

A Win-win Situation between Sports and Natural Environment Protection Based on the Theory of Cooperation and Competition

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Abstract: Sports are indispensable in people's daily life. Sports can exercise and strengthen the body. Therefore, with the development of the times, people's demand for sports is also increasing, so the development of sports has become very important. The development of sports would occupy a large number of natural resources and cause damage to the natural environment, which is obviously not in line with the strategy of sustainable development, so it is very important to compete and cooperate with the natural environment. This paper studied the cooperation and win-win of sports and natural environment protection based on the theory of cooperation and competition, aiming to make the natural environment and sports develop reasonably through the cooperation and win-win. This paper tested the extent to which the cooperation and win-win between sports and the natural environment reduced the pollution of the natural environment. The experimental data showed that the win-win cooperation between sports and natural environment could reduce the pollution of natural environment by 5% to 10%, while the win-win cooperation between sports and natural environment could reduce the cost of sports by 10% to 25%, which meant that the win-win cooperation between sports and natural environment has a good effect and is suitable for wide promotion.

1. Introduction

Sports is a sign of social development and progress of human civilization. The development level of sports is an important manifestation of a country's comprehensive national strength and social civilization. Sports can strengthen the physique, cultivate people's tenacious character and strong will. The natural environment is the place on which human beings rely for survival. Only by

protecting the natural environment can human beings survive healthily. Sports and the protection of the natural environment are very important.

The problem of natural environment has always been the focus of people's research. Elkafas A G believed that the emission of pollutants is a major environmental problem, because they would affect the deterioration of the environment and make the global atmosphere warm [1]. Yuldashov I believed that one of the main ways to promote harmony is physical education and sports, because physical education and sports play an important role in the healthy growth of adolescents after adulthood [2]. In some disciplines, such as sociology, management, history, media and cultural research, the strong trend of sports research has been established. However, in some disciplines, people's interest in sports is not so obvious [3]. Pelliccia A believed that most people who exercise engage in leisure and recreational activities can help them reduce the risk factors of arteriosclerosis and cardiovascular disease [4]. The win-win cooperation between the natural environment and sports is the trend of the development of the times. Only when the natural environment is well protected, the normal development of sports is in line with sustainable development.

The crowd of sports is very broad. Stefansen K believed that in all social strata, parents' participation in sports activities is regarded as a normal phenomenon, and sports activities are a way to establish emotional contact with children and promote their development [5]. Harmon K G believed that brain concussion caused by sports is a common injury in recreational sports [6]. Glazier P S believed that the computer model can identify the athletes' best sports, but considering the unique talent of each athlete, it is not clear whether these best sports can be achieved, especially under psychological pressure [7]. Bishop C believed that in many studies on sports and physical fitness, it has been found that there is a common phenomenon of asymmetry between limbs in the human body. However, few people have analyzed their impact on the body and movement [8]. The protection of the natural environment would have a binding effect on sports.

The natural environment must be protected, and it must be rationally developed. It is not allowed to trample on nature and violate the laws of nature. Therefore, the development of sports must not be unlimited. It is also necessary to take into account whether the natural environment can bear, and carry out sports on the premise that the natural environment can bear, which would enable the sustainable development of sports. This paper tested the degree of pollution reduction of the natural environment after the win-win cooperation between the natural environment and sports through experiments. The data showed that the degree of decline was still quite large. It also tested the cost of sports after the win-win cooperation between the natural environment and sports. From the data, the cost has been reduced, which showed that the win-win cooperation between the natural environment and sports is still worth carrying out.

2. Win-win Competition and Cooperation between Sports and Natural Environment Protection

2.1. Contradiction between Sports and Natural Environment

Nowadays, there are more and more sports competitions. Although this is of great help to human peace and development, it also brings many consequences, such as aggravating the pollution of the natural environment. Therefore, it is necessary to find a solution to the contradiction between sports and natural environment protection. The impact of the Games on the environment is reflected in the need to trim a large number of venues, parking lots and other places, which would occupy a large amount of natural environment and damage the natural environment. In addition, the noise pollution caused by traffic and the exhaust gas emitted during the Games would also cause damage to the environment. If the people gathered at the site continue to produce garbage, the pollution level would be higher. These factors that pollute the environment are very important. Nowadays, people's

awareness of environmental protection is gradually improving, so reducing the environmental pollution caused by sports has also become the focus of people's research. The types of pollution caused by sports are shown in Figure 1.

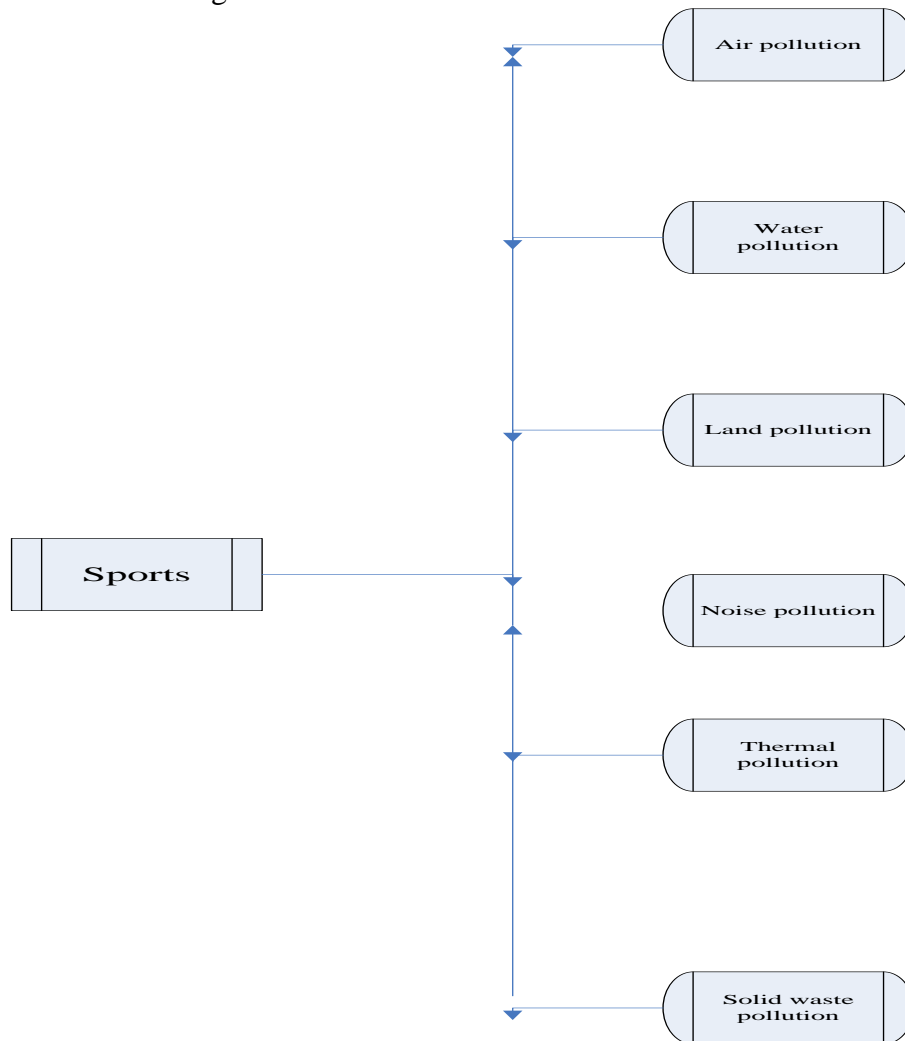


Figure 1. Types of environmental pollution caused by sports

2.2. Contribution of Orienteering to the Natural Environment

Oriented activities are those that do not require a stadium, as long as a suitable natural environment is found as a venue for sports activities, which can save a lot of costs as well as natural resources, and is well worth promoting. The establishment of sports activities usually requires the establishment of various facilities, which would cause damage to the ecological environment. This requires careful selection of stadiums and gymnasiums, and the planning and construction of stadiums and gymnasiums. For activities that do not require the use of stadiums, it is possible to simply choose to find a venue in nature, which allows the sports program to get closer to nature better. Therefore, the development of orienteering is of great help to the natural environment.

2.3. Relationship between Sports and Natural Environment

The natural environment is the place for human survival and development, and sports is the need of human society. The natural environment is the premise for the emergence and development of

sports, and also the place for the operation and development of sports. The natural environment can affect the extent of the development of sports and the scale of sports. The natural geographical location and climate reasons can also affect the performance of sports. Sports and natural environment are closely connected, and they would influence each other. The impact of win-win cooperation between natural environment and sports is shown in Figure 2.

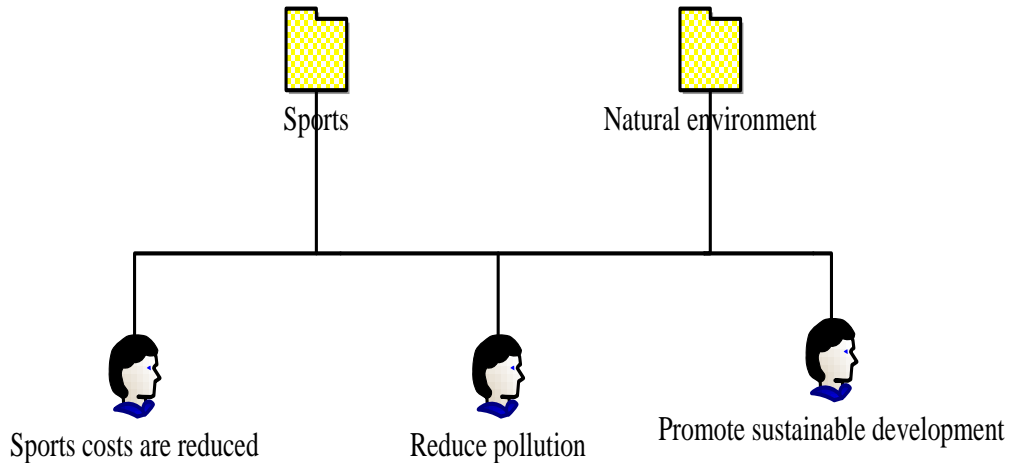


Figure 2. The effect of win-win cooperation between sports and natural environment

Sports would cause pollution to the nature, which would be mainly reflected in water pollution and site construction damage to the terrain, air pollution and other aspects. These pollution would affect the sustainable development of sports. Swimming, boating and other items in sports would directly or indirectly pollute water resources, and plastic containers would also have harmful effects on the environment [9]. In the process of sports, a lot of garbage, oil and other pollutants would be left in the water to pollute the water quality, and the athletes' excrement and secretion would also cause water pollution, so environmental education is needed to improve people's awareness of environmental protection [10]. The success of environmental protection depends on whether people's environmental protection actions are implemented [11]. If a sports venue is built in the forest, it would destroy the forest and make animals and plants lose their living place, which would cause the rapid decline of biological species and cause serious ecological crisis. The air pollution caused by sports is reflected in some anti-slip powder used by gymnasts and weightlifters, or in the smoking of athletes and spectators, and the exhaust gas released from racing events, which would cause considerable air pollution.

The impact of natural environment on sports is also relatively large. The long-term use of forests and grasslands has led to the degradation of ecosystems and carbon loss, which would reduce the number of sports venues [12]. Endurance training at high altitude can be stimulated by two different loads. One is the stimulation of the load itself, and the other is the hypoxia stimulation of the plateau environment. This special plateau environment can maximize the potential of the human body and make the human body more strongly stimulated, thus doubling the load that the body can bear. Therefore, athletes who train in the plateau environment tend to have better performance. Temperature and humidity also have a great impact on sports. If the temperature is high, the human body would easily lose too much water. If it is not replenished in time, it would be easy to dehydrate. If the temperature is cold, the athletes would shiver because of the cold, which would affect the normal performance of athletes. Therefore, only under normal temperature can athletes play their normal level. However, too much humidity would affect athletes' perspiration, which would affect their endurance, while too low humidity would make athletes feel dry, so appropriate humidity is very important for athletes.

2.4. Win-win Cooperation between Sports and Natural Environment

The competition and cooperation between sports and natural environment refers to the competition and cooperation between sports and natural environment. The competition between sports and natural environment is reflected in the fact that the development of sports would occupy natural resources and destroy the natural environment. However, if the protection of natural environment resources and natural environment is realized, sports cannot be carried out comprehensively. The cooperation of sports is to find a balance between the protection of the natural environment and the development of sports, so that sports can develop to a scale that is more in line with the current era, and various measures of natural protection should also be done well. The win-win cooperation between sports and natural environment is for sustainable development. Sustainable development is a highly intelligent result of human society's cognition of the world and its own. In order to achieve sustainable development of sports and the natural environment, it is necessary to develop harmoniously. Sports and natural environment complement each other. First of all, the natural environment provides a place for the operation and development of sports, but also restricts the excessive development of sports. In addition, sports is an indispensable part of human beings. The more people who play sports, the larger the scale of sports facilities must be, and the greater the pressure on the natural environment would be, which would form a contradiction.

Environmental pollution includes climate change, global warming, carbon emissions, environmental pollution, environmental pollution, environmental pollution, etc. [13]. Human health has been damaged by global temperature rise and natural destruction [14]. Many residents began to use disposable masks in an attempt to protect their health from the impact of particulate matter [15]. To solve the contradiction between the natural environment and sports, it is necessary to let people and nature develop harmoniously. Human beings need to understand that in order to survive and develop, they need to rely on the natural environment and resources. In order to be sustainable, they must protect the natural environment and resources. People should live in harmony with nature, develop healthily, and cannot blindly ask for resources from nature.

2.5. Calculation of Air Pollution in Sports

Coal-fired engines are often used in racing and other events, which would produce a lot of pollutants. The calculation of these pollutants is based on the heat supply and boiler efficiency, and then the coal consumption is calculated. After that, the emission of air pollution is calculated according to the emission rate of pollutants. The calculation of emissions is shown in Formula (1):

$$A = 500H \frac{Q}{KJ} \quad (1)$$

In Formula (1), A represents the emission of air pollutants, and H represents the emission rate of air pollutants; Q represents heat supply, and K represents coal consumption; J represents the average calorific value of coal.

The exergy expression method of coal turbine steam is shown in Formula (2):

$$l = n - md \quad (2)$$

In Formula (2), l represents the specific enthalpy of steam, and n represents the specific enthalpy of steam; M represents the temperature of 273.15K, and d represents the specific entropy of steam.

There is also a cylinder-type steam extraction method for coal-fired engines. The exergy of the heating steam extracted from the cylinder is shown in Formula (3):

$$l_r = n_r - m_r d_r \quad (3)$$

Among them, r represents the r -th extraction of the cylinder.

3. Simulation Experiment of Win-win Cooperation between Sports and Natural Environment

The win-win cooperation between sports and natural environment is necessary, because the protection of natural environment and the development of sports are indispensable. Only through mutual cooperation can sustainable development be achieved. This paper tested the degree of natural environment pollution reduction after sports and natural environment cooperation through experiments. The experimental results in Figure 3 were obtained by investigating the reduction degree of natural environment pollution in 50 places after the win-win strategy of sports and natural environment cooperation was carried out.

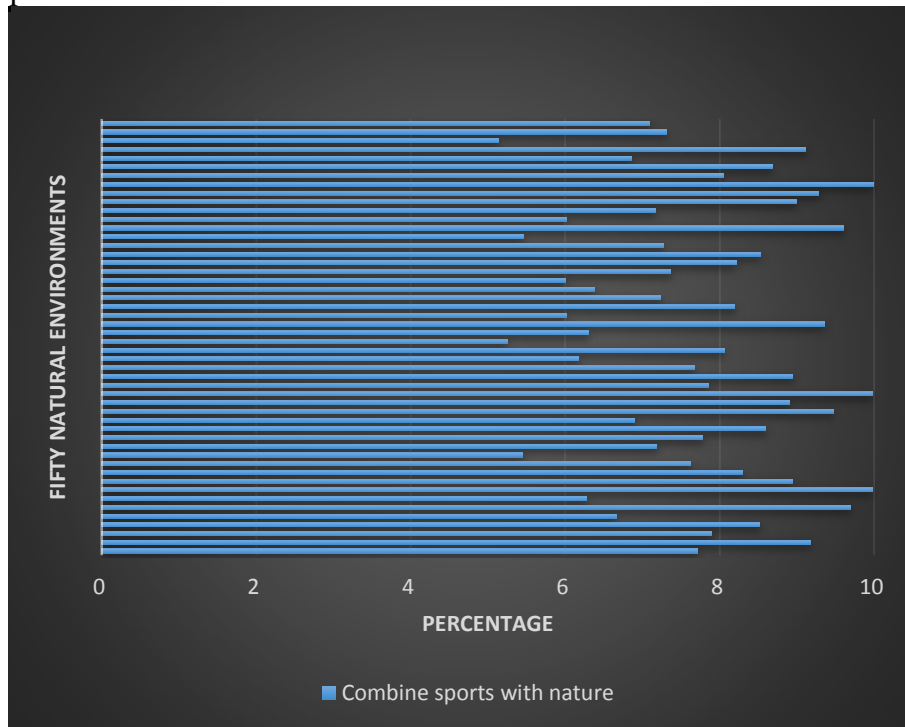


Figure 3. The pollution reduction degree of natural environment after the combination of sports and natural environment

According to the experimental results in Figure 3, after the win-win strategy of cooperation between the natural environment and sports, the degree of pollution of 50 natural environments has decreased by 5% to 10%. From this experimental data, it can be known that the win-win cooperation between the natural environment and sports can indeed achieve the effect of reducing natural pollution.

If sports can be carried out directly in the natural environment, rather than in the natural environment, it would reduce the cost of building a place, but also reduce the total cost of sports. This paper studied the cost saved by using the natural environment instead of building a place for sports held in 50 places, and the cost saved is shown in Figure 4.

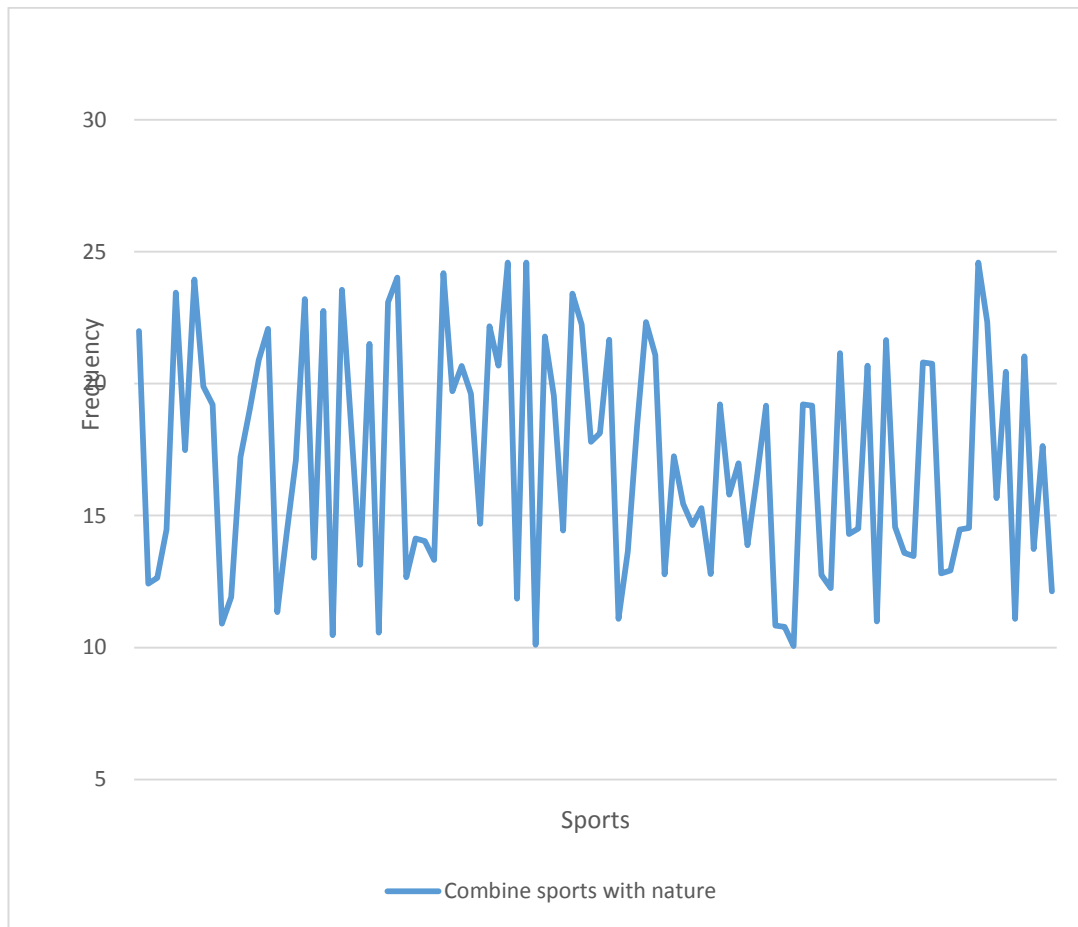


Figure 4. The cost of sport reduced by the combination of sport with the natural environment

From the experimental results in Figure 4, it can be seen that that after the win-win cooperation between the natural environment and sports, the cost of sports has been reduced by 10% to 25%. The construction site needs a large site and many facilities, so it can save a lot of costs after using the natural environment as the site.

4. Conclusion

The protection of the natural environment and sports are hot topics nowadays. The issue about how to protect the natural environment while ensuring the development of sports has become the focus of people's research. The development of sports would occupy the natural environment and cause pollution to the natural environment, and the protection of the natural environment would have many constraints on the development of sports. Through experiments, this paper tested the reduction of the pollution of the natural environment after the win-win cooperation between the natural environment and sports. According to the experimental data, the decline was still quite large. In the second test, the natural environment was no longer built on the natural environment, but directly used as a place. The experimental data showed that this could effectively reduce the cost of sports. Through two experiments, it can be proved that the win-win cooperation between the natural environment and sports is very desirable and can achieve good results. Due to the length of this paper, the number of experiments conducted is not enough, but it would continue to explore the cooperation between sports and the natural environment in the future. Finally, it is hoped that sports would develop more and more, and environmental protection would become better and better.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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