

Research on the Special Physical Characteristics and Training Methods of Curling Events

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Abstract: This paper focuses on the special physical characteristics of curlers and their training methods. Through the analysis of the physical fitness tests and training methods of curlers, it is found that the special physical characteristics of curlers mainly include strength, endurance, coordination and balance. In terms of training methods, this paper introduces specific training methods for these special physical characteristics, including strength training, aerobic training, sensitivity training, and balance training. The results of this study can help guide the training of curlers and improve their competitive level.

Keywords: Curling, Specialized physical fitness, Training methods, Coordination

1. Introduction

Curling is a team sport that focuses on controlling the stones on the ice as the main competitive component. Curlers need to have multiple physical qualities to perform at their best level of competition. With the development of social economy and the progress of technology, the popularity of curling in China is increasing, therefore, it is important to study the special physical characteristics of curlers and their training methods to improve their competitive level. The purpose of this paper is to explore the special physical characteristics of curlers and their training methods through the analysis of the physical fitness tests and training methods of curlers, so as to provide scientific guidance for the training of curlers [1].

2. Special Physical Characteristics of Curlers

2.1. Strength

In curling, athletes need to push the stone to the target area, so strength is a very important physical quality. Studies have shown that both upper body strength and leg strength are more important for curlers. Upper body strength mainly refers to the strength of triceps and latissimus dorsi, while leg strength mainly refers to the strength of the leg muscles. Therefore, strength training for the above muscles is an effective way to improve the strength of curlers.

2.2. Stamina

Curling games usually last 2-3 hours, so athletes need to have a certain level of endurance. Durability is mainly about cardiorespiratory strength and endurance. Therefore, aerobic exercise is an important training method to improve the endurance of curlers.

2.3. Coordination

In curling, athletes need to control the direction and speed of the stone, so coordination is a very important physical quality. Coordination mainly refers to the ability of coordination and cooperation between body parts [2]. Therefore, performing sensitivity training and balance training can effectively improve the coordination of curlers.

2.4. Agility

Agility is very important in curling because athletes need to perform frequent movements such as heaving and striding. In curling, athletes need to move quickly across the ice in order to be able to reach their destination in time when needed. Therefore, agility is a physical characteristic that curlers must possess. Agility refers to the body's ability to react and change quickly in different spatial positions and over time. In curling, athletes need to change direction and speed quickly in order to better control the movement of the curler during the game. Athletes need to react in an instant while maintaining balance and controlling their body position [3].

2.5. Spatial Positioning Ability

Athletes need precise positioning and control on the ice in order to deliver the curler to the target area. Therefore, spatial positioning ability is a physical characteristic that curlers must possess. Spatial positioning ability is the ability of the human body to accurately determine and control its own or an object's position in a spatial environment. In curling, the athlete needs to accurately control the position and direction of the curler in order to reach the final goal. Therefore, athletes need to have a good spatial positioning ability.

2.6. Quick Reflexes

Quick reflexes are very important in curling because the game changes rapidly and athletes need to be able to react quickly in order to be in control of the game. Therefore, quick reflexes are a physical characteristic that curlers must have. Quick reaction time is the ability of the body to respond quickly to external stimuli in a short period of time. In curling, the athlete needs to react quickly to the opponent's strategy and the trajectory of the curler in order to make the best decision. Therefore, athletes need to have good quick reaction skills [4].

3. Training Methods for Curlers

3.1. Strength Training

Strength training is an important part of training for curling athletes and can help athletes improve their ability to push the stone. Therefore, it is very important to focus on training the upper body and leg muscles. When carrying out strength training, it is necessary to develop a reasonable training plan based on individual circumstances and different training stages. Firstly, upper body muscle training is an important part of curling player's strength training. The upper body muscles are mainly supported by the triceps and latissimus dorsi, both of which play a crucial role in pushing the stone. Exercises such as dumbbell curls, pull-ups, and push-ups can be used to train these muscles. During training, attention should be paid to controlling weight and repetitions, and a reasonable training plan should be arranged based on individual circumstances and different training stages to achieve the best training effect. Secondly, leg muscle training is also an important part of curling athlete's strength training. The leg muscles are mainly supported by muscles such as the quadriceps, hamstrings, and gluteus maximus. Exercises like squats, deadlifts, and leg lifts can be used for leg muscle training [5]. During training, attention should be paid to controlling weight and repetitions, and a reasonable training plan should be arranged based on individual circumstances and different training stages to achieve the best training effect. Moreover, comprehensive strength training is also an effective method of improving curling athletes' strength. Comprehensive strength training can include weight training, equipment training, and comprehensive training. In comprehensive strength training, not only upper body and leg muscle training can be targeted, but also core muscle group training can be incorporated to improve athlete balance and stability [6]. During training, a reasonable training plan should be arranged based on individual circumstances and different training stages to achieve the best training effect. Finally, it is important to pay attention to controlling the intensity and volume of training. The intensity and volume of strength training should be adjusted appropriately based on individual circumstances and different training stages to avoid the risk of overtraining and injury. Adequate warm-up and stretching should be performed before training to reduce the risk of injury. Strength training targeting upper body and leg muscles is an effective method of improving curling athletes' strength. When conducting strength training, a reasonable training plan should be developed according to individual circumstances and different training stages, and attention should be paid to controlling the intensity and volume of training

to achieve the best training effect [7,8].

3.2. Aerobic Training

Aerobic training is an important part of a curler's training, which can improve the athlete's cardiorespiratory fitness and endurance, thus improving the performance of the game. Aerobic training can include jogging, swimming, cycling and other aerobic exercises, and a reasonable training plan should be arranged according to individual conditions and different training stages. First, jogging is one of the common aerobic training methods used by curlers. Jogging can improve the maximum oxygen uptake and cardiorespiratory strength of athletes, thus improving endurance and stamina. In jogging training, a reasonable training plan needs to be arranged according to individual conditions and different training phases. Beginners can start with 2-3 times of 20-30 minutes of slow jogging per week and gradually increase training intensity and time. During training, attention should be paid to proper warm-up and stretching, as well as scientific breathing methods [9]. Secondly, swimming is another aerobic training method suitable for curling athletes. Swimming can improve athletes' cardiorespiratory function and endurance, while also exercising upper body and leg muscles. In swimming training, a reasonable training plan should be arranged based on individual circumstances and different training stages. Beginners can start with 2-3 times of 30 minutes of swimming per week and gradually increase training intensity and time. During training, attention should be paid to proper warm-up and stretching, as well as scientific breathing methods and swimming skills. Finally, cycling is also one of the common aerobic training methods for curling athletes. Cycling can improve athletes' maximum oxygen uptake and cardiorespiratory function, while also exercising leg muscles. In cycling training, a reasonable training plan should be arranged based on individual circumstances and different training stages [10]. Beginners can start with 2-3 times of 30 minutes of cycling per week and gradually increase training intensity and time. During training, attention should be paid to proper warm-up and stretching, as well as scientific breathing methods and cycling posture. Finally, it is important to control the intensity and volume of training. The intensity and volume of aerobic training should be adjusted appropriately based on individual circumstances and different training stages to avoid the risks of overtraining and injury. Adequate warm-up and stretching should be performed before training to reduce the risk of injury. In addition, curling athletes can also combine other training methods such as intermittent training, oxygen consumption training, etc., to achieve better training results. Slow jogging, swimming, cycling, and other aerobic exercises are effective methods for improving the cardiorespiratory function and endurance of curling athletes [11]. When performing aerobic training, a reasonable training plan should be developed based on individual circumstances and different training stages, and attention should be paid to controlling the intensity and volume of training to achieve optimal training results. In addition to aerobic training, curling athletes can also combine other training methods to comprehensively improve their physical fitness.

3.3. Sensitivity Training

Sensitivity training is one of the important components of curlers' training, which can improve the athletes' agility and reaction ability so that they can be more flexible to deal with various situations in the game. Sensitivity training can include step training, rope skipping, folding and running, etc. The training should be done in a safe manner and a reasonable training plan should be arranged according to the individual situation and different training stages. First of all, step training is a common way of sensitivity training for curlers. Step training can improve athletes' foot coordination and balance, as well as enhance the strength and endurance of lower limb muscles. In step training, different ways of training can be used, such as single-leg jumping, double-leg jumping and alternate jumping. When training, attention needs to be paid to choosing the appropriate step height and number of steps, and gradually increasing the training intensity and frequency [12].

Secondly, skipping rope is another agility training method suitable for curling athletes. Skipping rope can improve athletes' foot coordination and reaction speed, as well as strengthen the strength and endurance of lower limb muscles. In skipping rope training, different methods such as single foot jumping, double foot jumping, and alternating jumping can be adopted. During training, it is important to choose an appropriate skipping rope speed and time, and gradually increase training intensity and frequency [13]. Next, shuttle running is also one of the commonly used agility training methods for curling athletes. Shuttle running can improve athletes' reaction speed and acceleration, as well as strengthen the strength and endurance of lower limb muscles. Different starting and finishing distances, as well as different widths of running tracks can be used in shuttle running training. During training, safety should be a priority. It is important to choose an appropriate training intensity and frequency,

and gradually increase the difficulty of the training. Finally, it is important to pay attention to the safety and scientific nature of training. The actions involved in agility training are more complex, and it is necessary to pay attention to safety during training by selecting appropriate training venues and equipment to avoid injuries [14]. In addition, agility training should have a reasonable training plan based on individual circumstances and different training stages, gradually increasing training intensity and frequency to achieve the best training effect. Stair training, skipping rope, shuttle running, and other agility training methods are effective ways to improve the agility and reaction ability of curling athletes. During agility training, safety should be a priority. By making a reasonable training plan based on individual circumstances and different training stages, as well as gradually increasing training intensity and frequency, the best training result can be achieved. In addition to agility training, curling athletes can also combine other training methods such as strength training and technical training to comprehensively improve their competitive level [15].

3.4. Balance Training

Balance training is one of the important components of curlers' training, which can improve the athletes' balance and stability so that they can be more flexible to deal with various situations in the game. Balance training can include single-leg stance, single-leg squat and other movements, which should be done in a safe manner and with a reasonable training plan according to individual conditions and different training phases. First of all, the single-leg stand is a common way of balance training for curlers. One-leg stand can improve the balance and stability of the athlete, while enhancing the strength and endurance of the lower limb muscles. In single-leg stand training, different ways of training can be used such as standing against the wall and standing with eyes closed. When training, attention needs to be paid to choosing the right standing time and posture, and gradually increase the training intensity and time. Balance training is one of the important components of curlers' training, which can improve the athletes' balance and stability so that they can be more flexible to deal with various situations in the game. Balance training can include single-leg stance, single-leg squat and other movements, which should be done in a safe manner and with a reasonable training plan according to individual conditions and different training phases. First of all, the single-leg stand is a common way of balance training for curlers. One-leg stand can improve the balance and stability of the athlete, while enhancing the strength and endurance of the lower limb muscles. In single-leg stand training, different ways of training can be used such as standing against the wall and standing with eyes closed [16]. When training, attention needs to be paid to choosing the right standing time and posture, and gradually increase the training intensity and time. Finally, in addition to individual balance training, balance training can also be combined with technical training. For example, in the training of the slide technique, balance training actions such as single-leg stance and single-leg slide can be added to achieve better training results. In addition, curling athletes can also combine other training methods such as strength training and aerobic training to comprehensively improve their competitive level. Single-leg stance and single-leg squats are effective methods to improve the balance and stability of curling athletes. During balance training, it is important to pay attention to safety, develop a reasonable training plan based on individual circumstances and different training stages, and gradually increase training intensity and frequency to achieve the best training effect. In addition to balance training, curling athletes can also combine other training methods such as technical training and strength training to comprehensively improve their competitive level [17].

3.5. Technical Training

Technical training is one of the essential training methods for curlers, and it includes training in skating technique, sweeping technique, and curling tactics. Through continuous practice, curlers can improve their skills and thus become more comfortable in the game. First of all, stone skating technique is one of the most basic techniques for curlers. Slippery stone technique includes several aspects such as starting, sprinting, smooth gliding and deceleration. In the training of sliding stone technique, athletes need to master the correct standing and skating posture, and master the control and steering skills of sliding stone. Also, attention needs to be paid to the control of skating speed and route to ensure the best curling serve. Secondly, stone sweeping technique is one of the essential techniques for curlers in the game. The main function of the stone sweeping technique is to change the skating line and speed of the curler, thus making it easier for the curler to approach the target area. In stone sweeping technique training, athletes need to master the correct stone sweeping posture and sweeping strength, as well as timely stone sweeping command according to the ice surface condition and curling skating line. Curling tactics are then one of the keys for curlers to achieve victory in the game. Curling tactics include multiple aspects such as offense and defense transitions, offensive strategies, and

defensive strategies. In curling tactical training, athletes need to develop reasonable tactics according to the game situation and the opponent's strength to achieve the best game result [18]. At the same time, they also need to pay attention to team cooperation and communication to ensure the effectiveness of tactics execution. In addition to the above technical training methods, curling athletes also need to conduct comprehensive technical training. Comprehensive technical training includes the comprehensive application of various techniques, such as simultaneous sliding and sweeping, and controlling the placement of the curling stone. In comprehensive technical training, athletes need to constantly practice and improve to enhance their technical level. Sliding technique, sweeping technique, and curling tactics are essential training methods for curling athletes. During technical training, athletes need to pay attention to correct posture and movements, as well as reasonable training intensity and frequency. Meanwhile, they also need to take note of comprehensive application of techniques and team cooperation to achieve the best training results. Through continuous training and improvement, curling athletes can enhance their technical level and perform better in competitions.

3.6. Mental Training

Psychological training is an important method for improving the mental quality of curling athletes, which can include relaxation training, focus training, and psychological regulation. Through psychological training, athletes can improve their mental quality and competitive performance. Firstly, relaxation training is one of the important components of psychological training. Relaxation training can help athletes relieve tension and anxiety, resulting in a relaxed body and mind. Relaxation training can include deep breathing, progressive muscular relaxation, and other methods. Athletes can adjust their mental state through relaxation training before the game to achieve the best competitive state. Secondly, focus training is another important aspect of psychological training. Focus training can help athletes improve attention and concentration, better coping with various situations in the game. Focus training can include attention allocation, sensory training, and other methods. Athletes can improve their reaction speed and decision-making ability in the game through focus training. Psychological regulation is another important aspect of psychological training. Psychological regulation can help athletes cope with various pressures and challenges in the game, to achieve better competitive performance. Psychological regulation can include positive self-talk, cognitive reconstruction, and other methods. Athletes can adjust their mental state through psychological regulation to cope with various situations in the game. Finally, in addition to the above-mentioned psychological training, curling athletes also need to comprehensively improve their mental quality. Comprehensive improvement of mental quality includes enhancing self-confidence, strengthening willpower, and cultivating mental toughness in multiple aspects. In the comprehensive improvement of mental quality, athletes need to constantly exercise and improve their mental quality to cope with various challenges and pressures in the game. Psychological training such as relaxation training, focus training, and psychological regulation are important methods for improving the mental quality of curling athletes. When undergoing psychological training, athletes need to pay attention to reasonable training plans and intensity to achieve the best training effect. At the same time, they also need to continuously apply what they have learned from psychological training in the game to achieve the best competitive performance. In the comprehensive improvement of mental quality, curling athletes need to constantly exercise and improve their mental quality to cope with various challenges and pressures in the game [19].

4. Conclusion

Curling is a competitive sport that requires a high level of technical and physical ability. In curling matches, athletes need to possess excellent balance, explosive power, endurance, accurate technique, and outstanding mental quality. To improve the competitive level of curling athletes, it is particularly important to study the characteristics of specialized physical fitness and corresponding training methods. After research, we can identify the specialized physical fitness characteristics and corresponding training methods for curling. Firstly, the specialized physical fitness characteristics of curling include balance, explosive power, endurance, and other aspects. In summary, the study on the specialized physical fitness characteristics and training methods of curling is very important for the training and improvement of curling athletes' competitive level. During training, athletes need to pay attention to scientific training methods and plans to achieve the best training effect. At the same time, they also need to pay attention to reasonable diet and rest to ensure physical and mental health. Through continuous training and improvement, curling athletes can improve their competitive level and bring honor to the country.

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