

Research on Sports Functional Clothing Assisting Sports Training and Teaching

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Abstract: In recent years, high-tech has entered many fields in China, including the clothing industry. If the clothing industry wants to March into the field of sports, it needs to think deeply about the clothing design and redefine the functional concept of clothing. Clothing with sports function is what the sports community really needs, and it is also the key to ensure the development of sports training and teaching. This paper will discuss the function of sports functional clothing in sports training and teaching, and analyze the functional characteristics of this type of clothing, in order to ensure that sports clothing has more perfect functions and make contributions to the development of sports in China.

1. Introduction

In the 1920s, people's concept of sportswear changed greatly. The design of sportswear focused more on people's physical characteristics, and everything served people. If the clothing industry wants to March into the field of sports, it needs to think deeply about the clothing design and redefine the functional concept of clothing. This paper will discuss the function of sports functional clothing in sports training and teaching, and analyze the functional characteristics of this type of clothing, in order to ensure that sports clothing has more perfect functions and make contributions to the development of sports in China.

2. The development course of sportswear

2.1 Evolution history of sportswear

Clothing appeared in the history of human evolution a long time ago, but sports clothing entered the public's field of vision very late, and the production of sports clothing was only more than 100 years ago. Relevant historical data show that in the Crete period of ancient Greece, the main sport of people was bullfighting. At that time, the matador only wore a hip skirt to perform bullfighting. This hip skirt covered the middle of the thigh, and was decorated with a metal belt and wristband, and the extremely bright and high-resolution color was selected as the main color of the skirt, thus highlighting the matador's vigorous posture and developed muscles. In the city-state period, dark and healthy skin prevailed at this time, and people did not wear any clothes during sports, so as to show the natural beauty and sports beauty of people. Later, people created more diverse sports. Although they no longer competed naked, there were still no special sportswear. In 1896, the first Olympic Games in human history was held in Athens, and sports has become a project that all human beings are keen on and constantly challenge and surpass, but at this time, athletes still don't have special clothes.

By 1920, women's tennis made a little attempt in sports clothes, but the clothes at this time did not have any function and were not considered from the needs of tennis. Athletes need to wear long skirts, high hats and ankle stockings, which will affect the athletes' play and hinder their hitting and running. Until the end of the 19th century and the beginning of the 20th century, the French fashion designer Paul Bourlette made a revolution in clothing, especially in women's clothing^[1]. After the designer's bold innovation, the sportswear in the future began to have functionality, and the shape was more concise and lively, which was helpful for athletes to play. The core design concept of sportswear in this period is to highlight the natural beauty of athletes. In the 1920s, people's concept of sportswear changed greatly. The design of sportswear focused more on people's physical characteristics, and

everything served people. In the past, the conservative dressing style was abandoned, and men's sportswear became vests and shorts, while women could wear short skirts for sports. As for swimwear and backless design, it has long been accepted by the public.

2.2 Historical changes in the texture of sportswear

By studying the texture of sportswear, we can sum up such a development track: from the earliest cotton cloth to nylon and spandex, and then back to the cloth dominated by natural fibers, and then from natural fibers to the mixture of natural fibers and man-made fibers. The above-mentioned changes in clothing texture are all based on human movement considerations and are designed around science and rationality. Up to now, sportswear fabrics are softer and more close-fitting, with strong elasticity, water absorption and warmth retention, providing high-quality clothing for athletes^[2]. In recent years, with the help of high technology, more functional synthetic fibers have been made, and it is believed that sportswear with this texture will create greater possibilities for sports.

2.3 The development of sportswear in style

In the past, sportswear paid more attention to visual aesthetics and absolute tight design. Later, with the change of design concept, sportswear design paid more attention to people's physical characteristics and sports needs. Clothing styles vary greatly according to different sports events, and we strive to design professional sportswear that reflects the charm of different events. Compared with men's sportswear, women's clothing styles have undergone tremendous changes. This is clearly reflected in the coverage rate of sportswear on athletes. According to the time line analysis, from 94% in the late 19th century to 82% in the early 20th century, then it experienced 57%, 39% and 31%. Finally, in the 1980s, the coverage rate of sportswear bikini was only 9%.

2.4 Sports and sportswear development process

The core idea of sportswear design is to serve people, and different sports correspond to different sportswear. For example, in the field of gymnastics, women's sportswear is designed in the form of an inverted triangle at the lower part to highlight the bodybuilding and slender body of women; In volleyball, clothes are often designed as long sleeves. Influenced by the inherent concept, some people think that short sleeves are more convenient for athletes to play, but the design of long sleeves will prevent athletes from making such illegal actions as "combo" and ensure the smooth progress of the game. In football, the goalkeeper's clothing design was first developed around aesthetics. Later, considering the goalkeeper's main needs, the clothing has a more protective function. Now the goalkeeper's clothing design focuses on ensuring the stability of athletes' contact with the ball. The clothing of the goalkeeper's upper body is designed to be composed of soft rubber, and the material with concave and convex patterns is used, which can increase the friction between the ball and the goalkeeper, make the goalkeeper catch the ball more stably, and reduce the impact of the ball to avoid the goalkeeper from being hurt when touching the ball^[3].

3. Development status of functional clothing

3.1 Concept and function

Functional clothing is a kind of clothing that can play a unique or super-effective role in one aspect. This type of clothing not only has the function of ordinary clothing to cover the human body and keep the body temperature, but also has a higher level of function. For example, intelligent temperature-regulating clothing, which can intelligently detect the change of the external environment temperature, adjusts the internal temperature of the clothing accordingly, and keeps the body temperature of the wearer in the most comfortable range all the time.

3.2 Design concept

The design concept of functional clothing should not only follow the principles of interactivity, safety, hygiene, aesthetics and practicality, but also meet the requirements of particularity and environmental protection. When designing functional clothing, designers must think from all aspects

of people's needs to protect people's health. Furthermore, the style design of functional clothing should be determined in combination with the pre-determined functions and actual fabrics. In addition, this type of clothing design should pay more attention to washing and sewing, which is convenient for people to move flexibly and put on and off conveniently.

3.3 Design requirements

Considering the high-frequency contact and interaction between functional clothing and human body, the design requirements are more diverse and specific, including comfort, safety, durability, convenience of interaction, and even the wearing comfort and social acceptance of equipment. In other words, we should design and develop according to people's real needs, meet people's personalized needs, and provide the best quality functional clothing for different people. With regard to clothing modeling, functional clothing designers need to determine according to the clothing environment. For example, protective clothing, which is uniform in shape and simple in outline, can completely wrap people's bodies and play a protective role. At the same time, designers should pay more attention to the choice of fabrics. Even if high-tech is added to clothing, it cannot harm human health and must be safe and harmless.

3.4 Join smart wearable devices

In recent years, sensor manufacturing has ushered in a new situation, and today's sensors are more intelligent, with higher integration and more diversified functions. Wearable devices don't have to work only in a certain part of the human body, but can be applied to the whole body of the human body. Functionally, it can not only realize information interaction, but also have medical characteristics, and can widely collect information data from the external environment to achieve real-time monitoring and transmission. In addition, the design of smart wearable devices should consider people's actual needs, improve the functions of this type of clothing according to people's physiological and psychological characteristics, ensure the safety of devices, and improve the comfort and convenience of wearing.

3.5 Join the mobile terminal

In order to make functional clothing more intelligent and meet people's needs in many aspects, we should also conduct diversified research on the transmission and interaction of information between smart devices and between smart devices and mobile terminals. At present, if the sensor detection node wants to communicate with the mobile terminal, it will adopt short-distance wireless transmission in most cases, and the interaction between the smart wearable device and the mobile terminal is mostly a single connection, which makes the information sharing efficiency low and limits the functional play of the smart device. Nowadays, more intelligent computers and mobile phones have come into public view, which also provide functional support for smart wearable devices. The devices can transmit information over a long distance, and the information obtained by devices is not only uploaded to mobile terminals, but also stored on cloud servers, so as to realize efficient sharing of information and optimize device functionality.

4. The auxiliary role of sports functional clothing in sports training and teaching

If we want to build an efficient physical education class, we should give full play to the many functions of sports functional clothing. According to the physical education class syllabus and actual teaching resources, we should make targeted teaching plans, reasonably plan the training duration, and integrate the dynamic evaluation mechanism to improve students' physical fitness. When students take part in sports training, they will wear sports clothes with powerful functions, and with the help of the characteristics of clothes, they will help the completion of training activities. Sports functional clothing can reduce students' physical and psychological burden, so that students can actively participate in sports training, have a stronger body and strengthen the awareness of lifelong sports, which is also conducive to the cultivation of sports special students and the delivery of talents for China's sports community.

In addition, by using the modern scientific structure division design of sports functional clothing, combined with the content of sports training teaching items, the goal, action decomposition and key points of breathing force skills of sports items are explained in detail, so that students can be more clear about the matters needing attention in sports, understand the intensity requirements of various sports activities and increase their sports knowledge. Moreover, through continuous training, with the help of the structural division of functional clothing, students' proficiency in action can be improved, their muscle memory can be deepened, and the body can be exercised in all aspects. With the help of sports functional clothing, sports training tends to be more efficient and rational, and teaching activities are promoted to a great extent. Students wear functional sports clothing for sports, and their physical functions will be better exercised. Teachers can also find students' shortcomings in time and formulate systematic improvement plans, and sports teaching will develop in a more modern and humanized direction.

4.1 Functional clothing and physical education curriculum integration, pay attention to the application of theoretical knowledge and sports technology

At the beginning of the 20th century, some scholars began to study the application of sports functional clothing in physical education teaching, among which the design of swimwear was the first to try to integrate functionality. Through experiments and analysis, professionals found that when people swim in the water, they will encounter resistance more or less, which will slow down the swimming speed. In order to avoid this resistance to the maximum extent, speed up swimming, and optimize the functionality of swimwear is imperative. By chance, the researchers found that compared with other shapes, the spindle has the least resistance in the fluid. If athletes can try to get closer to the spindle with the help of clothing, they will speed up the swimming and save physical strength. This idea was finally embodied in the swimsuit design, and achieved ideal results. The functional experiment in swimwear has also inspired scholars. Researchers put more energy into exploring the relationship between sportswear and sports, and some countries even set up clothing design institutions to engage in functional clothing design research.

In order to achieve outstanding results in the Beijing Olympic Games, China has also focused on the design of functional clothing. According to athletes' physical conditions and sports types, it has launched targeted design of sportswear, striving to give full play to the comfort and scientificity of sportswear, protect athletes' bodies and make them achieve better results. In the color selection of functional clothing, designers are ingenious and add bright colors to make people feel the vigor and vitality of athletes. In addition, sportswear also has good warmth retention, sweat absorption and breathability, which can reduce the temperature difference between the athlete's body and the surrounding environment, always keep the body temperature constant, protect the athlete's muscles and ligaments and prevent irreversible damage. It is worth noting that sportswear with weak functionality is not suitable for sports training and major competitions. Sports functional clothing has incomparable functions compared with ordinary clothing. This type of clothing integrates many professional disciplines such as human mechanics, kinematics and aesthetics in its design, and specializes in analyzing the characteristics of sports events and the physiological structure of human body, which exudes high-end scientific and technological atmosphere.

In order to realize the integration of theory and technology, sports functional clothing needs professionals to deeply understand the relevant theories and technologies, and then integrate them after scientific and reasonable research, and comprehensively design human movements, clothing fabrics and color matching with the help of other related disciplines. If we want to apply sports clothing to physical education and let functional clothing serve physical training, it is necessary to pay great attention to the theory of clothing design and sports technology, so that sports functional clothing can help physical training and teaching, realize auxiliary functions, strengthen students' sports effect, improve their physical fitness and avoid injuries during sports.

4.2 Functional clothing shaping and binding integration, to play the scientific nature of physical education

Physical education teaching involves many subjects, such as human mechanics, biology,

kinematics and so on. If we want to improve the efficiency of physical education teaching, teachers need to adopt systematic teaching methods and use reasonable training methods, so as to exercise students' physical fitness, standardize sports actions, avoid their injuries in sports and deepen their understanding of sports. Combined with the above points, designers must consider the knowledge of human mechanics, physiology, kinematics and other disciplines in the design of sports clothes, and focus on the changes of human muscles during exercise, so as to design sports clothes, ensure the functional play of sports clothes and better serve people. For example, in fashion design, shaping can be used to exert certain pressure on athletes' muscles. As a result, athletes' blood circulation is accelerated, resulting in excitement, and their body muscles can maintain vitality for a long time, weaken the sense of pain and fatigue, and exert greater potential. In addition, the extension design of sports clothes should meet the requirements of protecting athletes' bodies, that is, the clothes can't be extended indefinitely, and athletes will be restrained when doing stretching exercises to avoid damage caused by the range of exercise beyond their physical load. In order to strengthen the protective function of clothing on human body and prevent elbow joint and knee joint from being damaged, wrist pads and knee pads can be designed to provide thoughtful protection for athletes.

5. Conclusion

In a word, the design of sports functional clothing completely analyzes the problem from the perspective of people, taking into account the physiological and psychological needs of human body and different sports characteristics, and endows sports clothing with diversified, humanized and scientific functions. Sports functional clothing can also promote the efficient sports training and teaching. Students wearing professional sports clothing can not only better protect their bodies, but also standardize sports movements and exercise their physical fitness, so as to create an efficient sports classroom, give full play to the maximum role of sports teaching and realize the national movement.

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