

Research on Physical Training of Basketball Players

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Keywords: Basketball player, Sports, Training.

Abstract: With the development of our economy, people pay more attention on the sports. Basketball is one of the most popular sports. Aiming at the training of basketball players, this paper first describes the method of speed training, which is discussed from three aspects of displacement speed, reaction starting speed and action speed; secondly, analyzes the strength training method from the peak power training, quick-strength training and endurance strength training; and finally uses the method of scientific statistics to describe the physical fitness of the players by figures and charts. This paper has a certain positive effect for basketball players and coaches.

1. Introduction

Basketball is a kind of confrontational sports with fast attack and defense changing and on purpose of shooting for score. In the fierce confrontation, the physical fitness and the skills have become the key to the game. The physical fitness will ensure the players to complete the coach's tactics and is the basis to win the high intensity game. Strengthening the physical training can improve the competitive state of the players in the game[1]. The physical training mainly includes speed, strength, endurance, sensitivity and flexibility, etc.

2. Speed training

The speed training of the basketball player should combine with the skills. The speed training mainly consists of three aspects. It aims at improving the starting and running ability in the field[2].

2.1 Displacement speed exercises.

The players carry on 10 meters, 30 meters, 60 meters, 80 meters and 100 meters sprint. The training intensity is controlled to be about 80% of the maximum load and takes 4 groups each time. There must be a break between each group. The break lasts to the player's heart rate recovering to about 120 times per minute and then the player can do further exercise[3].

The exercise with ball. Based on the training above, the player can add the special technology of basketball into the exercise. The player's exercise frequency training is to try to complete the action as much as possible in a specific period of time at the request of a certain action, as to finish a certain times of lay-up in 1 minute.

Reaction starting speed exercises. The reaction starting speed exercise needs to maintain a consistent speed with the special technology action of basketball.

This exercise hopes to help the player master the action standards, increase the combination of skilled movements, actively improve human perception and shorten the reaction period of the player. There are the main methods currently adopted: standing-type (squat-type) listening and back running and standing dribble listening and back dribble running. According to the characteristics of the basketball, the running distance should be no less than 15 meters every time, 5 times for a group and 3 groups for each exercise.

This exercise focuses on improving the fast contraction speed of the muscle, strengthens the flexibility of the exciting and inhibiting of the nervous system and enhances the rapid muscle contraction strength and the muscle relaxation ability. Training methods: the exercise of high-speed and substantially swinging the leg from the front to the back, it requires to complete the reasonable folding technology in the fast swing, while the tight the thigh and the shank of the swing leg folds,

the smaller the radius and the faster the swaying speed will be. The exercise of accelerating feet landing speed, it requires to shorten the time in the air as far as possible. The exercise of fast swinging arm and leg exercises, it requires the coordination of leg and arm.

Accelerating in the motion, such as chasing the ball and the ball starting, running distance being no less than 15 meters every time, 5 times for a group and 3 groups for each exercise.

2.2 Action speed exercises.

The main purpose of this exercise is to improve the frequency of joining an action into the combined actions and the frequency of completing an action. Methods are: fast shooting, passing ball between two players 60 times / minute in 3 meters, standing dribbling for no less than 60 times / minute, so as to improve the action speed.

3. Strength training

The strength of basketball is with a strong antagonism. Once a player lacks power in the game, he will lose the initiative. The strength training is mainly the three kinds following:

3.1 Peak power training.

The strength is very important for basketball players. And the strength training is to improve the strength by changing the muscle. There are two aspects of muscle training.

3.1.1 Increase the physiological cross-sectional area of muscle.

To achieve this, the methods can be used are: inclined or flat lying to push barbells or dumbbells as shown in Figure 1, deeply squatting with barbells or dumbbells as shown in Figure 2[4], half squat and longitudinal flyer as shown in Figure 3. When carrying these training, the load intensity would be 65%-85% of the player's maximum load. If the load is 100%, the training cycle should be no more than 2 times every time. In the training, the player can take 5-8 groups each time and 8 actions a group. The action quality of each time should be maintained consistency, which means each action should be slowly did. In normal circumstances, an action should take 4 seconds, so as to maximize the muscle energy. After each group, the muscle will get in the fatigue period for a period of time, and the next group can be carried on when the fatigue period basically eliminated. For the professional basketball players, the rest time between each group can be about 3-5 minutes. In the rest, players can do some relaxing action for assisting[5].

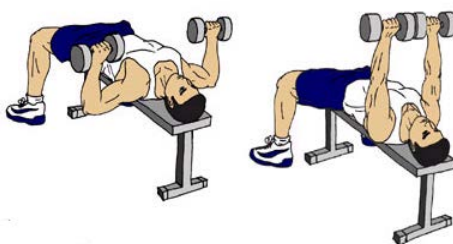


Figure1. Bench press

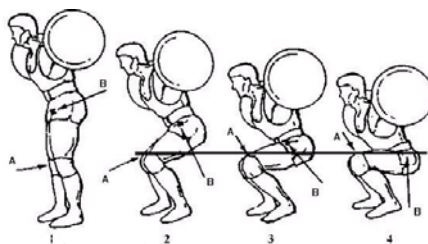


Figure2. Deep squat with barbell



Figure3. Flyer exercise

3.1.2 Improve the inner coordinate ability of the muscle.

Different from increasing the physiological cross-sectional area of muscle, the inner coordination of muscle is to mobilize more motion units to work and improve the neuromuscular system's ability of commanding the muscle. This exercise mainly carries out bench press in the way of inclined or flat lying. The load would be 90% player's maximum load, no more than 3 times for each group and 5 groups for each time. In the training, the action should be appropriately speeding up. Each action should be completed in two seconds and the rest time between each group should be no more than 3 minutes. In the peak power training, the players should pay attention to the coordination of muscle to prevent injuries.

3.2 Quick-strength training.

The quick-strength training is divided into two kinds, the weight training and the non-weight training.

3.2.1 Weight training.

The weight training is to use the tools like barbells or dumbbells to carry on standing, inclined lying and flat lying bench press, half squat and other training. The training should take account of both strength and speed. The load should be 40% of the player's maximum load, no more than 10 times for each and no more than 6 groups for each time. In the training, once the action starts to slow, the player should stop to have a rest, 3 minutes each time. The action should be coordinated and smooth.

3.2.2 Non-weight training.

This training mainly carries out sit-up, push-up clapping and deep-jump, etc.. Taking 1 minute as the limit, this training requires completing the training actions as much as possible, 3 groups for each training and 3 minutes rest between each group. In the training, the player should pay attention to avoid injury.

3.3 Strength endurance training.

The endurance exercise is an aerobic exercise. The endurance is the ability of the human body to overcome the fatigue caused by the long time work or exercise. It depends on the improvement of the muscle strength, blood circulation, respiratory and other relevant organs. In basketball, the strength endurance training uses the way of jerking barbell to improve the upper limb strength endurance and deeply squatting and half squatting to improve the lower limb endurance. The completing time of a single action should be about 20 seconds in the training, which can be properly adjusted due to the load. In the training, it will start the training of the next group when the body is not completely recovered in the rest, which will help achieve the accumulation of fatigue, to realize the purpose of strength endurance.

4. Scientific statistics

Before the physical training for the player, the player's training condition of the first time should be recorded. It can take statistics in EXCEL and SPSS to truly describe the basket player's physical

condition before the physical training.

Carrying statistical analysis on the training indexes of the physical training and recording the training condition of the player every time, it records not only the index, but also the player's psychological and physiological conditions. After a cycle (10 days), there will be a summary of the training, so that each player will see the physical changes in the period. And it can compare player's conditions in the form of energy, to show the player his shortcomings and advantages in the training, so as to strengthen his inner world, which will help him further improve the training result.

Carrying out tests of abilities by different players and showing that in the chart, it can clearly show the players their weakness, so as to take targeted training.

5. Conclusion

In this paper, it researches the physical training of basketball players. Basketball, as one of the most popular sports, has a broad mass base in China. Strengthening the physical training of the basketball players can effectively improve the results of basketball. This paper makes a comprehensive description of basketball players' physical training. But because of the space limit, the specific training method and the conditions in the training are not given. I Hope that basketball coaches and players will adjust according to their own conditions.

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