

Application of Sports Biomechanics in Martial Arts Awareness of Attack and Defense

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Abstract. Martial arts are a long-standing sport in China. It has a particularly important position in modern college physical education courses. It plays a unique role in inheriting martial arts movements, promoting martial arts spirit, and inheriting martial arts culture. Because there are many martial arts teaching content and routines, and the movements are relatively complex, most college students do not have the foundation of martial arts, and at the same time, there are few martial arts classes. Most teachers use the general physical education method to teach, and it is difficult to reflect the characteristics of martial arts and fail to achieve the expected results. Therefore, to comprehensively improve the teaching level of martial arts, we can draw on sports biology theory and at the same time integrate the offensive and defensive awareness in the teaching, so as to fully reflect the functionality and appreciation of martial arts.

Keywords: Sports biomechanics, Martial arts awareness of attack and defense, Movement.

1. Introduction

Martial arts are a long-standing and precious cultural heritage in China, as well as a traditional and excellent sports event of the Chinese nation. At present, physical education in colleges and universities is constantly developing martial arts courses. How to enhance the level of martial arts classroom teaching is a new topic for reforming martial arts teaching at this stage. However, there are still some problems in martial arts classes in college physical education. The reason is that martial arts have many technical elements, complex structures, and many movements, which weaken the learning interest of martial arts beginners; it does not pay attention to the progress of the student body, which affects the overall popularization and sustainable development of martial arts. Teachers must make efforts to promote the popularization of martial arts in college physical education and enhance teaching efficiency and quality. Filling in the shortcomings that affect martial arts teaching is a problem that must be dealt with when martial arts come into college physical education classes. Therefore, the establishment and research of teaching methods reflect the offensive and defensive consciousness and conform to the martial arts routines under the perspective of sports biology. Routine movements and the establishment of scientific martial arts teaching have outstanding practical value. [1]

2. The Connotation and Application Value of Martial Arts Awareness of Attack and Defense

2.1 The Connotation of Martial Arts Awareness of Attack and Defense

Different fields have different interpretations of "consciousness". From a philosophical perspective, consciousness is a kind of human skill, which is the reaction of humans to recognize and understand objective things; from a psychological perspective, consciousness is a psychological, thinking, and perceptual process after being stimulated objectively. The highest level of psychological reflection can also be called human potential; from the perspective of martial arts, whether it is competitive sports or martial arts routines, whether it is fighting in the field or daily training, you must have a basic awareness of attack and defense. In order to become a winner, the martial arts athletes adopt a kind of psychological process of exercise. Their mental journey includes observation, analysis, judgment, imagination, cognition, etc. [2]

2.2 The Application Value of Martial Arts Awareness of Attack and Defense

The analysis of the application value of martial arts awareness of attack and defense should be based on two levels: the theoretical and the practical level. In terms of the theoretical level, consciousness has always been the consciousness reflected by human practical activities, and is a thinking activity with strong image. In the process of martial arts teaching, the concept of attack and defense consciousness is a defense and attack consciousness activity that has a direct relationship with martial arts. By enhancing consciousness, learners can better understand martial arts, and then enhance learning efficiency. On the practical level, martial arts, as a traditional sport in China, its essence is defense, which is an important idea integrated into martial arts competition and training. Therefore, in teaching, students' awareness of attack and defense can be enhanced. On the one hand, it can mobilize their interest in martial arts, enhance their initiative and enthusiasm in learning martial arts skills, and then fully reflect the main participation in martial arts learning and training. On the other hand, it can also help students to better remember the learning content, deeply understand and fully perceive the connotation of martial arts movements, and play their own advantages in actual combat exercises to win.

3. Significance and Function of Training Awareness of Attack and Defense

3.1 Significance of Training Awareness of Attack and Defense

Competitive martial arts is a complex and comprehensive system. The basic offensive techniques include positive boxing, push kicking, back spinning, hook kicking, side kicking, down splitting, cross kicking, front kicking, etc.; defense includes close defense, dodge defense, block defense, etc.; footwork includes jumping, changing, withdrawing, up stepping, sliding forward and backward, etc.; tactics include counter attack, defensive counter attack, head on, continuous attack, direct attack, etc.; [3]Martial arts belongs to a kind of combat event, which takes "use" as the teaching value and effect, and has applications in mobile target, fixed kicking and competitive practice. At present, many colleges and universities arrange 60 classes for martial arts. In the limited class hours, most students find it difficult to "learn", let alone to become proficient in "application". This leads to the result that some students would think that martial arts is lack of attack and defense value, and it is only a useless and empty show, and they do not recognize martial arts and its teaching effect.

3.2 Function of Training Awareness of Attack and Defense

There are three functions in training students' attack and defense intention.

First of all, it can better inherit martial arts and show the characteristics and essence of martial arts. The view of martial arts embodies a strong appreciation value. Whether it is a competition routine that embodies martial arts skills, or a free hand competition that fights wisdom and bravery, it gives viewers the enjoyment of the beauty of characters, which is fascinating and embodies the appreciation value of martial arts. In the process of appreciation, it gives people fun and education, and then promotes the better inheritance and development of Martial arts.

Secondly, Martial arts includes the basic forms of expression such as "martial arts movement, attack and defense fighting, routine drill". It is precisely because of the consciousness of attack and defense, the combination of internal and external, and the combination of form and spirit that Martial arts can fully and profoundly reflect the routine and the beauty of attack. Practicing martial arts can test will in many ways. When practicing basic skills, we should continue to overcome the pain level and develop the will quality of perseverance. In the long-term exercise, it can cultivate people's will and good habits of being brave to progress, open-minded and studious, tenacious, resolute, assiduous and diligent. In the development process of thousands of years, Martial arts has always attached great importance to moral etiquette.

Finally, due to a strong sense of attack and defense, in the face of difficulties and emergencies, we can properly deal with them and fight back in self-defense. Martial arts routines include falling, tumbling, jumping, balancing, looping, flexing and stretching. Almost all parts of the human body

can be moved. Systematic and scientific martial arts training requires the human body to have high flexibility, endurance, dexterity, strength, speed and so on, so as to comprehensively exercise the human body and mind. It can strengthen the body, strengthen the muscles and bones, and improve the joints; it can regulate the spirit, channels, and internal organs. It often carries out defensive technical exercises, using fast fall, kick, fist fight and other actions. During the training, martial arts can develop each other's strengths and avoid weaknesses, avoid their strengths and attack their weaknesses, and pay attention to the opportunities of attack and defense, so as to enhance the ability of adaptability and judgment, and effectively enhance people's ability of self-defense and victory.

4. Action Application of Martial Arts Awareness of Attack and Defense from the Perspective of Sports Biomechanics

4.1 Application of Biomechanics Principles in Martial Arts

(1) Application of kinematic principles in Martial arts

Human body kinematics is a science to analyze the general laws of different parts of the human body changing with time. Based on the quantitative and qualitative analysis, it shows the law of human motion, not including the reason and mechanism of human motion. In addition, kinematics also studies martial arts equipment movement. Because martial arts produce technical actions through the changes of different parts of human body in space and time, human motion dynamics is a kind of science that deeply analyzes the spatial and temporal characteristics of human motion technology. Martial arts technical action is implemented in a certain time and space, so it has the time characteristics of speed and acceleration, the space characteristics of distance and displacement. To analyze Martial arts movement by means of biomechanics is to analyze the movement change, track and state of each part or whole body in Martial arts movement from the perspective of space and time.

(2) Application of dynamic principle in martial arts

Dynamics is a science that analyzes the relationship between the force of an object and mechanical motion. In martial arts, athletes show different movements, forms and speeds of different parts of the body. According to the principles of mechanics, all objects appear to change in speed or move without the action of force. The movement state of the human body and its induced devices are changed by the direction and value of the force. In order to understand the reasons of the movement and the related conditions of the changes, it is necessary to analyze the dynamic characteristics of the movement. Any movement of the human body, such as flipping movements (side-overs), jumping movements (flying feet), turning (kick movements), translations (pingchong movements), etc. in martial arts, are all accomplished by the action of force. It is an important result of the all-round coordination of external and internal forces. In the movement of the human body, internal force, that is, muscle strength, plays a leading role. At the same time, due to the influence of mechanical laws, complex and variable martial arts movements are born under the action of both sides.

4.2 Action Application of Attack and Defense Awareness in Martial Arts

(1) Searching for the meaning of attack and defense

In the process of martial arts teaching in Colleges and universities, to enhance students' awareness of attack and defense can better inherit and develop martial arts culture and fully reflect the essence of martial arts. At the same time, martial arts takes "martial arts movement, attack and defense fighting, routine drill" as the main form. It is precisely because of its attack and defense nature that martial arts can achieve both internal and external and physical and spiritual, and then fully reflect the spiritual beauty and technical beauty in martial arts Aesthetics. In addition, only students with a deeper sense of attack and defense can understand the role of martial arts and enhance its practicability. Therefore, when teaching martial arts, teachers must set an example and try their best to explain the meaning of attack and defense in all martial arts actions. For example, in the teaching

of 24 Style Taijiquan, when explaining the "wild horse split mane" move, they should first drag the opponent to themselves, and then attack the opponent from the armpit through the forearm. This move reflects the defense and attack. The profound connotation of attack; when explaining the move of "waving Pipa with hands", the dialectical relationship between defense and attack is confirmed by analyzing that when the opponent gains self-improvement, he catches the opponent with his anti joint.

(2) Attaching importance to attack and defense training and integrating attack and defense awareness

The cultivation and enhancement of students' awareness of attack and defense through martial arts teaching can effectively change the current situation that students do not fully understand martial arts culture, enable students to enhance their interest in learning martial arts through technical attack and defense and fierce confrontation, deepen their understanding and memory of martial arts routines, and enhance the quality of teaching. Therefore, when promoting teaching, teachers should pay attention to the decomposition and refinement of action essentials to help students understand the real meaning of martial arts attack and defense in action training, so as to cultivate their attack and defense awareness. For example, when teaching 24 Style Taijiquan, when teaching the "cuddle the knee and bend the step", the teacher should first explain the action essentials to the students, and then encourage the students to try to analyze the real connotation of the left hand block attack and the right hand block the opponent, so that the students can understand and experience the relationship between the defense and the attack and defense, and enhance their personal skills through the attack and defense principles in practical sports. For example, in the three-way long boxing, the moves such as horse stance punching, kicking punching, and lunge punching should be based on a deep understanding of the relationship between defense and attack, and then realize and recognize the practicality of the moves, so as to achieve the ultimate goal of enhancing students' awareness of attack and defense. In addition, when teaching martial arts, teachers must guide practical activities through theoretical knowledge and rich connotation of martial arts culture, encourage students to carry forward martial arts spirit, promote martial arts culture and sublimate martial arts theory through practice.

(3) Attaching importance to the teaching of martial arts theory and guiding young people to understand the connotation of martial arts

Although martial arts is a kind of sport, it has rich basic essentials and theoretical knowledge. Teachers should pay attention to impart theoretical knowledge to students so that they can fully understand the soul of martial arts. When analyzing and explaining the theoretical knowledge of offense and defense, teachers should help and guide the students to master the details of attack and defense and the essentials of movements, and mobilize the enthusiasm of students to learn martial arts and form a sense of defense. Only by allowing students to deeply experience and truly feel the charm of martial arts training and knowledge can they be promoted to further understand and learn. Such purpose-based training and theoretical teaching are of great value to students' training of offensive and defensive awareness and martial arts teaching.

(4) Using scientific teaching methods to improve students' martial arts experience

Teachers are the main participants in martial arts training and teaching. The training, teaching mode and mode they choose have a direct impact on students' mastery of martial arts. Therefore, it is very important for teachers to study and understand the awareness of martial arts attack and defense. If teachers don't understand martial arts attack and defense correctly, students can't understand martial arts attack and defense fairly and comprehensively. Therefore, teachers' correct guidance is particularly necessary and important. In the process of training and teaching, teachers should understand the content of martial arts teaching, master the connotation of basic martial arts attack and defense and action, so as to ensure the effect and rhythm of training and teaching. In teacher training and teaching, teaching materials are the main tools.

(5) Emphasizing practice and demonstration to achieve the unity of martial arts training and teaching

Martial arts teaching should not only carry out theoretical knowledge teaching, but also pay attention to word-and-body teaching. Therefore, teachers should guide students to understand and master the essentials of defense in a short time, and they must pay attention to demonstration. When students learn theoretical knowledge, they will have some differences from the actual teaching experience. Only when the students have experienced it personally can they deeply understand the meaning of the action. With the help of explanations and demonstrations, students are encouraged to fully understand martial arts. At the same time, some martial arts movements are difficult to understand only by language. The demonstrations can effectively guide students' multiple consciousness and senses, and they can more deeply understand the connotation of martial arts. With the help of practice, students gradually improve their perception and awareness of attack defense, and then make them more aware of the concepts and actions of martial arts attack and defense, so as to improve the quality and effect of martial arts training.

5. Conclusion

Martial arts has vastly different styles, but the same principle. Integrating dynamics in the martial arts can help to deal with problems in the field of biological dynamics of Martial Arts. In martial arts routines, issues such as changes in body posture, changes in movement status, movement occurrence, ways to defend and strength to exert force can be studied and analyzed through dynamic theory, and then effectively deal with problems. In addition, enhancing the offensive and defensive awareness of students in martial arts teaching can promote the development and inheritance of martial arts culture, and can enhance the teaching effect and students' martial arts skills. Martial arts teachers should change the teaching concept, help students have the offensive and defensive awareness, choose scientific teaching methods according to the teaching content, cultivate students' offensive and defensive awareness based on martial arts teaching, and then achieve the multi-dimensional goal of martial arts routine teaching.

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