

# Research on Core Strength Training of Sports Dance Combining Basic Training of Ballet

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**Abstract:** Core stability and strength training are the necessary stages of sports dance. It is an important means to create competitive results by using the mature training method of ballet basic skills. From the perspective of absorbing the training methods of “core strength” in sports circles, this paper puts forward a series of suggestions on auxiliary training. It can significantly enhance the core strength and self-control ability, and improve the quality of technical action completion. Ensure that the core area plays a role of stabilizing the body and transferring energy, so as to coordinate the whole body and ensure that the action is completed in high quality. It is suggested that ballet movement training be popularized and applied in basic training. In sports dance training, it is necessary to change the normal body posture habits, to achieve free movement of the limbs, to completely control the joints and muscles of the body, and to have strong flexibility and strong strength to achieve dance.

## 1. Introduction

Sports dancing requires dancers to see the flow of power and the smooth connection of upper and lower limbs in the process of dancing, which requires the coordination of the core strength of the body to complete [1]. The basic skills training of ballet is a complete and scientific theoretical system, and its standard training methods provide dancers with comprehensive basic physical ability training. After scientific basic woodwork training, the body has the basic strength to develop the dance pace and posture. Its core strength training can stabilize the correct body posture, improve control and balance, improve energy output, prevent sports injury and promote recovery after injury, so as to improve sports performance. The purpose of core strength training is to develop the contraction strength of the large superficial muscles and the control ability of the deep small muscles, as well as the ability of the nervous system to control the muscles and coordinate the whole body [2]. All sports movements are movement chains centered on the middle heart muscle group. The powerful core muscle groups play a stable and supporting role in the body posture, motor skills and special technical movements in the movement [3]. The rhythm combines breathing, meditation, flexibility, and balance to emphasize the influence of human breathing on human movement, and strengthens the core part of the body to improve the body's motor function. In this process, the nuclear myocardium plays a role in stabilizing the center of gravity, link strength, and transmitting strength. It is also the main link of the overall force. It plays a pivotal role in the synergy and integration of the upper and lower limbs [4].

There are a lot of leg control movements in ballet basic training, and the requirement of hip joint strength is very strict [5]. The training method is to follow the principle of using one's own weight, number of times, small weight and meditation. The breathing method during training is breathing through the nose and mouth [6]. It is a kind of external training for muscle shape, joints and so on [7]. In the process of strength training, only by solving the problem of transforming special strength into special achievement, can strength training serve special purpose better. Core muscle group is composed of rectus abdominis, transverse abdominis, dorsal, oblique abdominis, lower dorsal and erector spine muscles, and the muscles around hip joint - gluteus, rotator hip and posterior femoral muscles also belong to the core muscle group of human body [8]. In this process, core muscle groups play the role of stabilizing the center of gravity, linking force and conducting force, and are also the main links of overall force. They play a pivotal role in the coordination and integration of

upper and lower limbs. At present, the training focus of coaches in various countries has shifted from skills and tactics training to core strength training. In recent years, China's competitive training has paid attention to the role of the body trunk on the performance of the whole sport, and has recognized that core stability and strength training is the necessary stage for learning sports dance [9]. The first condition of sports dance is to have a tall and straight figure, especially the middle and back erect. In this basic form, it is necessary to swing the ankles a lot and use the limbs to produce a rich and varied dance posture, which is very necessary to coordinate the control of muscles in various parts. Therefore, the core strength training of sports dance integrating ballet basic training is worthy of in-depth research and discussion [10].

## 2. Theoretical Analysis of Ballet Basic Skills Training Method on Sports Dance Training

Core strength training is the basis of other sports abilities, such as speed, agility, coordination and other quality training. An important principle of the core strength training program is to coordinate the work of many muscle groups during exercise. The theory of core in sport is consistent with that of ballet dance. In ballet, any movement develops and changes on the basis of externality. This form of externality first conforms to the physiological structure and skeleton structure of human body. For example, when kicking to the side, the big trochanter bone of the hip turns away and the back of the foot lifts upward, the power leg can reach 180 degrees and above. It can improve the feeling of the main nerve, strengthen the strength of the deep muscles and the stability and control of the core torso, and improve the flexibility and coordination of the body. Improve the hip muscle contraction ability, the joint activity is greater and the flexibility is higher when the dance is completed, thus improving the overall level of completing the dance movement.

Balance control throughout the whole process of sports dance performance, sports dance performances are completed in motion, there is no completely static action. The muscles needed to exercise the hip joints belong to the lower limb band muscles according to their position. The main muscles are pinnate and fan muscles, which originate from the pelvis or vertebra. The muscle bundles span the hip joints and extend to the femur or leg bones. Stability is the main purpose of core pre-training, and core strength training is the basis of other sports abilities, such as speed, agility, coordination and other quality training. Athletes with good coordination ability and strong core muscle group can maintain good body balance. Increasing the core strength helps to strengthen the intra-abdominal pressure. The intra-abdominal pressure is the pressure generated when the muscle groups around the abdominal cavity contract. When this pressure is increased, the lower part of the spine is pushed backwards to prevent the collapse of the waist and the advancement of the vertebrae, reducing the waist. Front bends to reduce lumbar load. Support the joints with the relevant muscle balance, maintain the proper balance and stability of the core muscles, and be in a stable state, effectively exerting strength. The training effect of the core strength of sports dance is shown in Table 1.

Table 1 Core strength training function of sports dance

	Demand	Effect
Core stability	15.20	6.34
Force at the core	12.72	9.32

Learn and master the key techniques of core strength training and improve the functional status of the muscles, ligaments, joints and tendons in the core part of the body. In order to meet the training needs, such as gradually prolonging the time, increasing the number of exercises or increasing the weight of the load, replacing bare-handed exercises with equipment-loaded exercises, gradually increasing the weight of the load, gradually complex forms of action and so on. The core strength training on the unbalanced support surface can create a unique dynamic training environment. The practitioner must rely on the core strength to maintain the balance and stability of the body, which increases the training load of nerve and muscle. The stronger the body control force is, the more stable the dance movement is, the smaller the change of the pressure center of the foot

is. On the contrary, the body control is weak, the dance movement is not stable enough, and the change of the pressure center of the foot is greater. For sports dance students, basic dance training can effectively improve the various skills of the body parts. Compared with other quality practice methods, the basic training method does not make the muscle fibers rapidly increase and affect the shape of the dancers. This is related to sports. The ornamental features of the dance program are consistent.

The purpose of core strength training is to develop the ability of rapid explosive contraction of large muscle groups on the surface of the core and the control ability of small deep muscle groups, as well as the ability of nervous system to control muscle functions and coordinate body participation in sports. In the rapid action, the strong core muscle group can ensure that the limbs remain in normal position during the action. The stable function of deep small muscle group plays a key role in protecting, which prevents the occurrence of acute injury. Because of the poor flexibility of pelvic and sacroiliac joints, the pressure exerted on them by muscle contraction and elongation increases during exercise, and the weakness of adductor muscle strength, which is very easy to cause damage to the pubic bone. Therefore, only the stabilization of the pelvis can ensure the effective work of the hip muscles. Strengthening and stretching your body in each movement, balancing and controlling your movements is the principle of core strength training. Ballet core strength training moves from the steady axis of the body to the maximum control action, and each All actions require the use of reaction forces to maintain balance and stability. Therefore, the control ability of the middle part of the body during the sports dance is the core stability, which is an essential condition for ensuring the completion of the dance movement technique.

### **3. The Role of Core Strength in Completing the Technical Movements of Sports Dance**

The strength of the core strength muscle group affects the control ability of the body. The change of the plantar pressure center can be effectively reduced and the core strength can be improved through the training without the lever. In the process of dancing, the ability of stability is needed for standing, exterior rotation of lower limbs, stride, rotation and balance. The ability of stability of control is also needed for rhythm change or uniform motion. All of these are the basis of dancing training and performance activities. Emphasis is placed on the control process at rest. Strong and stable core stability can effectively transfer the force from the ground to the upper limb, in order to achieve the maximum acceleration or deceleration of the upper limb or the device, and also can transfer the momentum of the upper limb to the lower limb. Adjust the effect of the lower limb muscles on the ground, so as to improve the coordination work efficiency between the upper and lower limbs or technical movements. During the core strength training process, the movement is required to be accurate, smooth, and slow, and the time for muscle control is extended. This allows the practitioner to maximize the muscle strength while consuming the fat of various parts of the body.

Core strength training is different from traditional strength training. It makes the muscles of lower back and abdomen do work at the same time, just like upper and lower body do work at the same time. Simple combination, single action, can be more targeted to develop local muscle strength. This kind of exercise is more suitable for beginners, and it is the strength training process that beginners must go through. But this does not mean that the basic people can not do ground exercises, this form of training can improve the strength of specific body parts in stages. The combination of breathing and exercise is one of the cores of ballet sports. The ballet breathing method is a lateral breathing method. Each breath expands the ribs to both sides, the abdomen gathers inward, the lungs absorb the maximum amount of oxygen inhalation and exhale the gas in the lungs completely. After a period of repetition, repeated training, and adjustment of the difficulty of the dance routine, the excitation and inhibition process of the cerebral cortex can be more coordinated, and the dance movement can be more precise and perfect, and the action is automated. The core strength training of sports dance integrating ballet basic training improves the smoothness of the movement in the movement, so that the lower leg folds tighter during the forward swing, making the thigh swing forward faster and swing more.

Strong core strength can ensure the body's posture in the air, limbs can coordinate movement in the air, and when landing, feet and hands can land simultaneously in a controlled manner. Strong core muscle group is not only the original muscle of body posture change. Sports dance exercises enable each core muscle to be exercised, and the tension between the muscles can also be maintained in balance. For example, sit-ups, weight-bearing back flexion and extension combined with rubber band tension for lumbering-type rotation abdominal closure and V-type rotation, the training effect is ideal. Intense muscle activity makes the body's need for oxygen much stronger than usual. In order to ensure the transport of oxygen, cardiac blood output will increase. Persistent endurance exercise improves the blood circulation of myocardium, enhances myocardial contractility, and improves the regulation function of cardiovascular system. While developing the strength of the thigh muscles, it is also in the core area of the exercise. The difficulty in the operation is that the hips are easy to be tilted when the squat is performed. This means that the middle section of the trainer is loose, so it requires a certain amount of force to contract the control. The exercise in the area is self-evident. A good sense of prophecy has gradually formed. As we continue to explore the practice of groping, the degree of sensory sensitivity becomes more accurate.

The improvement of ballet's motor ability plays an important role in "migration". It can not only improve the interest of the boring training of comprehensive control ability, but also break through the bottleneck phenomenon of high altitude movement technical ability caused by dynamic stereotyping in ballet basic skills practice. In ballet basic training, aiming at enlarging the range of motion of hip joint, enhancing the flexibility of hip joint and improving the ability of external rotation of leg, it mainly trains the range of motion of hip joint on the basis of no swaying of hip joint to increase the flexibility of hip joint. Stability force in the work, the length of muscle unchanged, by changing muscle tension to overcome tension, this force is also known as isometric contraction cabinet. It is the dancer's ability to keep the fixed part of the body still, and then control the center of gravity and stabilize the balance of forces. Make the muscles of the joints softer, get moderate soothing, improve the mobility of the joints, and expand the range of motion to make the movements more flexible. It acts on body shape, body center of gravity, body balance and dance styling. The limbs involved in the completion of the movement are connected into a "chain". Each part involved in the completion of the movement is a link in the chain. The completion of the technical movement is realized by the transmission of momentum between the various links. The core strength is the momentum in momentum. The chain plays a "core" role. Under the requirement of correct body alignment structure, the extension, contraction and control of each muscle are understood by the heart, and the purpose is to strengthen the strength of the core muscles of the human body to improve the stability of the body and the correct posture of the whole body.

#### **4. Conclusion**

This paper studies the core strength training of sports dance which integrates the basic training of ballet. For sports dance, basic dance skills training can effectively improve the various skills of body parts. Compared with other quality training methods, basic dance skills training method will not make muscle fibers grow rapidly and affect the shape of dancers, which is consistent with the strong ornamental characteristics of sports dance. For the core part of the body, the exercise makes the spine soft and tough, enhances the contractility of ligaments, and makes the muscles strong and flexible. A developmental core strength training developed by continuous development, strengthening its leisure sports values, transforming its leisure sports attitudes, making it a good leisure sports behavior, and gaining a good psychological experience in participating in sports and sports activities for its future Develop a habit of lifelong exercise and enjoy a high quality of life. The application of core strength in the field of competitive sports requires scientific guidance, requires long-term exploration and practice, and requires in-depth study of its functions, physiological mechanisms, training intensity, and training methods.

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