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Method exploration to improve the ability of energy supply in the training of taekwondo

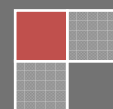
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ABSTRACT

With the development of exercise training and competitions, especially with the emergence of modern media technology, action skills of various sports tend to be perfect. As a result, the tactics composed of action skills is also gradually improved. Among many sports or games, if a new action is used to defeat an opponent, it will be studied and imitated. At the same time, defensive tactics against this action will be worked out. This research is just focused on the methods to improve the ability of energy supply in the training of taekwondo. As competitive level is rising fast and competition is heating up, taekwondo athletes should be guided to master the scientific methods of energy supply which ensure the application of tactics and skills to make better performance. With high antagonism and complexity, taekwondo places greater demands on athletes' physical efficiency, which is the key of this thesis. In the training, the majorities of coaches pay high attention to athletes' physical training, so it's urgent to study the methods to improve the ability of energy supply in the training of taekwondo such as the improvement of energy supply through strength training, aerobic training and flexibility training. Effective training methods should be developed according to practical needs to lay a foundation for athletes' more excellent performance in competitions and provide a strong theory support for researchers.

KEYWORDS

Taekwondo; Energy supply; Training methods; Physical efficiency.



INTRODUCTION

The training of taekwondo is a complicated process, and taekwondo is a sport which has high antagonism and complexity. The improvement can't be noticed in a short time, so the athletes must persevere in the long term on the basis of scientific training methods to totally improve their general quality. As a antagonism-oriented sport, the actions of taekwondo consist of many skills except for specific actions, such as basic skills including footwork, skipping, kick, punch, etc. Good physical quality is the prerequisite for athletes to get a good mark in competition^[1]. This thesis starts a deep analysis with the energy supply characteristics of taekwondo. Physical training is combined with technical and tactics training to improve the athletes' energy supply ability, laying a solid foundation for their progress of special abilities and technological level^[2]. Scientific and systematic training methods is needed to improve the abilities of three energy supply systems of taekwondo athletes, making them adapt to competitions with high antagonism and complexity and keeping them away from lacking energy supply. In recent years, many countries around the world pay more attention on taekwondo because it can not only show national sportsmanship, but also bring glory in international competitions. From the view of development trend, taekwondo has turned from a skillful and flexible sport into a high-antagonism one, which needs enough energy supply as a precondition, highlighting the importance of the methods to improve the ability of energy supply in the training of taekwondo imperceptibly.

THE NECESSITY AND SIGNIFICANCE OF THE IMPROVEMENT OF TAEKWONDO ATHLETES' ABILITY OF ENERGY SUPPLY

Create conditions for athletes to master advanced and complicated sport skills

As the name suggests, the training for ability of energy supply help athletes coordinate the abilities of all organ systems and reach their fullest potential. in other word, this is a process of getting the abilities needed by all sports and taking part in training. Different sports request different levels of physical efficiency. If athletes want to master advanced and complicated action skills and apply them to practice, they must improve their comprehensive quality first. To achieve this goal, the training of the ability of energy supply is a must to keep skills and tactics from other factors in practice.

The training of the ability of energy supply helps athletes bear high-intensity training and competition

Modern competitive sports become increasingly frequent, which is an important aspect of culture exchange in some sense. Athletes can find out their weakness and overcome them in a short time. They can also learn from others' strong points to create conditions to improve their skills and abilities. With the competition becoming increasingly fierce, to make better performance, athletes must get physical training on the basic of skillful technique and tactics to improve their physical quality, which need change their bodies constantly in a long term. The training of the ability of energy supply lays a foundation for these and ensures athletes' physical efficiency in high-intensity training.

The training of the ability of energy supply helps athletes have a steady mood, creating conditions for a good mark in competition.

Figure 1 shows balance training methods in the training of energy supply. It is easy to see from the figure that the balance training methods are composed of practice means, training load, practice progress, methods of instruction and training environment, all of which play an important role in the balance training. With the modern competition becoming increasingly fierce, where there is a game, there are winning and losing. Therefore, positive mindset is very important to athletes. This means no matter athletes lose the game for what factors, they must embrace the next game positively. On the contrary, athletes who have won in a game should make unremitting efforts, trying to perform better in the next game. All of these depend on mindset. The higher level games are in, the fiercer competition is. When athletes are at the same level, the real test is not skill, but psychological quality. The above figure starts with balance training methods in the training of energy supply, conveying the importance of intensive training and the effect of mindset. Combined with positive mindset, enough energy supply which gives athletes an advantage in intensive games lay a solid foundation for athletes' better performance.

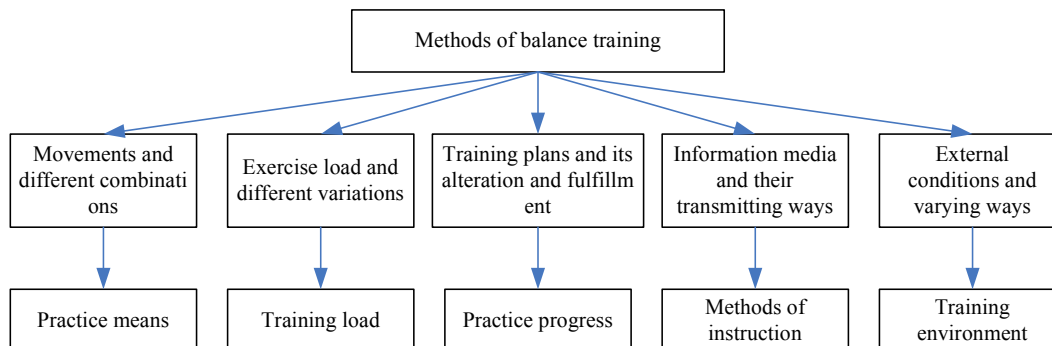


Figure 1 : Balance training methods in the training of energy supply

The training of energy supply can prevent injury, promote health and extend the sport life

TABLE 1 is the daily training table for athletes. Health is the premise of normal training and physical health is the basic assurance of systematic training^[3]. These exercises are warming up before training, which keep athletes away from bad conditions like muscle strains. They can help athletes improve their ability to resist diseases and adapt to environment, keep away from injury, and extend their sport life while promoting health.

TABLE 1 : The daily training table for athletes

Part	Movement	Time
stretching	static stretching	5minutes
warming up	Jogging around the playground	10minutes
waist	side bend with a ball in arms	30 times a group
shoulders	arms with a ball lift side upward while sitting or standing	30 times a group
abdomen	straight-arm twist with a ball in supine position	left and right, 30 times a group
back	push forward with a ball in arms	30 times a group
hip	swinging kick with single-leg support in supine position	left and right, 15 times a group
legs	hold the ball with one leg and both hands on ground	keep 60 seconds

Antagonism and complexity of taekwondo determine the importance of the training of energy supply

As shown in Figure 2, the weight is on Y-axis. Without the help of arms, legs must kick hard, which has requirements in speed and strength. Only in this way can the training effect in the practice. After long development, taekwondo has formed its own unique characteristics. Among antagonism, physical education and nationalism, antagonism is the key feature of taekwondo^[4], which requests the good physical efficiency of athletes. Athletes' physical efficiency can be shown in many aspects, such as speed, strength and endurance. Taekwondo focuses on the speed and strength of legs, showing the importance of the training of energy supply.

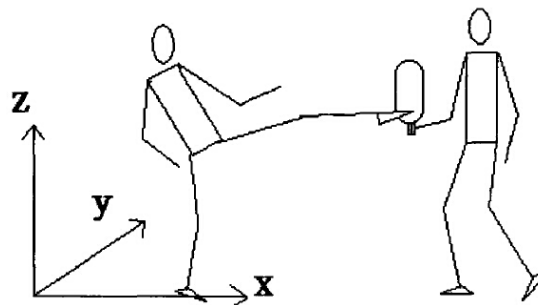


Figure 2 : The training of legs' speed and strength

Strength quality is essential for athletes to understand the skilled actions in the training of energy supply

Taekwondo is an antagonistic event as "a battle of wits, skills and strength" which depends on opponents' attack. And strength quality is one of the basic abilities for athletes^[5]. To an extent, it shows the importance of strength quality in the training of energy supply, which is the basic of speed, endurance, flexibility and agility and indispensable condition to understand the skilled actions. Strength quality is related closely to and interacts with other qualities. Sometimes, athletes can't get a full control of skilled actions largely because of lacking energy supply. So, strength quality training should be taken seriously in the training of energy supply to improve skills and make better performance. In the games, athletes' central nervous system is in a highly nervous and excited state. If two athletes are at the same level in every aspect, the person who has higher strength quality is more likely to win. To an extent, it proves that performance is proportionate to the strength. In the games, the athlete whose explosive force deters the opponent fundamentally, making them injured even disabled will finally win. Given this, the importance of strength quality can't be ignored in the training of energy supply.

THE METHODS TO IMPROVE THE ABILITY OF ENERGY SUPPLY

Improve taekwondo athletes' ability of energy supply through strength quality training

Figure 3 is the sketch of volume and intensity of athlete's training. As one of fighting games, taekwondo requests strength and coordination. It is well known that strength quality is not only the most fundamental quality for sports, but also the basic to master skilled actions. And strength quality will also affect other qualities. Generally, there are no clear requirements about taekwondo athletes, but their body shape and physiological function must be thin-tall type and quality-type. Strength quality is divided into three sections: greatest strength, fast strength and strength endurance, which interact

with each other in the training of energy supply^[6]. From Figure 3, it's not hard to see training should be arranged according to actual conditions, with seasons, racing seasons and other factors considered. Besides, the plan of load intensity and load amount should be made on the real situation of athletes, which needs to be improved step by step. It's worth mentioning that strength exercises should not be taken alone to increase muscle flexibility without other trainings in the training of energy supply, or problems like muscle rigidity and strain will occur. Besides, less intensive training should be chosen to develop endurance. More repetitive trainings should be arranged in May and June, while the training volume in other months should be arranged according to the real situation. The key factor to consider is weight, which ensures a knockout with power, changing the situation and bringing an unexpected effect. Without systematic and scientific plans, strength can't make a breakthrough and muscle strength can't increase over time, contrary to its intention of the training of energy supply. In general, strength training with high load and fewer repetitions should be chosen to increase muscle strength and explosive force. Furthermore, training methods of strength should be combined with training methods of skills and tactics and applied in games.

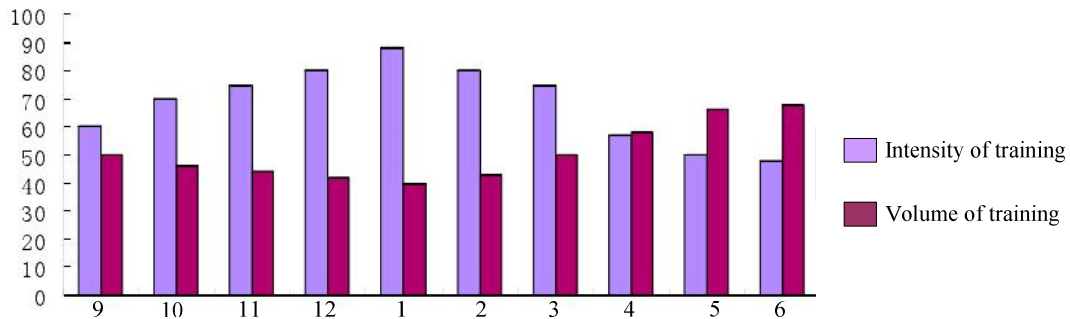


Figure 3 : The sketch of volume and intensity of training

Improve the ability of energy supply through aerobic training

Normal taekwondo has 3 turns which must be accomplished in one day and each turn lasts 3 minutes. Coupled with taekwondo's characteristic of antagonism, good physical efficiency is demanding. It is very important for athletes to control energy reasonably and have good endurance. Therefore, in the daily training, aerobic training should be enhanced to improve the ability of energy supply. There is just one-minute break between two turns, demanding aerobic endurance to support the next turn. Aerobic metabolism is the foundation of anaerobic metabolism. Only under the presupposition of lacking oxygen, anaerobic metabolism can work and ATP can form. Anaerobic metabolism generates lactic acid which can't be oxidized in a short time while aerobic metabolism generates ATP which has no side effect^[7]. At the same time, aerobic metabolism can increase blood capillaries in muscle and speed up oxygen in the blood. Therefore, scientific and reasonable aerobic metabolism can promote blood circulation, affecting directly on athletes' aerobic capacity. Thus moderate-intensity training of energy supply, including running, trail running and swimming should last for a long period to improve athletes' aerobic capacity and solve problems brought by lacking energy supply completely.

Improve the ability of energy supply through flexibility training

Figure 4 shows the quality forms of physical training for taekwondo athletes, in which strength occupies the largest proportion, flexibility second and sensitivity least. They are equally important, connecting and interacting with each other. Good physical quality can ensure best performance of athletes. Taekwondo focuses on legs attack with the help of arms. Flexibility is needed besides excellent skills and tactics for an athlete who wants to get a high score in games. As the name suggests, flexibility means the range of motion and stretch ability of muscle and ligament, which determines whether athletes can accomplish difficult skilled movements and make different results. Besides, flexibility is closely related to balance ability. To get a better attack effect, athletes need to attack rapidly when they lose balance, which can bring unexpected results. That is to say they can exercise to support with straight arms in prone or supine position, and to straighten back in V or T type^[8], in order to improve the flexibility and energy supply ability of athletes.

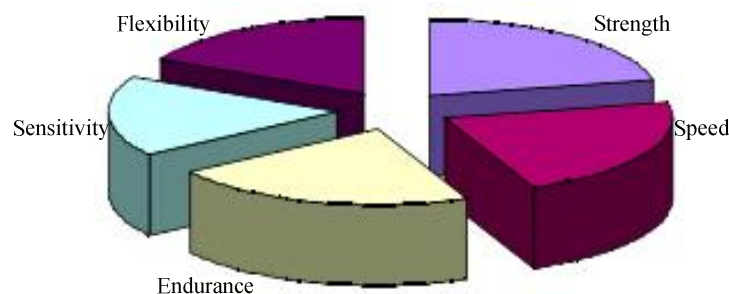


Figure 4 : The quality forms of physical training

CONCLUSION

Started with the significance and importance of energy supply ability, this thesis has researched the methods to improve the ability of energy supply in the training of taekwondo. The ability of energy supply can be improved through strength training, aerobic training and flexibility training, so reasonable plans must be worked out to solve the series of problems brought by lacking energy supply. With the rapid development of taekwondo skills, greater demands were being placed on athletes. However, any training has its own characteristics, so does taekwondo. Therefore, the training plans should be based on the actual situation and ensure an all-round development to improve athletes' skills. By this way, athletes can make better performance to get more honors for their nations.

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