

Analysis on the Knowledge Map of the Application of Music in Chinese Sports

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Abstract: Objective: To analyze the current situation, hotspots, and trends in the application of music in China's sports field since 2000 through a knowledge map. Methods: Using "music" and "sports" as the subject words, the literature from January 1, 2000 to December 31, 2022 included in the Chinese National Knowledge Infrastructure (CNKI) database was searched, and the literature was analyzed using Cite Space. 6.1. R1 software. Results: A total of 500 articles were included in the analysis. (1) Scholars in China who study the application of music in the field of physical education mainly focus on specific fields such as sports dance, physical education, sports, primary school physical education, artistic gymnastics, and carry out research work on the physical education classroom teaching process of college students and primary school physical education. (2) The research on the application of music in the field of physical education in China has gradually transitioned from an initial stage to an advanced stage that focuses on the exploration of application models, forming hot areas such as research on musical means, application strategies, and teaching strategies. (3) The authors are from music university and sports university, but the degree of cooperation between authors and institutions is low.

1. Introduction

In the process of music creation and application, there is a very urgent demand for music in fields such as competitive sports competitions, physical education activities, and community leisure sports. To a large extent, music has been driving the progress of sports industry^[1-3]. Taking world-renowned sports events such as the Olympic Games and the Football World Cup as examples, the significance of the theme song for the event itself has far exceeded the artistic value carried by a song, and often has rich functional values such as disseminating the Olympic culture, inheriting the sports spirit, and promoting the national characteristics of the host country^[4,5]. To explore the role of music creation in promoting the progress of sports in China since the 21st century from a global perspective, it is proposed to publish papers on the application of music in the field of sports in China for more than 20 years (January 1, 2000 to December 31, 2022), conduct a knowledge map analysis, and clarify the current status, hot spots, and future trends of research on the application of music in the field of sports in China.

2. Data and Methods

2.1 Literature Search

The search object are simplified Chinese journal articles in the database CNKI, with the subject words "Music" AND "Sports" AND "Events", etc. The search start and end time is from January 1, 2000 to December 31, 2022. A total of 1702 journal articles were obtained, and a total of 500 qualified articles were selected.

2.2 Statistical Methods

Cite Space. 6.1. R.1 software handles the co-occurrence analysis of keywords, keyword

clustering, prominent words, authors, and institutions of retrieved documents.

3. Results and Analysis

3.1 Annual Distribution of Documents Issued

Figure 1 shows that over the past 20 years, the number of published papers on the application of music in the field of sports in China has been relatively stable, indicating that research in this field has a good sustainability, and the research enthusiasm of scholars in this field has not decreased.

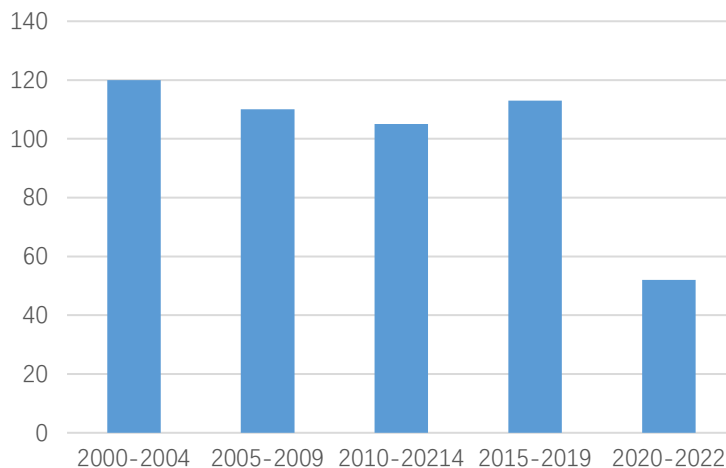


Fig.1 Distribution of Literature on the Application of Music in China's Sports Field from 2000 to 2022

3.2 Author Characteristics and Co-Occurrence Network

Table 1 Ranking of Authors of Applied Research on Music in China's Sports Field

Ranking of published documents	Author's Name	Number of documents issued	Percentage of documents issued (%)
1	Liu Weijun	4	0.8
2	Du Juan	3	0.6
3	Guo Hui	3	0.6
4	Zhou Na	3	0.6
5	Han Han	2	0.4
6	Lei Yuxuan	2	0.4
7	Zheng Yundan	2	0.4
8	Tan Xiaoxue	2	0.4
9	Xu Gangbo	2	0.4
10	Xiao Liqin	2	0.4

Liu Weijun, the author with the highest number of published articles, has published 4 articles. The number of documents issued by the remaining authors is 2-3 respectively (Table 1). The minimum number of core authors' posts is calculated to be $N=0.749 * \sqrt{N_{pmax}}$ (N_{pmax} is the highest output of authors' posts)^[6]. All authors in this study are core authors. The results show that the stable core author group for the application research of music in China's sports field has not yet fully formed.

Only a small number of scholars, such as Xiao Lijin and Wang Zihao, have collaborated on relevant research, with a number of articles ranging from 1-2, but the publication time is relatively recent, making them a relatively active group of scholars in this field. Many other scholars have independently conducted research work. It is suggested that most music scholars in China have not conducted effective cooperation in the research on the application of music means in the field of sports.

3.3 Institutional Characteristics

Table 2 Ranking of Publishing Institutions for Music Application Research in China's Sports Field

Ranking of published documents	Name of institution	Number of documents issued	Percentage of documents issued (%)
1	Guangzhou Institute of Physical Education	9	1.8
2	Xinghai Conservatory of Music	6	1.2
3	School of Physical Education, Zhengzhou University	4	0.8
4	Nanjing Sport Institute	3	0.6
5	Tianjin Institute of Physical Education Sports Art Department	3	0.6
6	Shanxi University	3	0.6
7	School of Music and Dance, Qiqihar University	3	0.6
8	Wuhan Institute of Physical Education	3	0.6
9	Xianyang Normal University	3	0.6
10	Experimental Kindergarten of Fujian Normal University	3	0.6

Table 2 shows that both music and physical education institutions account for a considerable proportion. The first ranked Guangzhou Institute of Physical Education has issued 9 articles, 3 more than the second ranked Xinghai Conservatory of Music. The number of documents issued by other institutions is 4-3 respectively. The results suggest that in addition to scholars from professional music colleges and departments who focus on the application of music in the field of Chinese sports, scholars from sports colleges and departments also actively participate in the research of music and sports, and have formed relatively fruitful academic achievements^[7-8].

The department of sports arts established in China's sports colleges is a professional institution for cultivating sports art talents. Art course teachers are trained by art colleges and universities. In recent years, with the continuous growth of the academic level of this group of sports art scholars, they have become the backbone of the applied research of music in the field of Chinese sports, and have promoted the research level of Chinese sports art to a higher level.

Through in-depth analysis, it is found that conservatories, as the main academic research institutions for music research, often neglect communication and cooperation with the studied objects in the process of conducting research in the field of sports. As a newly emerging research subject, sports colleges have not demonstrated the desire to actively cooperate with music professional institutions^[9-10].

3.4 Keyword Analysis

Table 3 shows that the keywords used in research on the application of music in China's sports field have the highest frequency of occurrence, respectively, music, sports dance, and sports teaching. Since 2005, the academic community has begun to focus on music, sports dance, and physical education as research focuses and hotspots, conduct in-depth research and publish a large number of research papers, becoming the mainstream of music application research in China's sports field^[11,12].

Table 3 High Frequency Keyword Ranking of Music Application Research in China's Sports Field

Ranking	Keyword	Frequency	Centricity	Time
1	Music	169	0.60	2000
2	Sport Dance	84	0.36	2005
3	Physical teaching	76	0.44	2005
4	Physical education	33	0.23	2006
5	Function	26	0.09	2000
6	Physical education classroom	20	0.09	2011
7	Primary school physical education	19	0.06	2013
8	Teaching	17	0.06	2006
9	Sports	13	0.11	2006
10	Application	13	0.05	2005

From the results of keyword clustering analysis using the LIR algorithm (Table 4), the top ten high-frequency keyword clusters are: sports dance, sports teaching, influence, interaction, college students, sports music, sports, primary school sports, sports classes, and aerobics, reflecting that scholars have invested a lot of energy in the above research directions, and have formed a hot and leading direction for the application of music in the field of sports in China [13.14].

Table 4 High-Frequency Keyword Clustering List of Music Application Research in China’s Sports Field

Order number	size	silhouette	Mean(year)	Top Terms (LSI)
0	51	0.912	2013	(14.62) Sports dance; (12.92) Localization; (10.92) Dance; (10.34) Aesthetic feeling; (10) Clothing
1	42	0.932	2012	(11.67) Physical education; (10) Application in teaching; (8.02) Physical education; (8) In teaching; (8) Effects
2	38	0.912	2011	(17.92) Impact; (14.76) Application; (13.14) Sports dance; (12.92) College physical education; (12.49) Action
3	29	0.962	2012	(10) Interaction; (10) Music creation and editing; (10) Music education; (10) Integration of sports and art; (8.83) Aesthetics
4	23	0.875	2012	(10) College students; (10) Feasibility; (10) Music Academy; (5.36) Students; (5) Implicit moral education
5	21	0.967	2016	(15) Sports music; (10) Rugby; (5) Motivational characteristics; (5) A composer; (5) Content division
6	20	0.933	2013	(12) Sports; (9.6) Application; (9) Sports; (6.92) rhythm; (6.83) Music rhythm
7	19	0.863	2017	(14.24) Primary school physical education; (10.75) Classroom teaching; (10.34) Musical means; (10.25) Strategy; (10) Application method
8	19	0.864	2014	(11.17) Physical education classroom; (10.07) Physical Education; (5.47) Sports; (5) Reasonable selection; (5) Demonstration class
9	16	0.892	2010	(10.34) Aerobics; (10) Rhythmic gymnastics; (10) Music teaching; (8.83) Art; (5.36) Rhythm

Further analysis of the temporal map of emergent words found that primary school physical education lasted longer than other research hotspots, and until now, it has continued to become a hot research direction in the application of music in the field of physical education in China. The same situation has also emerged in hot areas such as musical means, application strategies, teaching strategies, and dance teaching. as shown in Fig. 2.

Top 10 Keywords with the Strongest Citation Bursts

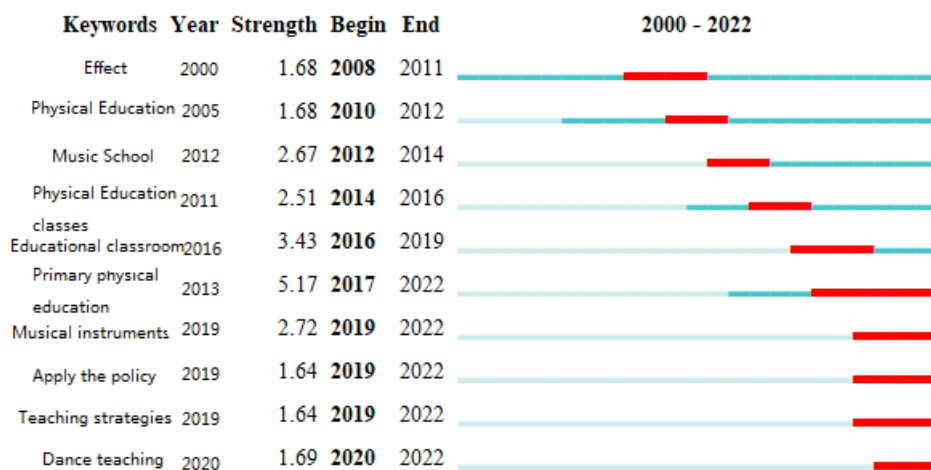


Fig.2 Key Word Emergence Map of Music Application Research in China’s Sports Field

4. Discussion

4.1 Research on Music Methods, Application Strategies, and Teaching Strategies Has Received Much Attention

In this study, the words “music means”, “application strategies”, and “teaching strategies” that appear in the keyword highlighting words have also appeared in other keyword clusters for many times, respectively, reflecting the continuous focus of research on the application of music in China’s sports field. Scholars in this field have gradually transitioned from the initial stage of calling for the use of music to promote sports development to a higher stage of exploring how to effectively use music to promote sports progress. In other keyword clusters, key words such as “dance teaching” and “primary school physical education” are highlighted, indicating that musical means have been effectively applied in these fields.

4.2 Research Institutions Exhibit Diverse Distribution Characteristics

Independent music colleges and art departments in comprehensive universities are the main frontiers of music research, with professional music teachers serving as the backbone group of music research. Sports art teaching units in sports colleges cultivate sports art talents such as sports dance. In order to explore the law of cultivating sports and art talents, sports and art teachers have conducted in-depth research on the teaching methods and training models of music in the process of fostering sports talents, and published a large number of high-level research papers. They have gradually become a team of scholars comparable to music colleges, greatly enriching and expanding the field of music research. This has also led to a diversified distribution of research institutions for the application of music in the field of sports.

4.3 The Cooperative Relationship between Researchers and Research Institutions Needs to Be Further Improved

In this study, scholars from both music schools and the sports arts department of physical education institutes showed significant independence in their research. Most of the scholars in this study have shown a very low level of participation in collaboration within institutions and in conducting research with other institutions. As an interdisciplinary research field, to accurately grasp the internal relationship between music and sports and overcome the academic barriers between the two disciplines, it is essential for researchers to develop interdisciplinary cooperation and exchange, and effectively play the role of music in pushing sports.

5. Conclusion

The research on the application of music in the field of physical education in China mainly focuses on sports dance, physical education, and other fields, emphasizing the application value and role of music in the process of physical education classroom teaching.

The latest hot spot in the application research of music in the field of sports in China focuses on the research fields of music means, application strategies, and teaching strategies, and has gone from simply emphasizing application to exploring the advanced stage of application models.

In China, there has been a good situation in which music institutions and sports institutions have jointly participated in the application and research of music in the field of sports, but there are also serious deficiencies in collaborative research between scholars and research institutions.

References

- [1] Li Dan. Research on the Multiple and Integral Characteristics of Olympic Theme Songs. *Journal of Guangzhou Institute of Physical Education*, no.06, pp.20-23, 2021.
- [2] Zou Huan, Li Xiyao. Perceived dimensions of the impact of sports event theme songs and their impact on event evaluation. *Journal of Shanghai Institute of Physical Education*, vol.46, no.12, pp.19-21, 2022.

- [3] Wang Jin. Research on the influencing factors of China's marathon sponsorship market based on grounded theory. *Sports and Science*, no.01, pp.31-33, 2021.
- [4] Zheng Yingjie. Research on the Cultural Rights of Chinese Sports Music in the Context of the Times. *Journal of Physical Education*, vol.29, no.02, pp.15-17, 2022.
- [5] Wu Yan. Looking at the Development of Sports Music from the Theme Song of the Olympic Games. *Music Creation*, no.09, pp.18-20, 2017.
- [6] Hu Liyong. Evaluation of core elements of highly-cited papers in the field of library and information based on Price's Law. *Library Research*, vol.46, no.4, pp.113-117, 2016.
- [7] Zheng Yundan. Research on the Problems and Countermeasures of Music Accompaniment in the Performance Items of Traditional Ethnic Sports Meet. *Modern and Ancient Culture and Creativity*, no.04, pp.13-17, 2021.
- [8] Zheng Shaohui. Integrating Music and Physical Education to Create a New High Quality Physical Education Classroom. *Anhui Education and Research*, no.36, pp.32-34, 2021.
- [9] Xu Gangbo. Research on Functional Training in Physical Education Classrooms: A Case Study of Zhejiang Conservatory of Music. *Sports Perspective*, no.04, pp.9-11, 2021.
- [10] Guo Qifa. A new curriculum for exploring the effective integration of music and physical education. no.33, pp.20-21, 2020.
- [11] Yu He, Jin Shunai. Research Status and Prospect of the Integration of Sports and Music. *Sports Culture Guide*, no.09, pp.22-24, 2019.
- [12] Tian Yingjuan. The Role of Music in Sports Dance Teaching: A Review of Sports Dance. *Chinese Journal of Education*, no.06, pp.10-12, 2019.
- [13] Zheng Hao. Application of Music Elements in Primary School Physical Education Teaching and Training. *Pupils (Second Edition)*, no.03, pp.14-15, 2022.
- [14] Liu Lingling. Strategies for the Application of Music in Primary School Physical Education Classroom Teaching. *Contemporary Family Education*, no.32, pp.10-11, 2021.