Regional Characteristics of Orienteering Development in Chinese Schools

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Abstract. In order to evaluate the development of orienteering in the national education system, the study takes the National Student Orienteering Championship as the research object. Statistics and interviews were conducted on the scale and level of competition in different provinces. Research suggests that:

In the secondary school group, the development of orienteering is unbalanced among provinces. Only 1/3 of the provinces in the country registered to participate in the competition. Enrollment policy is the main driving force for the popularization of orienteering. In the College Group, Orienteering is well popularized. Two-thirds of the provinces in the country signed up for the competition.

The flow of orienteering talents presents a funnel shape in china. Orienteering reserve talents are mainly concentrated in Hunan and Guangdong provinces. Athletes from Hunan mainly go to Beijing, Shandong and Zhejiang provinces. Athletes from Guangdong mainly go to Beijing, Tianjin and Zhejiang provinces. The cross-provincial mobility of elite athletes has promoted the popularity of orienteering in provinces.

Introduction

Orienteering, An outdoor sport that originated in northern Europe and swept the world. It is loved by many people because of the unique education[1], fitness[2], and leisure value[3]. Since it spread to China in the 1980s, It has developed rapidly in various schools and the perfect competition system has been established by the Ministry of Education of China. This study compares the development of different regions in China through the observation of the National Student Orienteering Championships to summarize the characteristics and problems of orienteering development in schools.

Overview of the Competitions

The National Student Orienteering Championship is sponsored by the Ministry of Education and is held every summer. The competition consists of 8 groups such as junior, high school, college I, college II, college III, college elite, junior colleges, and PE Institutes. According to the survey, the athletes from college I, college II, college III, junior colleges, and PE Institutes have no Professional training experience of orienteering before entering colleges. These students participate in training mainly for physical education. So these five groups are combined and referred to as the general college group to distinguish from the college elite group.
Unlike the genera college group, 18 colleges of the elite group qualify to recruit high-level orienteering athletes from high school. The main purpose of elite athletes is to participate in international competitions represent China\cite{4}. The main purpose of the students from junior and high school is to enter higher-level schools. These three groups together constitute China’s orienteering training system.

**Layout of Participants in Groups**

There are more than 460 participants in the college group every year, about 50% of the total participants(Figure 1B). Elite athletes account for the other 50% of the total participants. The number of participants in the high school group is significantly more than Junior high school. The results show that the development of elite training and physical education is balanced in China. But this is just an illusion because physical education is mainly developed in colleges\cite{5}. The interview shows that orienteering in junior school and high school is aimed at entering a higher level of school. The enrollment policy drives the development of orienteering in middle schools. This phenomenon is fragile because the driving force is not based on individual interests.

**Regional Characteristics of Participants**

From the perspective of geographical distribution, Only 12 provinces registered for the competition in the middle school group. Nearly 2/3 of the provinces failed to register for the competition in China(Figure 1A). The athletes are mainly from Hunan, Guangdong, Beijing, Jiangsu, Sichuan, Henan, and other provinces. There are significant differences among provinces. Hunan, Guangdong, Beijing, Jiangsu occupy the top four(Figure 1C). More than 15% of the total number of participants in Hunan and Guangdong, and more than 10% in Beijing and Zhejiang provinces.

From the perspective of geographical distribution, Colleges in 25 provinces have developed orienteering. There is a big gap between the number of participants and the level of competition between different provinces. Orienteering is more popular in colleges of Beijing and Zhejiang Province.

Through the comprehensive analysis of middle school and college groups, we can find that students take part in the competition of each group in Hunan, Guangdong, Beijing, Zhejiang provinces. Most of the participants come from middle schools in Hunan and Guangdong provinces, But Most of the participants were from colleges in Beijing and Zhejiang Province.

The interview results show that the enrollment policy and economic level between provinces have led to differences in development. Hunan and Guangdong provinces are mainly affected by the enrollment policy. Beijing and Jiangsu provinces are mainly affected by the economic level. And the enrollment policy is more influential than the economic level.
Regional Characteristics of Middle Schools Group

Sports performance is the comprehensive performance of athletes’ competitive ability. In this study, the top 8 in each group of the 2018 National Student Orienteering Championship were selected and were assigned 9,7,6,5,4,3,2,1 respectively to evaluate the competitive level of each province by total score and average score.

Junior School Group

The top 8 of mini-orienteering, sprint, and middle distance orienteering are chosen and assigned for the statistic. The results of Guangdong and Hunan are outstanding in the competition, followed by Beijing and Jiangsu. The survey results show orienteering started early in junior high school in Guangdong and Hunan provinces (Figure 2A). Students good at orienteering can reduce the requirements in the entrance examination for high school. Orienteering started late in Beijing and Jiangsu provinces but developed rapidly in recent five years. There is great potential for the competition Level.

High School Group

The athletes in the high school group mainly come from Guangdong, Hunan, Henan, Beijing, and Sichuan provinces. The number of participants is large in Guangdong and Hunan provinces. The top 8 of mini-orienteering, sprint, and middle distance orienteering are chosen and assigned for the statistic. The statistical result displays the sports achievements were outstanding in Guangdong and Hunan provinces, followed by Beijing and Jiangsu provinces (Figure 2B).
The result of the interview shows that orienteering started earlier in high school in Guangdong and Hunan provinces. Both provinces have listed orienteering as a test event for high-level athletes. However, it started late in Henan and Sichuan. Both provinces also carry out the same policy, so their orienteering has developed rapidly in recent 5 years. Orienteering has made rapid progress in Beijing’s high schools. Although orienteering has not been included in the high-level test project in Beijing, some schools recruit high-level orienteering athletes by sharing the enrollment quota with track and field.

By comparing the number of participants and sports results between provinces, middle school orienteering athletes are mainly concentrated in Guangdong and Hunan provinces in China. Their competition level is obviously higher than other provinces. The average score of each athlete in Guangdong Province was significantly higher than that in Hunan Province. The results show that the training efficiency of Guangdong Province is higher.

**Elite College Athletes Group**

Orienteering is a non-Olympic sport. There is no three-level talent training system in sports system. In order to solve the problem of the shortage of Chinese orienteering athletes, the Ministry of Education selected 18 colleges to recruit high-level sports teams nationwide. These 18 teams belong to the elite group of colleges in the National Student Orienteering Championship.

The statistical result displays that elite athletes have a higher competitive level in Tianjin and Beijing (Figure 2C). This phenomenon breaks the monopoly of the middle school group in Hunan and Guangdong province. The highest score per capita was in Tianjin. Orienteering in Tianjin Middle School is not ideal, but its elite athletics rank first in China. This special phenomenon deserves further study.

**General College Group**

The athletes from college I, college II, college III, junior colleges, and PE Institutes have no professional training experience of orienteering before entering colleges. These students participate in training mainly for physical education. So these five groups are combined and referred to as the general college group to distinguish from the college elite group.

Statistical result display colleges from 24 provinces across the country signed up for the competition. It has covered two-thirds of the provinces in China. Orienteering has been widely developed in colleges in China. Orienteering is widely carried out in colleges in Guangdong Province and Zhejiang Province (Figure 2D).
Characteristics of Talent Flow among Different Provinces

Origin of Elite Athletes

In order to further study the characteristics of the flow of orienteering talents, 117 athletes of elite group were investigated on their origin. Result Display that 65 athletes from Hunan, 30 athletes from Guangdong, 7 athletes from Sichuan, 4 athletes from Jilin, 2 athletes from Guizhou, Shandong, Zhejiang respectively. The result display that the elite athletes from Hunan and Guangdong provinces account for 80% of the total number of elite Colleges group. Both Hunan and Guangdong provinces are the reserve training bases for orienteering talents in China.

Characteristics of Competitive Talents Flow

Previous studies have shown that both Hunan and Guangdong provinces are the important bases for training reserve in China. Through the analysis of the flow of reserve talents in the two provinces, We can understand the growth path of Chinese high-level athletes[8].

Flow Direction of Athletes from Hunan Province

Teenagers grow into excellent orienteering talents through the training of junior high school stage. Later, after sports Ability Test, the athletes are diverted to the colleges all over the country (Table 1). In addition to attending local colleges, most of the other athletes went to Beijing, Shandong and Zhejiang provinces (Figure 3A).
Table 1. Flow direction of athletes from Hunan province.

| Province | Bei | Guang | Si | Gui | Jiang | Ji | Shan | Zhe | Hu |
|----------|-----|-------|----|-----|-------|----|------|-----|----|
| Athlete  | 11  | 5     | 2  | 2   | 3     | 3  | 8    | 8   | 23 |
| Rate     | 17% | 8%    | 3% | 3%  | 5%    | 5% | 12%  | 12% | 35%|

Flow Direction of Athletes from Guangdong Province

Through systematic training in junior and senior high schools, young athletes from Guangdong province have grown into excellent orienteering talents. After the elite athlete test, Qualified athletes are streamed to colleges and universities all over the country(Table 2). Except for studying at Shenzhen University, other athletes went mainly to Beijing, Tianjin and Zhejiang Province(Figure 3B).

Table 2. Flow direction of athletes from Guangdong province.

| Province | Gui | Guang | Bei | Zhe | Tian | Jiang | Hu |
|----------|-----|-------|-----|-----|------|-------|----|
| Athlete  | 1   | 7     | 7   | 3   | 5    | 3     | 4  |
| Rate     | 3%  | 23%   | 23% | 10% | 17%  | 10%   | 13%|

Figure 3. Direction of talents flow.

The flow of talent comes from Guangdong and Hunan provinces, To a certain extent, it also explains the phenomenon of large contrast between the movement of the middle school group and the high school group in Beijing, Tianjin and Zhejiang provinces. Orienteering reserve personnel training system is not perfect in the above provinces. Cross-regional introduction of high-level athletes can not only enhance their competitiveness, but also promote local orienteering popularization.

Characteristics of Economic Talents Training System

In china, orienteering reserve talents are mainly concentrated in Hunan and Guangdong, other
provinces develop relatively slowly. Resulting in excessive reliance on reserve talents in Hunan and Guangdong provinces. The channel of reserve talents is too single and narrow.

However, 18 elite colleges are all over the country, the colleges set up a network for orienteering development. Colleges orienteering are widely distributed but it is over-concentration in the middle school group. The training channel of orienteering talents presents “funnel” shape.

**Conclusion**

In the secondary school group, the development of orienteering is unbalanced among provinces. Only 1/3 of the provinces in the country registered to participate in the competition. Enrollment policy is the main driving force for the popularization of orienteering. In the College Group, Orienteering is well popularized. Two-thirds of the provinces in the country signed up for the competition.

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