

Research on the Application of Functional Movement Screening in the Training of Physical Education Students in Pengze No.2 Middle School

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ABSTRACT. In addition to taking part in the national unified examination subjects, physical education students should take part in additional physical education examination. This is an important way for colleges and universities to recruit sports talents. With the national education reform, colleges and universities gradually expand the enrollment, the number of students participating in the physical education college entrance examination is also increasing. Whether there is a professional sports training knowledge system and the formulation of sports training plan is a widespread concern of coaches and players. This paper discusses the application of functional movement screening in the training of Pengze No.2 Middle School.

KEYWORDS: Functional movement screening; Pengze no, 2 middle school physical education students; Fms test

1. Introduction

Functional movement screening (hereinafter referred to as FMS) is a set of prediction system designed by American Orthopedic expert gray cook and training expert Lee Burten in the 1990s, which is used to find various deficiencies and obstacles in various basic movements. FMS is composed of 7 simple action modes and 3 exclusion tests. It is the detection of the most basic action modes of human beings. It can quickly evaluate a person's stability, flexibility, action control ability, and prevent the occurrence of possible sports injuries .[1] There are strict evaluation criteria for each test, and the total score is 21 points. It is divided into four grades: 0, 1, 2 and 3. Each grade has its own standard according to the different actions. Among them, 3 points are the highest score, 0 point is the occurrence of pain, 14 points is the passing line level, and the risk of injury below 14 points is higher than that of normal people.[2] FMS is a kind of scientific and theoretical knowledge with the principles of human anatomy, sports physiology and creativity abroad. When we complete different movements, due to the objective restrictive factors of our individuals and the insufficiency of movement functions of certain parts of the body, the problems of movement compensatory phenomenon and low efficiency of movement mode will occur. For a long time, there will be chronic or hidden injury factors, especially the requirements for people's difficult movements, which will lead to the emergence of injury.[3] It is a simple and direct way to check people's instability, imbalance, asymmetry and other problems in sports.

Relevant research shows that although there are few studies on the characteristics and differences of different sports specific injuries, the research on FMS mainly focuses on the prevention of athletes' acute injuries and the evaluation of the functions of various body parts of various groups of people. In the process of sports injury prevention and movement improvement, we should find out the high-frequency injury parts and special injury characteristics in advance, which is the primary focus, and then according to the found injury characteristics and high-frequency injury parts, we should formulate appropriate sports training plans and sports rehabilitation programs.[4] According to the functional test of FMS, we can find out whether the athletes have hidden sports injury factors and functional action deficiencies. According to the scores of the functional movement screening test and the detailed body movements, we can deeply analyze and discuss the balance of muscle strength in different parts of athletes in different sports, the dimensions of activities and the causes of injuries, and find scientific and standardized functional training plan methods according to the questions of different sports, so as to improve the training Standardize the content and method of exercise, and make the most directional program of sports training. Further more perfect and make the training plan of athletes, to ensure that the athletes' body to achieve the minimum probability of injury.

The research object of this paper is the physical training team members of the second senior middle school in Pengze County, Jiujiang City, Jiangxi Province. The college entrance examination of Jiangxi Province sports is divided into two categories: quality and technology, including 100 meters, 800 meters, standing long jump,

technology including basketball round-trip dribble shooting and football 20 meters around the bar dribble shooting. From the sports characteristics of these five different sports, we can see that each sports item has its own characteristics in terms of its exertion and sports laws. Their sports laws and sports characteristics lead to different injury characteristics of individual training team members, and long-term engagement in some sports will affect the basic sports ability of athletes, that is to say, there are mutual improvement or resistance among various sports items Hinders the athlete's athletic ability. Functional movement screening can find the characteristics of athletes' basic movement ability and their basic movement structure, that is, the score of movement screening test, which is an important reference for the formulation of the function improvement program after the movement screening evaluation.

To sum up, this study mainly through the experimental method and test method, to explore the correlation and difference of the functional movement screening level of the members of Pengze No.2 Middle School Physical Training Team in different sports, and make a four-month training plan before and after the test. In order to make up for the shortcomings in sports training, improve the sports function of the weak part of the design of functional movement in the process of rehabilitation training, and make more detailed and professional training plan, it provides certain theoretical basis and reference.

2. Research Object and Method

2.1 Research Object

In this paper, 20 members (including 15 boys and 5 girls) of the junior high school physical training team in Pengze County, Jiujiang City, Jiangxi Province are taken as the research objects.

2.2 Research Methods

2.2.1 Literature

Based on the key words of “functional action”, “functional action screening”, “sports college entrance examination training”, “FMS scoring” and “physical training”, the relevant research literature in the application of this research is searched through China HowNet, Chinese science and technology journal database, foreign journal database and other ways, so as to comprehensively and profoundly understand the relevant development of this research field The status quo provides a strong theoretical basis for this study.

By using the library resources of North China University of science and technology, I have consulted and studied the relevant authoritative books such as functional training, sports training, sports physiology, sports rehabilitation, and further improved my basic theoretical knowledge, so as to ensure the authenticity of the paper data and the scientificity of the method.

2.2.2 Experimental Method

(1) Subjects

In this experiment, 20 members of the third grade physical training team of Pengze No.2 senior middle school were taken as the subjects. The subjects were basically 20 or 21 years old, with an average height of 172.9cm, an average weight of 62.3kg, and a total of 2 years of exercise

(2) Experimental Procedure and Purpose

First of all, through the functional action screening test of the physical function of the team members, the technical (basketball, football) and physical quality (standing long jump, 100m, 800m) tests are carried out on them to understand the physical and technical ability of the team members before making a detailed plan, so as to provide a reference for the improvement of the physical function after training.

Then, according to the results of the pre screening test, through four months of training to improve the physical condition of the team members, so that they can achieve excellent sports results in the sports college entrance examination.

Finally, the team members were tested again for functional screening, technical and physical fitness related data, and the students' functional screening data, technical index test data and physical fitness index test data before and after 4 months of training were compared and analyzed.

In the process of testing and training, there will be some factors that can not be excluded, such as the reasons of coaches and players themselves, the conditions of facilities, environment, etc.

(3) Experimental Site

The track and field field of the Second Senior Middle School of Pengze County, Jiujiang City, Jiangxi Province, the training room of the third grade sports group.

3. Results and Analysis

3.1 Screening and Scoring Results of Each Individual and Overall Functional Action Before Training.

According to the scores of the participants in the test, the participants in the seven movements screening showed that the squat and trunk stability push ups scored 0, with a full score of 55% in the squat test and 50% in the trunk stability test; the test results of shoulder flexibility were the best, only one of the 20 participants scored 2 points, and the rest scored 3 points, with a full score of 95%; body rotation stability The test results of push ups are the most unsatisfactory, with 7 team members getting full marks, with a full score of 35%; the full scores of hurdles, straight leg squatting, and active leg lifting are 65%, 80%, 75% respectively, and the full scores of 6 of the 7 action screening test results are more than half. The number of people who got 2 points for body rotation stability was more, accounting for 60% of the total number, and only one got 1 point. In addition to straight leg squat and shoulder flexibility, other movement screening tests all have a score of 1, but the frequency of each occurrence is relatively small. The average score is 17.85, the highest score is 21, and the lowest score is 13. A foreign rehabilitation expert pointed out in an article that athletes with a total score of less than 14 in functional movement screening have a higher injury rate of nearly 51% than those with a total score of more than 14. In addition, no matter what the total score of the athletes with asymmetry is, the probability of injury is 2.3 times higher than that of symmetrical athletes. There are 8 players in the sports training team who have physical asymmetry, and the asymmetry rate is 40%. Only one player has a total score of less than 14 points, and the rest of the players have more than 15 points. Based on the above information, it can be seen that the screening score of functional movement of the members of the training team participating in the screening is not very ideal. Although one member is full score, there is still asymmetry. Most players have problems in hip joint, lower limb strength and stability.

Through the analysis of the indexes after the functional screening of the members of the sports training team and the understanding of the injuries among the members who took part in the sports college entrance examination over the years, it was found that although most of the members scored higher, their soft tissue injuries still existed mostly. It mainly occurs in the lower limbs, including the inner thigh, the outer leg and the foot. The main reasons for their injuries, low scores and imbalance are: the flexibility and stability of hip joint and knee joint are insufficient, and the thigh muscles are too tense and stiff due to not relaxing and stretching in time after training. Lower leg muscles are less resilient, leading to inadequate warm-up often with synovitis. In the standing long jump training, the core stability and explosive force of the players are poor, which leads to the lack of height and distance. After landing, the players can not keep stable, and there is not much room for buffering.

Therefore, according to their scoring conclusions and injuries, we should strengthen their body flexibility, trunk stability and core strength in each training program. In order to improve their overall performance and functional movement screening score, reduce sports injury. Whether the training plan and adjustment of these four months are scientific or not will also affect their final physical examination results. There are six key factors in the formulation of training, including the principle of “reducing difficulty and strengthening” of intensity, the “actual effect” of technology, the maximum simulation test, the cultivation of psychological quality, the supplement of nutrition and the recovery of function. On the basis of these, I discussed the training plan and specific implementation with the coach of the high school training team, and determined the stage training content arrangement for 4 months, and the training time increased from 2 hours in the morning and evening of their original Monday to Friday, which was mainly used for training balls. Of course, the reduction of cultural courses will have an impact on their cultural achievements, but after the final examination in April, they will still have two months of cultural training time. So at present, it is mainly to improve physical education achievements.

3.2 Comparative Analysis of Screening Results of Functional Movement Before and after 4 Months of Training.

The results of functional movement screening before and after 4 months' training showed that there was a significant difference in the scores of 20 members ($P < 0.01$ or $P < 0.05$). The average score of squat movement screening was increased by 0.45, the average score of hurdle movement screening was increased by 0.25, the average score of straight leg squat movement screening was increased by 0.05, the shoulder flexibility and initiative were increased by 0.05. The average scores of leg lifting, trunk stability push-up and rotation stability were improved, which were 0.05, 0.2, 0.4 and 0.45 respectively. The average score of FMS overall score increased by 2.05 points, with a large increase. It can be seen that straight leg squat and shoulder flexibility increase the least, but the reason is that their scores in the pretest results are the best compared with other motion screening. Moreover, the scores of seven movements screening are improved, which also shows that the development and implementation of the training plan have made substantial progress. Of course, we should also take into account the environment, venue equipment, coaches and players.

Table 1 Scores of Physical Training Team Members in Pretest

Number Item	number of people	of asymmetric	asymmetric ratio	highest score	lowest score	Mean±SD	Range
N=20	8		40%	21	13	17.85±2.00	13-21

Table 2 Average Scores of Each Action Screening Before and after Training

Name Item	Squat	Hurdle step	Straight split squat	Shoulder flexibility	Active leg lifting	Trunk stability push ups	Spin stability
Mean Pretest	2.2	2.65	2.85	2.95	2.7	2.2	2.3
Mean Post test	2.75	2.9	2.9	3	2.9	2.6	2.85

4. Conclusion

From the result analysis, the shoulder flexibility is the best, but the core strength and trunk stability are generally poor. In the process of testing and training, there will be factors that can not be excluded that interfere with the experiment: the coach's team leading style, training guidance, responsibility system. Train the physical quality, sports level and learning ability of the team members. Training ground, equipment and weather conditions. Through practical research, coaches and team members learn about functional action screening, which enriches the ability of team members and accumulates more knowledge and methods for future training. In order to improve the sports performance of the high school sports training team and reduce the probability of injury, the relevant schools and competent coaches should pay more attention to the players, introduce the FMS movement function test into the training system, and pay attention to the rehabilitation training work of the players, reduce the sports injury and improve the sports life of the athletes. The test results can not only help the players to understand their own physical function status. It can also provide the basis for the coaches to choose the targeted training means, so that the players can play more excellent sports ability and get the best results in the competition or physical examination.

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