

Folk sports culture heritage and development prospects

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Abstract. Folk sports culture is an integral part of Chinese culture, embodies the Chinese culture has a long history and the era characteristics. In the current rapid development of material culture, protect the folk sports culture, make the old culture continue to spread, is a new generation of young people's mission in unavoidable. In this paper, the folk sports culture heritage and development prospect were studied. First of all, in the use of statistical and mathematical curve fitting method, comprehensive analysis of the current situation of folk sports investment and the crowd's known in the folk sports. Secondly, using the variational method in the most value principle, the maximum value of the folk sports participation theory is studied. Thus conclude that the masses of rubber band skipping, jump rope, kick the shuttlecock ball, the lion dance, dragon boat racing, the mass known as high degree of the project, such as flying kites kumite gyro, and rolled a hoop with less familiar, swing, folk sports investment and inheriting problems remain to be solved at the present time. In the people's living standards and folk sports facilities construction investment permitted conditions, in theory to participate in the number of folk sports biggest percentage can reach 69.8%. In order to further promote the development of folk sports, should actively encourage people involved in the folk sports, play the role of the masses.

1 Introduction

As one part of Chinese sports, folk custom sports culture gets closest to masses life, is one kind of sports events with most national characteristics. But due to the development of era, lots of folk custom events has nearly lost, many youth knows little about Chinese folk custom sports culture.

Yan Wei in the article "Century Chinese folk custom sports research review and outlook", he found that current society Chinese folk custom sports from starting to preliminary development, it went through tortuous process, spiral climbed and finally realized comprehensive development. The paper viewed in currently fast pace of lifestyle, researched current environment Chinese folk custom sports development trend, and carried out practical investigation, data handling, finally got the result: in order to strengthen folk custom sports construction, it must focus on different folk custom sports cases researching, continue to grasp and solve issues that hinder folk custom sports development, on this basis, it put forward folk custom sports future development trend to provide important theoretical references for Chinese folk custom sports development.

Zhang Zhi-Cheng in the article "Chinese folk custom sports development status analysis", analyzed Chinese folk custom sports status advantages, disadvantages, opportunities and problems to be confronted, studied and pointed out corresponding solutions. The paper through interviewing schools, collected urban and rural residents satisfaction on current stage folk custom sports and nation

attentions on folk custom sports, finally got conclusion: folk custom sports basically met public demands, it possessed 5000 years cultural deposits, but some public still lacked of recognition on folk custom sports, and nation investment on urban and rural sports was imbalanced. It suggested spreading folk custom sports culture through modern media especially by network. Zhang Guo-Dong in the article "Chinese folk custom sports development status and countermeasures research", under the social environment of urban and rural construction harmonious and steadily development, researched on economy and folk custom sports culture harmonious and sustainable development. The paper through utilizing investigation and researching methods, analyzed contemporary folk custom sports was one kind of vivid characteristic, plentiful and various compositions folk custom sports activity, and then put forward it should gradually establish folk custom sports system, strengthen national administrative management on folk custom sports and arrive at realistic folk custom sports culture and economy integration.

The paper starts from folk custom sports culture inheritance and development prospect, utilizes curve fitting method and variational method extremum principle, makes quantitative analysis of folk custom sports culture status, and studies folk custom sports culture participants' amount maximum value in the perspective of theory to make theoretical contributions to folk custom sports culture development and inheritance.

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2 Curve fitting model-based folk custom sports investment status

With the development of economy and advancement of times, more and more folk custom sports events have lost. Up to now, folk custom sports that still exist are mainly spinning top beating, rubber band skipping, rope skipping, shuttlecock kicking, earthbags flinging, iron-hoop rolling, dragon-boat racing, lion dancing, kite flying, swinging and so on. Folk custom sports is an important part of Chinese

sports, its development has important significances in Chinese rural sports and urban and rural development. For folk custom sports development, its investment is a main factor that affects its development. Government investment is crucial to folk custom sports infrastructure, field construction.

Below Table 1 is Chinese folk custom sports investment status in year 2007~2012, data is from general administration of sport of China, China's statistical yearbook, internet relative investigation report.

Table 1. Folk custom sports investment status.

Year	2007	2008	2009	2010	2011	2012
Folk custom sports investment/ten thousand Yuan	69.32	72.45	65.17	73.68	78	72.14

Known a group of data (two dimensions), that plane n pieces of points $(x_i, y_i), i=1,2,3,\dots,n, x_i$ are different from each other, assume there is a curve function $y=f(x)$, let $f(x)$ to get closer to known all original data's data figure points positions in one relation criterion, so that it can get curve fitting goodness. In general, we use polynomial function by least square method to solve the fitting function.

2.1 Data processing

Utilize SPSS software, process with above Table 1 original data, and then get folk custom sports investment fitting curve. It is clear that present Chinese folk custom sports investment lingers, folk custom sports inheritance is still by far a problem to be solved. Presently, folk custom sports development among masses life is not so extensive, many folk custom sports events have lost, folk custom sports position in people's mind is still not going well, and then also restricts folk custom sports culture inheritance to certain extent.

2.2 Folk custom sports events satisfaction analysis

Folk custom sports mainly spinning top beating, rubber band skipping, rope skipping, shuttlecock kicking, earth bags flinging, iron-hoop rolling, dragon-boat racing, lion dancing, kite flying, swinging and so on. It has various forms and abundant in contents, gets closer to masses life and is loved by masses. But in recent years, with constant advancement of times, some folk custom sports events have gradually been forgotten by people, iron-hoop rolling, lion dancing, spinning top beating and other events have become memory of the old, even some youth know little about them.

Below Figure 1 is Chinese masses' familiar extent on above several kinds of folk custom sports events, and the data is from relative literatures information and internet investigation report. Draw above table into statistical figure, as following Figure 1:

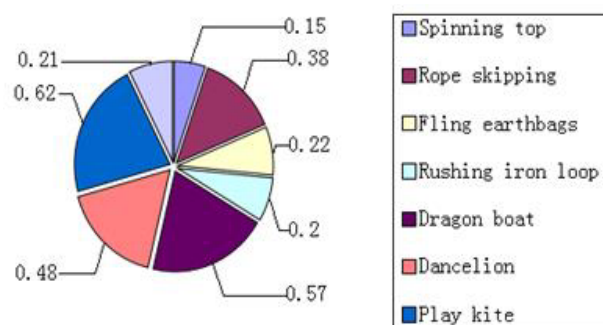


Figure 1. The picture of familiar extent.

By above pie figure, it is clear that in spinning top beating, rubber band skipping, rope skipping, shuttlecock kicking, earthbags flinging, iron-hoop rolling, dragon-boat racing, lion dancing, kite flying, swinging and other folk custom sports activities, rubber band skipping, rope skipping, shuttlecock kicking, dragon-boat racing, lion dancing, and kite flying masses familiar extent is higher, they are relative completely preserved, while spinning top beating, iron-hoop rolling, swinging familiar extent is lower, which also shows these kinds of activities inheritance has suffered influence, most of people don't know more about them.

3 Variational method-based folk custom sports events and participants amount maximization research

In order to study Chinese folk custom sports culture inheritance, and masses development prospect in participating in folk custom sports events, now utilize variational method to study them, establish mathematical model, and then get folk custom sports events participants maximum value under the circumstance of current existing economic conditions and construction base.

3.1 Variational method model establishment and solution

Model construction and solution:

According to above problems hypothesis, it can get in case that allowed by people's living standards and folk custom sports facilities construction investment, number of participant maximization state equation:

$$\begin{cases} \frac{dx(t_1)}{dt_1} = -m(t) + g(t)u(t) \\ x(0) = x_0 \end{cases}$$

In above state equation, among satisfied $0 \leq u(t) \leq U$ function set W , look for optimal control strategy $u^*(t)$.

It solves: $x(t) = 4(1+t_s)^{\frac{1}{2}} + 96 - 2t$, $t_f = 2(1+t_s)^{\frac{1}{2}} + 28$

Get: $t_s = 10.6, t_f = 69.8$

Then get optimal control strategy as:

$$u^*(t) = \begin{cases} 1, & 0 \leq t \leq 10.6 \\ 0, & 10.6 \leq t \leq 69.8 \end{cases}$$

3.2 Result evaluation

By above variational method analysis, it is clear that allowed by people's living standards and folk custom sports facilities construction investment, number of participants in folk custom events percentage maximum value is 69.8%. In spinning top beating, rubber band skipping, rope skipping, shuttlecock kicking, earthbags flinging, iron-hoop rolling, dragon-boat racing, lion dancing, kite flying, swinging numerous events, masses participation is basic impetus to preserve and inherit folk custom sports culture, only national consciousness promotes, they focus on protection of folk custom sports culture, then can fundamentally carry forward folk custom sports events.

4 Conclusion

The paper firstly makes comprehensive analysis of folk custom sports investment status, starts from statistical figure and mathematics curve fitting two methods, learns that presently Chinese folk custom sports investment

lingers, and on this basis, it studies masses familiar extent on folk custom sports. It puts forward that folk custom sports investment and inheritance problems are by far the problems to be solved, masses familiar extent on rubber band skipping, rope skipping, shuttlecock kicking, dragon-boat racing, lion dancing, kite flying and other public events are higher, while on spinning top beating, iron-hoop rolling, swinging are lower. The paper bases on comprehensive analysis of folk custom sports inheritance and development status, utilizes variational method's extremum principle, studies on folk custom sports events and participants maximization on the condition that people's living standards and folk custom sports facilities construction investment permit, and gets conclusions: on the limited conditions, folk custom sports events participants amount percentage maximum value can arrive at 69.8%. The masses are carriers of folk custom sports culture inheritance, only masses promote consciousness of protecting culture, strengthening folk custom sports culture inheritance, then it can let existing folk custom sports culture to continue to preserve so as not to lose.

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