent unexpected situations during training [12]. Many people engage in high-intensity training because they want to make rapid progress, neglecting rest and causing irreversible damage to the body due to overtraining. These safety hazards require high attention.

The third difficulty is the arrangement of teaching, and the main considerations for arranging teaching content include the following:

(1) Athletes need to cultivate their cohesion in understanding and executing tactics. It is necessary to elect a captain who can obey the crowd. It requires a good tactical sense and the ability to plan tactics [13].

(2) Different players in different positions need to consider different training content, and different players in the same position also need to consider their physical fitness and arrange different training. Each individual needs to arrange different training.

(3) Training capacity and post training recovery need to be carefully considered. The pressure and load caused by different training capacities on the body also vary, and the time required for recovery varies from person to person [14].

4. Teaching Design Ideas

To fully unleash students' subjective initiative, it is necessary to make them full of love for football. Students can learn about the history of all types of football, allowing them to fully understand the origins of football and the connections between various types of football. It is necessary to understand why they come to learn American football and their dreams, and arrange their positions according to their abilities and hobbies [15-16].

By conducting physical fitness assessments on students and investigating their previous favorite sports, only with a thorough understanding of their basic physical abilities and technical abilities can a reasonable training plan be arranged. For example, if some students used to play football and shoot very accurately, they can be trained to score more free kicks; For example, if some students used to practice wrestling, they can be given more training in grappling techniques [17]. In short, it is necessary to have a better understanding of the skills that students possess and then conduct targeted training based on their physical abilities.

It is necessary to organize more group activities for students to strengthen their cohesion. American football is a team competitive sport, and only unity can win.

When strength training is carried out, students can assist each other in training, which can not only strengthen cohesion but also ensure safety during training. Every week, students are arranged to relax their bodies, such as massages, baths, etc. Only when their bodies rest can they become stronger and proceed to the next stage of training.

5. Specific Design of Teaching Methods

5.1 Theoretical Knowledge Teaching

Students are taught theoretical knowledge, including the history of football, how to develop strategies and tactics in American football competitions, how to arrange their training, recovery, and diet, among others. Every week, theoretical knowledge teaching is conducted using multimedia classrooms, which allow students to watch videos of past American football matches and learn about strategic tactics in professional competitions.

5.2 Physical and Technical Training

Targeted training is conducted based on the students' basic physical fitness and selected positions. For example, running guards need to have good speed, strength, and directional ability for their physical fitness, as well as technical skills such as receiving and covering the ball. They also need to have a broad perspective, and a keen sense of smell for changes in the position of teammates and opponents on the field [18]. When training running guards, leg strength and explosive strength training should be carried out. For strength, it is necessary to practice deep squats, hard pulls, etc. more; for explosive power, they can practice high leg lifts, step jumps, and more; for the ability to change direction and catch the ball, they can conduct training on changing direction running and throwing and catching the ball. For covering ability and vision, more competition training is needed. A week is a cycle, and Sunday is a day off for students to relax and have a group friendly competition every two weeks. The specific training plan is shown in Table 1.

Among them, directional running training includes T-shaped exercises, line running, touch turn back running, diagonal running, and so on. Two actions are randomly selected, and each action is performed in three sets, totaling six sets; deep squat and hard pull training should be arranged according to the students' respective strength levels in terms of weight bearing and frequency; Explosive strength training can be conducted by selecting two to three movements from high leg

lifts, explosive squats, step jumps, hip lunges, and step high leg lifts [19]. The core training includes plate support (which can be loaded according to their respective levels), goat push ups, hip bridge, neck bridge, and other movements to choose from. The throwing and catching of the ball is done in pairs by the runners and defenders. This training fully considers the various abilities required for running guards and students have sufficient time to rest and relax their bodies. Holding a competition every two weeks can test students' training results and increase their competition experience. Based on the students' performance during the competition, the training plan has been revised and improved.

Table 1: Running guard training

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Variable direction running	6 groups	6 groups			6 groups	6 groups
Strength training			Squats 4 sets Hard pull 4 groups			
Explosive power training	6 groups					6 groups
Core training	9 groups			6groups	9groups	9groups
Throw and catch training	1000 times	1000 times	1000 times	1000 times	1000 times	1000 times

Each position, such as quarterback and center, can be trained according to the training mode in Table 1, and can be adjusted according to the focus of the position. Flexibility training is required for flexibility, sprint start training and high-speed stop training are required for quick stop and quick start ability, and free kick training is required for free kick training.

5.3 Training Load

Training can be divided into capacity and intensity, and the calculation formula for capacity is as follows:

$$\text{weight} \times \text{frequency} \times \text{group} \quad (1)$$

For example, if there are 4 groups of squats with 12 times each group and 4 groups of hard pulls with 8 times each group, and the weight used for squats and hard pulls is 100kg and 120kg respectively, the training capacity is 8640. Strength and capacity go in opposite directions. When using high-intensity, that is, heavy weight training, the number of group sessions would significantly decrease. Squatting 100kg 12 times per group to 120kg may only be 6-8 times, with a capacity of 4800 for 4 groups of 100kg, while 120kg is only 2880-3840. The load on the body varies depending on the training capacity. High intensity and heavy training places a significant burden on the nervous system, while high volume training places a significant burden on the muscles. The underlying principle of training progress is progressive loading, which means that

each cycle of training produces a higher load on the body than the previous cycle of training. In order to achieve load balance, high-capacity training and high-intensity training are selected for each cycle of training [20].

5.4 Creating a Good Environment

The impact of the environment on people is enormous, and a good environment can effectively enhance students' subjective initiative. This requires teachers to have a high sense of responsibility, fully understand the physical and mental health of students, make adjustments to training based on their situation, and provide psychological guidance to students at appropriate times. Teaching must be strict, and well-designed plans must be completed on time, avoiding cutting corners and building a good spiritual environment for students.

The material environment is also indispensable, and training venues, equipment used for training, protective equipment, food, accommodation, and so on need to be considered. Having an excellent training venue for students can also enhance their training atmosphere and passion. After training, diet and sleep are also crucial, allowing students to consume sufficient nutrients and receive sufficient rest in order to progress [21].

6. Practical Application Experiment of Teaching Methods

Practice is the only criterion for testing truth. This article applies the developed theory to practice and employs 50 students for teaching. Using the reformed teaching method, 50 students are trained for 8 weeks and undergo a physical fitness test every two weeks. They are divided into four groups, with group numbers a, b, c, and d. The results are averaged and the test results are observed.

Physical test includes 100 meter run, standing long jump, standing high jump, touch turn back run, squat, hard pull test. Running is an agile test, squatting and hard pulling are strength tests, and standing long jump and standing high jump are explosive tests. The results are shown in Figure 1, Figure 2 and Figure 3.

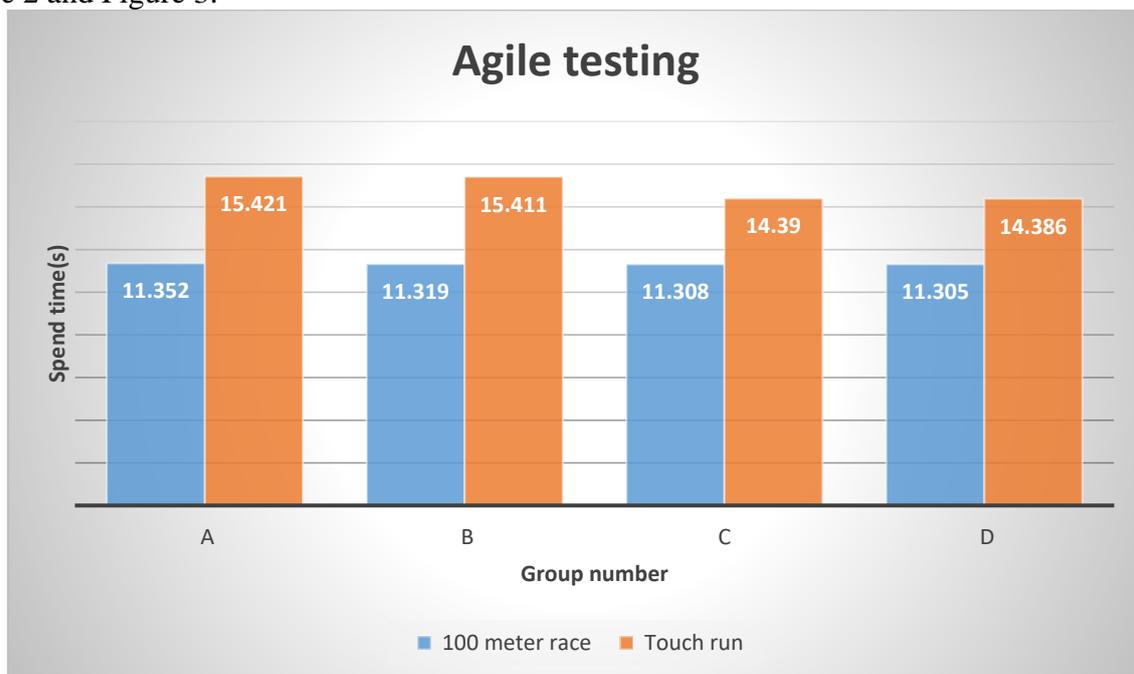


Figure 1: Agile test results

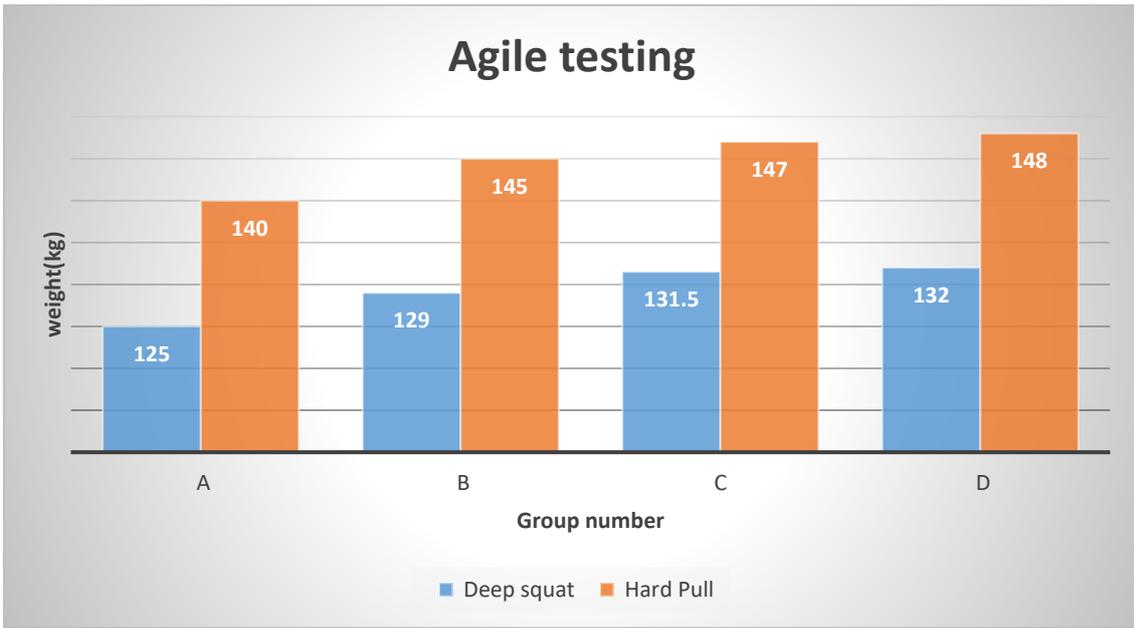


Figure 2: Strength test results

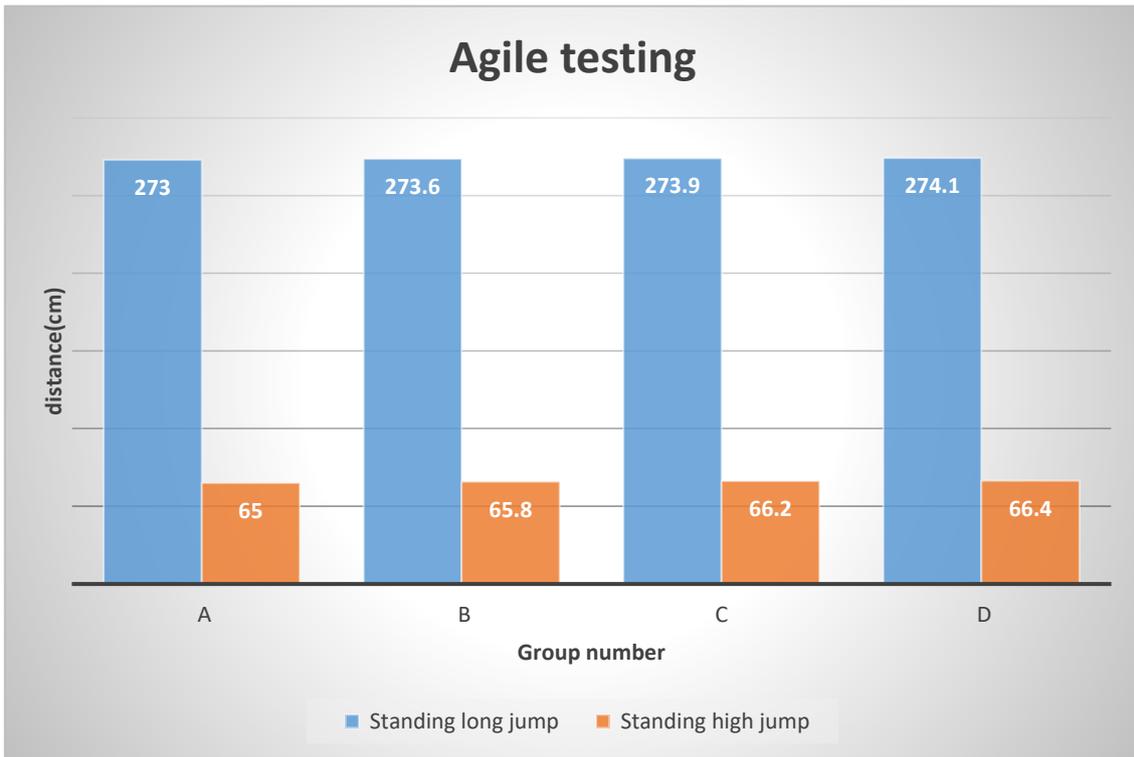


Figure 3: Explosive force test results

From the figure, it could be seen that the reformed teaching method could help students steadily improve their overall physical abilities. However, with the improvement of grades, the rate of progress becomes slower and slower. This was because the body adapts to training. When a bottleneck period gradually occurred, it was necessary to change the training method. Within 8 weeks, the performance of the 100 meter run improved by 0.047 seconds and the touch turn back run improved by 1.035 seconds; deep squatting and hard pulling increased by 7kg and 8kg respectively; the standing long jump and the standing high jump improved 1.1cm and 1.4cm

respectively.

After the experiment, 50 students were interviewed separately. According to statistics, 43 students learned to arrange simple training plans for themselves and how to adjust their diet and sleep. 45 students said they became more fond of American football and engage in low-intensity training every day, as well as learning tactical coordination and planning during matches. There were a few students who only liked happy football and did not like the intense competition mode. They preferred to engage in entertainment mode with friends with low level of confrontation. In short, most students strongly agreed and liked the reformed teaching methods.

7. Experimental Summary

This article conducted experiments on the application of the reformed teaching methods in practice, mainly verifying whether the reformed teaching methods could effectively improve students' sports performance. Fifty students were selected for an 8-week teaching session, with testing conducted every two weeks. They were divided into four groups and the data was recorded to calculate the average. The experimental results indicated that the reformed teaching methods could effectively improve students' sports performance, with improvements in speed, flexibility, strength, and explosiveness. The average progress of the 100 meter run and touch turn back run was 0.047 seconds and 1.035 seconds. Deep squatting and hard pulling increased by 7kg and 8kg respectively; the standing long jump and the standing high jump improved 1.1cm and 1.4cm respectively.

8. Conclusions

This article made some research on the teaching methods of American football courses. This article analyzed traditional teaching methods, pointed out the problems of traditional teaching methods, and analyzed how to improve them. This article provided a detailed analysis of the needs and difficulties of teaching reform, aiming to comprehensively improve the teaching methods of American football courses. The specific work is as follows: (1) The history, rules, and player positions of American football are briefly explained. (2) Traditional teaching methods have been studied, pointing out the problems of traditional teaching and improving it. The needs and difficulties of reform are analyzed and addressed one by one. (3) Based on the analysis of the reform of teaching, some ideas on how to reform and the teaching design after the reform have been proposed. (4) According to the ideas, teaching methods, and detailed design are carried out, such as arranging targeted training, creating a good teaching environment, enhancing students' spiritual environment for learning, and teaching students theoretical knowledge. (5) The designed teaching methods are put into practice to test the effectiveness of the reformed teaching methods. Experiments have shown that the reformed teaching methods can effectively enhance students' love and passion for American football, and a reasonable training mode can effectively improve students' sports performance.

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