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Research on the Integration Training of Physical Fitness and Technology in Badminton

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Abstract: The purpose of this study is to explore the new strategy of combining physical fitness and technology in badminton training.Based on the uniqueness of badminton and advanced training concepts, this study draws up a unique integrated training plan.The plan advocates skillfully integrating physical training into technical exercises, aiming at enhancing athletes'lasting competitiveness in competitions.In addition, this kind of integrated training also helps to reduce the possibility of sports injuries, thus prolonging the career of athletes.This research has opened up a new path for the scientific training of badminton, and has a far-reaching impact on improving the comprehensive competitive skills of athletes.The follow-up study will explore the specific application of fusion training in order to play a greater role in the progress of badminton.

Keywords: Badminton; Physical Fitness; Technology; Fusion Training

1. Introduction

1.1 The importance of physical fitness and technology in badminton

Badminton, as a sport with strict physical and technical requirements, is in the top competitions.Athletes not only need to show exquisite skills, but also need to have superior physical support.Excellent competition results often depend on the perfect integration of athletes'technology and physical fitness.

Badminton puts forward extremely high requirements for athletes'physical fitness, among which physical fitness, as its core foundation, is particularly important.In this fast-paced sport,Athletes must show excellent explosive power, agile speed, lasting endurance and flexible posture.They frequently move quickly, jump and turn in the short competition.This is not only a severe test of muscle strength and endurance,It also tests their ability to maintain technical stability in a state of extreme fatigue.

Badminton technology forms the core element of the sport.It includes basic skills such as serving, receiving, lob, drop shot, kill, net control and footwork movement.It also involves the integration of technology and tactics and the strategic layout of the competition.Technical proficiency and stability have a decisive impact on the results of the competition;Excellent athletes should not only master all kinds of skills skillfully, but also be able to perform skillfully in fierce competitions.Quickly adjust the countermeasures according to the opponent's style of play and the rapid changes in the field.

1.2 Research background and significance

Today, with the rapid development of badminton, more stringent standards have been put forward for athletes'physical strength and technology.The past training mode has gradually become inadequate to meet the complex needs of modern badminton training.In view of this, this paper studies a new training strategy that combines physical fitness with technology.It has undoubtedly become a key research direction in the field of badminton training.

With the implementation of the 21-point system, the intensity of competition has been rising.Athletes are given the ability to show complex technical movements in a very short time.This poses a serious challenge to their physical strength.For a long time, physical training often only focuses on the improvement of strength, speed, endurance and other aspects.However, it neglects the importance of effectively integrating these physical qualities into actual combat.Exploring the training strategy of combining physical fitness with technology is not only helpful for athletes to improve their strength in the arena, but also helpful for athletes.At the same time, it also opens up new ways and means for the progress of badminton.

2. Analysis of physical fitness needs of badminton players

2.1 Speed and Explosive Power

In badminton, the speed and explosive power of athletes are particularly important.They are the preconditions for athletes to complete difficult movements in the rapid change.In the fierce battle, athletes need to constantly start, run, change direction and brake to adapt to the opponent's strategy change.For example, when dealing with serving and receiving, quick reaction and agile action, as well as delicate control of the ball in front of the net.All of them test the explosive power and speed of athletes.Efficient displacement can not only help athletes better grasp the rhythm of the game, but also effectively reduce the error rate.So as to improve the level of competition at both ends of the offensive and defensive.

2.2 Sensitivity and coordination

In the process of competition, the agility and coordination ability of badminton players are particularly critical.They must make precise decisions and respond quickly in an instant.This undoubtedly puts forward extremely high requirements for their agility and coordination between various parts of the body.Take the flat high ball hit by the opponent as an example, the player must quickly predict the landing point of the ball.And quickly adopt the corresponding displacement and batting strategy.In addition, coordination is also manifested in the coordination of multiple parts of the body, such as hand-eye coordination, synchronization of footsteps and arm movements.

2.3 Endurance and stamina

Badminton competitions often consist of several compact rounds, each of which lasts for a short time.However, the duration of the overall event can often span hour.In view of this, athletes must have excellent endurance and lasting physical fitness to support their performance in a long and intense confrontation.Endurance involves not only the durability of aerobic support, but also the instantaneous explosive force in the anaerobic state.Aerobic endurance enables athletes to maintain a stable output of physical fitness and alleviate fatigue in the competition;Anaerobic endurance provides powerful energy support for high-speed start-up and execution of difficult movements in an instant.

2.4 Core Strength

Badminton players pay special attention to core muscle group training in physical fitness training.Strength in this area is not only critical to maintaining the athlete's overall balance and stability,It is also a key factor affecting the strength and accuracy of hitting the ball.In the fierce competition, athletes need to maintain their body stability in the rapid movement to ensure the strength and accuracy of hitting the ball. To strengthen the core strength, many training methods can be adopted.For example, maintain the plank, do the Russian twist, or practice sit-ups.

2.5 Flexibility and Flexibility

In badminton, the flexibility of athletes'joints and muscles plays a vital role.In the competition, athletes often implement smash, drop shot, push and block and other techniques in the limited space.The implementation of these techniques undoubtedly puts forward high requirements for athletes'bodies. They must have excellent flexibility and flexibility.In order to improve these two physical fitness elements, we can enhance them through diversified training methods such as rope skipping, special footwork exercises and stretching.

2.6 Psychological quality

Badminton players in the competitive process, the importance of psychological quality is self-evident.In the face of intense competition, athletes must maintain extreme concentration and calmness in order to properly handle all kinds of unexpected situations.There are various ways to strengthen psychological quality, such as self-psychological suggestion, relaxation exercises, setting clear goals and so on.These strategies can not only help athletes maintain a positive psychological state in the competition,It can also enhance their self-confidence and ability to cope with stress.

3. Analysis of technical characteristics of badminton

3.1 Technical combination and tactical application of badminton

In competitive badminton competitions, athletes often skillfully integrate all kinds of techniques and strive to play the ultimate role in the competition.The integration of these technologies not only requires athletes to have keen tactical insight, but also tests their ability to adapt to changing circumstances.So that they can flexibly choose the appropriate strategy collocation in different parts of the competition, and effectively deal with the strategy change of the opponent.For example, at the beginning of the game, players may focus on controlling and anti-controlling the ball in order to control the rhythm of the game.Gradually improve personal status.With the deepening of the competition, athletes may increase the use of point kill, split kill and push block technology, by changing the ball path and speed.Destroy the other team's defensive formation.As for the critical moment, players may use fast and changeable ball paths with heavy kills, attacks and net attacks.They directly threaten their opponents to compete for key points.

3.2 Technical training methods of badminton

The improvement of badminton technology can not be separated from precise technical training.This kind of training not only enables athletes to improve their basic skills, but also enhances their tactical awareness and immediate response ability.Specifically, some widely used technical training methods,For example, targeted technical exercises, competition scenario simulation and actual combat confrontation training are all important ways to cultivate athletes'technical ability.

Technical special training focuses on the deep training of a certain technical point, which is repeated through countless movements.It enables athletes to accurately grasp the technical essentials and engrave memories in their muscles.Such as setting specific training objectives such as improving the accuracy of hitting the ball and enhancing the strength of killing the ball, and carrying out training activities with clear pertinence[3].

In the simulation training similar to the real competition atmosphere, athletes can hone their skills in an environment close to actual combat.This training strategy aims to improve athletes'immediate reaction and psychological endurance.So that they can show their skills more freely in the real competition.In the training process, we can create a variety of specific situations, such as the early, middle and critical moments of the competition.To practice purposefully simulating the game.

The purpose of antagonistic training is to make athletes improve their skills in the changeable arena through actual competitive confrontation.It can significantly improve the athletes' quick reaction and accurate judgment.Let them deal with the enemy's strategy change more effectively in the fierce competition. Such as taking on opponents with very different styles,It can help athletes quickly adapt to the changes of the current opponents and the surrounding environment in the competition.

4. Specific methods of physical fitness and technical integration training

4.1 Speed and sensitivity fusion training method

In badminton matches, the fast movement, quick reaction and swift hitting speed of athletes are the core elements affecting success or failure.Speed involves not only the displacement speed of the players on the court, but also the instantaneous reaction and the speed of the ball;As for sensitivity, it is mainly manifested in the ability of athletes to adapt quickly to unexpected situations and to turn flexibly.

4.1.1 Reaction speed training

In order to improve the reaction speed, athletes can adopt a variety of training strategies.Such as the use of light response trainers, which require athletes to react quickly when they recognize the flashing lights of various colors.In order to strengthen its visual rapid response ability. In addition, the use of sound signals for response training is also common.Athletes must make agile movements to sound stimuli of different frequencies and rhythms.

4.1.2 Sensitivity training

The cultivation of flexibility mainly adopts diversified running and agility ladder exercises.In this process, athletes need to skillfully ar-

range a number of road signs in the venue in order to quickly adjust the direction in high-speed travel.Skillfully work around these obstacles. As for agility ladder training, it focuses on changing footsteps quickly, so as to enhance the agility and harmony of athletes'footsteps.In addition, ball games, such as quick passing and catching exercises in a small area, are integrated.It also helps to improve the overall sensitivity of athletes.

4.1.3 Comprehensive speed and agility training

Through integrative training, we are able to combine agility and flexibility,Create a series of challenging training programs. For example, build a comprehensive training ground covering many key points of practice.Athletes are required to move quickly to the next link after completing each exercise, and different links have different requirements for reaction and steering techniques[2].This kind of training method not only effectively improves the quick reaction and flexibility of athletes,It can also greatly enhance their adaptability and adaptability in competition.

4.2 Strength and Endurance Training Strategy

Badminton players need not only strong strength, but also tough endurance in competition.Strength is the cornerstone of athletes'explosive power and batting power.Endurance provides a guarantee for its stable performance in high-intensity confrontation.Therefore, the combination of strength and endurance training is the core of improving the overall quality of athletes.

4.2.1 Core strength training

The basic quality of badminton players is the core strength, which is not only related to the stability of athletes.It is also a direct determinant of the accuracy and strength of the strike. There are many ways to exercise core strength.For example, take the plank, do Russian twist exercises, or do sit-ups and other activities.In addition, with the help of Swiss ball and balance board, it can not only enhance the intensity of training, but also increase the fun of training.

4.2.2 Lower limb strength training

The flexible movement and jumping height of badminton players on the court depend largely on the strong strength of their lower limbs.Through the implementation of special exercises such as squat, squat and box jump, the lower limb muscle strength of athletes can be significantly improved.In addition, functional exercises with elastic bands, such as squats and squats with elastic bands, can not only further strengthen the strength of the lower limbs.It can also synchronously improve the cooperation ability and explosive power of muscles.

4.2.3 Endurance training

Combining aerobic and anaerobic exercise is an effective way to improve endurance.Aerobic activities, such as long-distance running, swimming and cycling, can significantly enhance the cardiopulmonary endurance of athletes.Anaerobic exercise such as sprinting, interval training and high-intensity interval training (HIIT),It helps to improve the explosive power and endurance of athletes.

4.3 Coordinated Promotion Scheme of Technical Movements and Physical Fitness

In badminton training, it is a key strategy to combine the accuracy of technical movements with the improvement of physical fitness. Adopting systematic and reasonable training methods will not only help athletes to form more standardized technical movements,It can also enhance its physical condition synchronously and help it show its peak performance in the arena.

4.3.1 Standardized training of technical movements

In sports competition, the standardized training of technical movements constitutes the cornerstone of athletes'technical improvement. This requires the coach to carefully carve and coach every technical movement of the athletes.To ensure the accuracy and standardization of technical movements.The use of video analysis and slow-motion replay can greatly promote athletes'in-depth understanding and mastery of technical movements.In addition, special training courses for technical movements can be set up.Strengthen the practice of specific techniques such as drop shot, kill ball, net ball and semi-fixed ball path.

4.3.2 Combination of physical and technical training

Combination of physical and technical training can take a variety of implementation strategies.For example, carefully design a com-

pound training plan that integrates both technical movement exercises and physical fitness improvement.Athletes are required to switch to physical training quickly after completing the technical movements.For example, after a series of highly efficient full-court smash and fast-break training, 100 times of double-shake rope skipping exercises are followed.This kind of training mode not only helps to improve the attacking skills of athletes, but also effectively strengthens their physical fitness.

4.3.3 Simulated competition training

Simulated competition training is an important way to improve the overall quality of athletes.In this training mode, athletes can withstand high-intensity pressure and exercise their technical movements and physical fitness in a simulated competition atmosphere.Based on this, the coach can carefully design the opponents and strategies according to the specific competition situation.To guide athletes to continuously improve and enhance their personal skills and physical fitness in the simulated arena.

5. Challenges and Countermeasures in Fusion Training

5.1 Control and adjustment of training intensity

In the process of badminton exercise, the training intensity should be accurately controlled and moderately adjusted.It is very important to synchronously improve the physical strength and technical level of athletes.Vigorous training helps to rapidly develop an athlete's explosive power and endurance, however,Overtraining may lead to physical exhaustion or even injury.

In the process of training, we should abide by the principle of gradual progress to adjust the training intensity.In the initial stage, it is advisable to set a lower intensity, and then increase the amount and intensity of training in order, so that athletes can gradually adapt to the body.For example, at first, they can engage in basic physical exercise, such as jogging, rope skipping and other activities, and then gradually turn to specialized technical training.Such as footwork adjustment, batting skills and so on.With the progress of athletes'physical fitness and technology, the intensity of training can be increased appropriately, but the intensity should be prevented from rising sharply.

When arranging the intensity of training, the athletes'rest state must be taken into account.The recovery phase plays a vital role in improving the effectiveness of training.After intensive training, athletes need to enjoy adequate rest so that their bodies can be fully repaired. Coaches can observe athletes'heart rate (HR), blood lactic acid concentration (Lac) and other biological indicators.The recovery degree of athletes is effectively evaluated, and the training intensity is adjusted accordingly.

5.2 Consideration of individual differences of athletes

There are obvious individualized characteristics among badminton players.It covers many factors such as age, gender, physique, technology and psychological endurance.These characteristics play a decisive role in the effectiveness of training.Therefore, when planning the training process, the unique characteristics of each athlete must be considered in depth.And tailor a differentiated training plan accordingly.

In the growth process of young athletes, their bodies are still in the period of development.Therefore, the core of training should focus on the exercise of basic physical fitness and the mastery of technical movements.At the same time, we should avoid over-training and over-emphasis on high-intensity exercises, and instead focus on stimulating their enthusiasm and self-confidence in sports.With the help of game-based training and interesting activities, athletes can effectively enhance their training enthusiasm and sense of active participation.

In the training of adult athletes, their bodies and skills have reached a relatively stable stage.Therefore, the focus of training should be shifted to improving the application of special techniques and tactics.At this time, it is necessary to properly increase the intensity of training, but at the same time, we must abide by the scientific principles and rationality of training.In case of excessive fatigue or injury.At the same time, in view of the stability of adult athletes'psychological quality, psychological adjustment is supplemented, such as setting goals, using psychological hints and other means.Help to play a better performance in the competition.

In the training of professional athletes, in view of their physical fitness and technology have reached a higher level.The focus of training should be shifted to the elaboration of details and the precise adjustment of technology.By using video analysis and data tracking methods, it can accurately identify and optimize the subtle flaws in its technical actions.At the same time, facing the psychological pressure of these athletes, we need to pay attention to the appropriate adjustment of their psychological level.Such as relaxation training and pressure

control, to ensure that they maintain the best state of play.

5.3 Association between psychological state and training effect

In badminton training, the psychological state of athletes plays a decisive role in their training effectiveness.Good psychological quality can not only stimulate the training enthusiasm of athletes, but also show excellent performance in the competition;On the contrary, bad mentality may greatly weaken the effectiveness of training.Therefore, setting goals has become a key strategy to regulate the psychological state of athletes.Coaches need to work with athletes to establish short-term and long-term goals that are both challenging and realistic.Ensure that athletes have clear goals and sufficient motivation in training.These goals should be clear, measurable and moderately difficult, so that athletes can achieve small goals one by one.Gradually enhance self-confidence, and then enhance the enthusiasm of training.

In terms of improving the psychological quality of athletes, positive evaluation and motivation are particularly critical.In the process of training, coaches should frequently give positive affirmation to athletes and appreciate their progress and efforts in training.And provide suggestions for improvement in due course.Such positive feedback can not only strengthen the self-confidence of athletes, but also stimulate their enthusiasm for training.At the same time, coaches need to pay close attention to the emotional fluctuations of athletes and provide timely psychological counseling to help them adjust their psychological state.In order to maintain the continuation of positive emotions.

5.4 Injury prevention and recovery measures

Badminton players are often troubled by injuries in training and competition, which undoubtedly has a significant impact on their performance.Therefore, it is particularly critical to take preventive measures.In the usual exercises, we should pay attention to taking preventive measure, such as adequate warm-up before training and muscle stretching after training[1].Both are essential to reduce the chance of injury.By warming up, the temperature and elasticity of muscles can be increased, thus effectively reducing the possibility of injury;Stretching helps to relieve muscle tension, promote blood circulation and help muscle recovery.

In the prevention of sports injuries, besides exercise, nutrition and adequate rest are equally important.A balanced diet can provide athletes with the necessary energy and nutrients to help their bodies repair.Athletes are advised to increase their intake of foods rich in protein (Pro), carbohydrates (Carbs) and various vitamins and minerals.Such as lean meat, fish, fresh fruits and vegetables. In addition, adequate and high-quality sleep plays a key role in preventing injuries and illnesses.Athletes need to ensure that they have seven to eight hours of sleep a day to facilitate the full recovery of their physical functions.

When an athlete suffers an injury, he or she must immediately stop practicing and seek medical assistance.For minor injuries, ice compress, massage and physical therapy can be used to promote rehabilitation;If it is a serious injury, it must be diagnosed and treated by a professional doctor.In the rehabilitation stage, athletes should reduce intense activities and turn to mild restorative exercises.For example, walking in the water and static stretching, etc., to help the body recover.During this period, coaches need to carefully increase the intensity and measurement of training according to the progress of athletes'rehabilitation.To ensure that they can quickly and safely return to regular training after recovery.

6.Conclusion

In this study, we deeply analyze the process of integrating physical fitness into technical training for badminton players.And then comprehensively explained the important role of the two in badminton and the interaction between them.The study points out that the effective combination of physical fitness and technology is very important to improve the performance of athletes.Physical fitness training can not only enhance the speed, strength, endurance and agility of athletes,It also helps to improve the stability and durability of its performance in the competition;Technical training enables athletes to master complex movements and strategies skillfully.So as to have better adaptability and control ability in the competition.

In this study, we emphasize that physical fitness should follow a scientific and reasonable layout when combined with technical training.For the training of speed and sensitivity, it is suggested that it should be synchronized with technical movements.The purpose is to improve the athletes'ability of quick reaction and action coordination.In the exercise of strength and endurance, it is necessary to develop

the muscles of the whole body in a balanced way to prevent the excessive burden of certain muscle groups.In addition, the training plan combining technical movements and physical fitness improvement should take into account the individual characteristics of athletes.In order to develop individualized programs that maximize the effectiveness of training.

The results show that the psychological state of athletes plays an important role in the effectiveness of their training.This is not only reflected in the enthusiasm and concentration in the training process, but also has a direct impact on the performance of competition occasions. As a result, psychological adjustment and exercise play an indispensable role in the combination of physical fitness and technology training. At the same time, the prevention and recovery of injuries should not be neglected.By making scientific training arrangements and appropriate recovery strategies, the risk of injury can be significantly reduced.To ensure their health and competitive level.

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