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A Study on the Impact of Functional Training Based on FMS Testing on Children's Basketball Offensive Techniques

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Abstract: Basketball is one of the world-renowned sports. Its competitive activities require participants to master solid skills. Basketball usually involves multi-person cooperation, and any training in this sport should start from an early age. The level of basic skills in a sport determines the achievements one can attain in that sport. Physical fitness training helps improve sports performance; however, during childhood, due to the slow development of bones, it is not recommended to carry out a large amount of resistance training to avoid sports injuries. The implementation of functional training helps address such issues, reduce the occurrence of sports injuries, effectively enhance children's physical literacy, and assist them in achieving good sports performance.

Keywords: FMS test; functional training; children's basketball offensive skills

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1. Introduction

With the development and gradual popularization of basketball among children, parents and coaches have paid close attention to children's basketball skills. Among these skills, basketball offensive techniques are crucial for scoring in competitions, covering aspects such as dribbling and passing. The mastery of these techniques directly affects athletes' performance on the court. However, in children's basketball training, some coaches focus excessively on the imitation of technical movements while neglecting the physical development status of children. This has led to issues like uncoordinated movements in some young basketball players. FMS (Functional Movement Screen) serves as a scientific tool for evaluating physical functions, enabling the identification of children's movement patterns, stability, and other related aspects. Coaches can formulate reasonable training content based on FMS results, which helps effectively address children's physical function deficiencies and lay a solid foundation for subsequent basketball offensive training. Starting from functional training based on FMS testing, this study analyzes its impact on children's basketball offensive techniques and provides references for children's basketball training.

2. The Impact of Functional Training Based on FMS Testing on Children's Basketball Offensive Techniques

2.1. Overview of FMS Testing and Functional Training

FMS (Functional Movement Screen) is a standardized tool used to assess the basic functional movement patterns of the human body. Through simple and accessible movements, it can identify functional impairments and asymmetry issues exhibited by individuals during movement execution. The implementation of FMS testing allows for the evaluation of young athletes' performance based on the quality of different movements. Functional training focuses on improving the body's functional level, with daily life and sports as its objectives. It adheres to the principles of human movement, takes into account the results of individual movement assessments, and designs scientific and practical training methods[1]. Compared with traditional training, functional training has the following characteristics: Firstly, it emphasizes the integrity of movements and pays attention to various parts of the body, such as the coordination between muscles and joints, rather than focusing on training a single part. Secondly, it highlights the practicality of movements. Training movements can be connected to specific sports events and provide high-quality support for sports performance[2]. Thirdly, it demonstrates strong individualization. Coaches can identify movement deficiencies based on FMS test results and develop targeted training plans, thereby truly achieving the goal of precise training.

2.2. Impact on Dribbling Technique

Dribbling plays a fundamental role in basketball offensive techniques. Only by mastering solid dribbling skills can young athletes maintain body balance and control their lower limbs effectively. In the actual FMS testing process, indicators such as squatting and rotational stability are closely related to dribbling technique. For children with low scores in the squat test, training programs such as resistance band-assisted squats are mainly designed, with the difficulty of movements gradually increased to effectively improve the flexibility of children's lower limb joints and core stability[3]. For children lacking rotational stability, training methods like standing torso twists are adopted to enhance the coordination of their trunk rotation. Through regular training interventions, children can achieve significantly better dribbling performance[4]. Based on specific teaching practice data, it is evident that functional training guided by FMS testing helps improve the technical level of young basketball players, enhances their body control ability, and lays a foundation for subsequent flexible movements.

2.3. Impact on Passing Technique

The core of basketball passing technique lies in accurately mastering the force application sequence while maintaining a proper body posture and upper limb control. In the FMS testing process, indicators such as trunk stability push-ups and rotational stability are closely associated with the quality of passing[5]. When shoulder joint flexibility is insufficient, it tends to restrict the arm movement of children during passing, making it difficult for them to execute long-distance passes. According to FMS test results, coaches can identify movement deficiencies in different passing techniques and conduct targeted functional training. For children with insufficient shoulder joint flexibility, shoulder circumduction exercises can be used to improve their shoulder joint mobility. For children with weak core muscle strength, training methods such as planks and glute bridges can be implemented to enhance their trunk support ability[6]. Based on the above measures, functional training guided by FMS testing can help young basketball players adjust their passing techniques and achieve more accurate passes.

3. Functional Training Strategies for Children's Basketball Offensive Techniques

3.1. Formulation of Personalized Training Programs Based on FMS Testing

First, conduct accurate FMS test and evaluation activities. Before carrying out functional training, professional personnel can be invited to conduct FMS tests to comprehensively assess the skills of young basketball players. In accordance with

FMS standards, each test movement is observed, and whether pain occurs during the test is recorded[7]. After the test is completed, the children's test results can be analyzed in detail to clearly identify their deficiencies in movement patterns, stability, and other aspects. For example, some children exhibit knee valgus (joint inward deviation) when performing squats, which is often caused by insufficient lower limb coordination. Coaches can develop scientific and personalized training plans based on such findings to lay a solid foundation for subsequent training.

Second, design hierarchical and grouped training. Based on the total scores and individual item data of the FMS test, children can be divided into different levels, specifically including the high-score group, medium-score group, and low-score group. Children in the high-score group possess sound motor skills and only show minor movement deficiencies in basketball training; thus, the training focus should be on improving the refinement of their movements and enhancing their sports performance. For children in the medium-score group, who usually have certain movement function issues, training should emphasize the adjustment of movement functions, with basic functional training as the main component, while gradually incorporating technical training content[8]. As for children in the low-score group, who have obvious movement function defects, training should focus on improving movement functions as the core task, prioritizing targeted functional training. Only after their movement functions are significantly improved should basketball offensive technique training be gradually integrated. Through hierarchical and grouped training, it is ensured that each child receives training content that matches their actual situation, thereby improving the targeting and effectiveness of training.

3.2. Design of Training Content Aligned with Children's Physiological and Psychological Characteristics

Children are in a stage of rapid physical development, with immature bones, muscles, and joints. The design of training content must fully take their physiological characteristics into account: high-intensity and heavy-load training programs should be avoided to prevent adverse impacts on physical development. For instance, during lower limb strength training, bodyweight exercises (such as single-leg squats and depth jumps) can be used instead of weight-bearing training to reduce pressure on the knee and hip joints; during flexibility training, the intensity and duration of stretching must be controlled to avoid muscle and ligament injuries caused by overstretching[9]. Meanwhile, training movements should be simple and intuitive, matching children's body control abilities and movement cognition levels.

In addition, children's psychological development needs should be considered. Children have psychological traits such as strong curiosity, easy distraction, and a preference for interesting activities. Thus, training content design must emphasize fun and diversity, avoiding monotonous and boring repetitive training to enhance children's enthusiasm and participation in training[10]. For example, when conducting core stability training, interesting training programs like "plank relay races" and "glute bridge passing games" can be designed—combining functional training with games to allow children to complete training tasks while playing. When carrying out offensive technique training, scenario simulation training (e.g., simulating passing, shooting, and breakthrough scenarios in actual games) can be adopted to stimulate children's competitive awareness and training enthusiasm. Additionally, timely encouragement and praise should be given to children during training: when they complete training tasks or make progress, verbal praise and small rewards (such as basketball stickers and small badges) can be used to boost their self-confidence and motivation for training.

3.3. Emphasis on the Gradual Progression and Dynamic Adjustment of the Training Process

First, achieve the gradual increase of training intensity. During the basketball functional training process, coaches must implement the principle of gradual progression. Based on children's adaptation, the difficulty of training should be increased step by step to avoid injuries caused by a sudden surge in training intensity. In the early stage of functional training, basic training should be the main focus, with relatively low overall training intensity and simple movement requirements for children. The key at this stage is to help them learn correct movements and develop good habits[11]. In the middle stage of training, after children have gradually adapted to basic training activities, coaches can appropriately increase the intensity and raise the difficulty of movements. For example, add torso rotation to plank training and integrate

simple basketball offensive technique exercises[12]. From the perspective of the late training stage, emphasis should be placed on increasing training intensity and difficulty, while strengthening the integration of functional training and offensive technique training, so as to improve children's physical fitness and offensive skill proficiency.

Second, conduct dynamic adjustment of the training program. During training practice, coaches should regularly check the status of young basketball players, actively conduct FMS tests, evaluate their basketball offensive techniques, and dynamically optimize the training program based on the assessment results. For instance, if a child's score in shoulder joint flexibility increases from 1 to 2 in the FMS test, it indicates a significant improvement in their shoulder joint flexibility. In this case, relevant training content for shoulder flexibility can be appropriately reduced, and training that combines passing and shooting can be added[13]. If a child's offensive techniques improve, coaches can identify the weak points reflected in the child's FMS test, carry out targeted functional training, and optimize the content of technical training. Through such adjustments to the training method, the training can better match the children's actual conditions, further optimizing the training effect.

3.4. Strengthening Training Supervision and Safety Assurance

Coaches need to conduct full-process training supervision. To enhance the effectiveness of functional training, it is necessary to focus on the specific training process and implement whole-process supervision. Before training, coaches can explain the movements to help children understand the key points and purposes of each movement, and demonstrate the movements to assist children in accurately grasping the details of the movements. During the specific practical training session, coaches can observe children's movements, promptly identify any mistakes they make to prevent injuries caused by non-standard movements. At the same time, coaches can monitor children's performance and adjust the training intensity and rhythm in a timely manner[14]. After training, coaches can organize children to participate in cool-down exercises, which effectively help relieve muscle fatigue and promote physical recovery.

In addition, attention should be paid to improving training safety assurance measures. The safety of children is a prerequisite for basketball training, and the construction of training safety measures can effectively protect children's safety.

First, conduct safety inspections of training venues and equipment. Regularly check the flatness of the basketball court surface, the stability of basketball hoops, and the integrity of training equipment (such as hurdles, resistance bands, and medicine balls). Damaged equipment should be replaced promptly to eliminate potential safety hazards. Second, ensure adequate warm-up before training and proper cool-down after training. Warm-up exercises (such as jogging, dynamic stretching, and joint mobilization) should be sufficient, lasting no less than 10 minutes, to help children warm up their bodies slightly, increase their heart rate, and reduce the risk of sports injuries. Cool-down exercises (such as static stretching and massage relaxation) should be thorough, lasting no less than 15 minutes, to promote blood circulation and relieve muscle tension[15]. Third, establish training health records. Record children's basic information, FMS test results, training content, training performance, and physical status (e.g., whether pain, fatigue, or other symptoms occur). If a child experiences physical discomfort during training, training must be stopped immediately. A sports rehabilitation specialist should conduct an assessment and provide treatment; if necessary, the child should be taken to see a doctor promptly.

4. Conclusion

In summary, in the context of traditional basketball teaching activities, the integration of functional training into basketball can enhance children's basketball offensive skills and help them achieve better performance in offensive skill assessments. Specifically, coaches can adopt measures such as formulating personalized training programs, dynamically adjusting the training process, and strengthening training supervision. These measures can effectively improve children's body control ability, enhance their stability, and enable them to flexibly change directions during movement.

Disclosure statement

The author declares no conflict of interest.

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