Characteristics and Trends of Medical-Physical Integration Research-Econometric Analysis Based On CNKI Data (1998-2020)

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Abstract. This article uses the visualization software CiteSpace to take the 272 medical-to-physical literatures of China Academic Journals Online Publishing Database (CNKI) as the data source. It attempts to construct knowledge about medical-to-physical integration by quantifying the time of publication, authors, institutions, and keywords. Map and analyze it. The study found that the exploration of medical-physical integration in the context of a healthy China is based on the practice of medical-physical integration. In-depth research is a research hotspot. Based on a comprehensive analysis of the knowledge map of medical-physical integration, the future academic circles on the "medical and physical education reform in various fields and colleges, training professionals" and "improving the masses with sports to promote health concepts, building a healthy China" is likely to become a research hotspot on this topic.

Keywords: Medical-Physical Integration, CiteSpace, Visualized Analysis, Mapping Knowledge Domains

Health is the most concerned and most realistic issue of vital interests of the people, and the state attaches great importance to protecting the interests of the people. President Xi Jinping pointed out in the report of the 19th National Congress of the Communist Party of China that the implementation of a healthy China strategy, perfecting the national health policy, and providing the people with a full range of full-cycle health services. In 2019, the State Council issued the "Opinions of the State Council on Implementing the Healthy China Action" emphasizing the establishment of a Healthy China Action Promotion Committee at the national level. The Fourth Plenary Session of the 19th Central Committee pointed out that it is necessary to strengthen the institutional guarantee for improving the people's health level, and "Healthy China" has been elevated to a national strategy. However, in the real society, "civilization disease" makes people's bodies in a sub-healthy state. Environmental pollution, food safety, infectious diseases and other health incidents also threaten the health of the people. The new crown pneumonia that broke out in Wuhan, Hubei is even more so. It poses a major challenge to the safety of people's lives. In the course of the comprehensive
implementation and in-depth advancement of the Healthy China strategy, "Integration of Medicine and Physical Fitness" has become an important way to build a healthy China. Therefore, it is of great theoretical value and practical significance to comb and analyze the relevant research status of the integration of medicine and sports. With the help of CiteSpace metrical analysis tool, this paper conducts a metrical analysis and draws a knowledge map of 272 documents related to the integrated medical and physical research in the Chinese Academic Journals Network Publishing Library (CNKI), trying to dig out the research hotspots and frontiers of this field, and judge Future research trends will provide ideas and directions for my country's medical and physical integration research.

1. Data Source and Research Design

1.1. Data Source

Articles are searched on CNKI's full database by topic search. The search time is September 9, 2020. The search formula is set as: Subject=Integration of Medicine and Sports or Combination of Sports and Medicine (precise matching). A total of 398 articles were retrieved, including 324 journal papers, 25 dissertations, 43 conference papers at home and abroad, and 6 important newspaper articles. After excluding repetitive, non-keyword-free newspaper documents and other non-research documents, 272 documents were obtained as research objects, exported in "Refworks" format, and then retrieved documents were named in "download_xx" format, through data conversion A file with a suffix of ".txt" is formed, and the final file is the input data needed in CiteSpace, which is used as the data source for the later construction of the knowledge graph[2].

1.2. Sample Analysis

Judging from the time-quantity distribution diagram of the effective literature retrieved from the search (Figure 1), the number of research literatures related to "Integration of Medicine and Body" has shown a linear increase overall. Among them, with 2006 as an important turning point, the amount of publications before 2006 was less, and the academic circles paid much less attention to the "integration of medicine and the body". However, since 2006, people have gradually paid attention to health issues. This period was in a tortuous development process. With the emergence of social aging issues and the country's planning and deployment of health issues, the number of relevant research documents after 2016 has increased rapidly. The "Healthy China" development strategy proposed by General Secretary Xi Jinping in the report of the 19th National Congress of the Communist Party of China in 2017, and the "Opinions of the State Council on Implementing the Healthy China Action" issued by the State Council in 2019 have greatly promoted the academic research on the integration of medicine and sports, The growth rate in 2019 is close to 100%.

![Figure 1. Time and quantity distribution diagram of related literature on the integration of medicine and body](image)

2. Knowledge Graph Analysis of Research on Integration of Medicine and Sports
Through the operation of CiteSpace, the knowledge atlas of the key words of medical body binding can be obtained\[3\].

2.1. Research Hotspots: Analysis of Keyword Frequency and Betweenness Centrality

Research hotspots refer to the scientific issues or topics discussed in a group of literatures with a relatively frequent and relatively large number of internal connections in a certain period of time[4]. Intermediary centrality is a centrality index that measures the control of resources by network nodes, reflecting the role of a bridge between one node and other nodes, and can be understood as a key position of information circulation. The higher the betweenness centrality, the higher the degree of connection between the keyword and other connected keywords, that is, the greater the intensity of the information transmitted by the keyword. It is generally believed that keyword frequency and betweenness centrality can reflect research hotspots[5]. CiteSpace can be used to obtain the keyword feature distribution table (see Table 1), including two indicators of frequency and betweenness centrality, and sorted by frequency. The results showed that there were 14 keywords with word frequency $\geq 5$, among which the combination of sports and medicine appeared the most. It can be seen from Table 1 that the research hotspots on the integration of sports and medicine are mainly distributed in two aspects:

Table 1. Keyword feature analysis (frequency $\geq 5$)

| No. | Key words                              | frequency | betweenness centrality |
|-----|----------------------------------------|-----------|------------------------|
| 1   | Combination of sports and medicine     | 135       | 0.45                   |
| 2   | Physical Medicine Fusion               | 39        | 0.17                   |
| 3   | Combination of Medicine and Body       | 35        | 0.22                   |
| 4   | Healthy China                          | 33        | 0.28                   |
| 5   | Medical school                         | 20        | 0.28                   |
| 6   | National Health                        | 14        | 0.21                   |
| 7   | Exercise prescription                  | 13        | 0.13                   |
| 8   | Community                              | 10        | 0.04                   |
| 9   | Health promotion                       | 9         | 0.06                   |
| 10  | Path                                   | 8         | 0.28                   |
| 11  | Mode                                   | 7         | 0.01                   |
| 12  | Integration of Sports and Medicine     | 6         | 0.15                   |
| 13  | Teaching mode                          | 6         | 0.08                   |
| 14  | Urban community                        | 5         | 0.03                   |

1) Exploring the integration of medicine and sports under the background of healthy China

It can be seen from the table that the frequency and intermediary centrality of the keywords "healthy China", "health for all", "exercise prescription" and "health promotion" are all high in education. The "Healthy China 2030" Planning Outline released in 2016 pointed out that "strengthen the integration of sports and medicine, publish guidelines for sports and fitness activities, establish and improve a library of exercise prescriptions for different groups of people, different environments, and different physical conditions, and promote the formation of diseases that integrate sports and medicine. Management and health service model[6]" shows the close relationship between "health" and the integration of medical and physical education, which is an important field that scholars cannot ignore. On the one hand, as the background of the research on the integration of medicine and sports, Healthy China promotes the integration of medicine and sports into the national health work, and provides better health services. On the other hand, Healthy China is the ultimate goal of the integration of medicine and sports, requiring the integration of medicine and sports to combine the dual advantages of sports and medical treatment, provide personalized exercise prescriptions, guide the people to strengthen exercise, effectively intervene in diseases, and ultimately enhance the health of the whole people and improve the quality of life. The background and purpose of healthy China as a combination of medicine and sports is an inevitable and important hot spot in research.
2) Colleges and communities are the practical support for the integration of medical and sports
The keyword frequencies of "medical school", "community" and "urban community" are 20 times, 10 times, and 5 times respectively, and the intermediary centrality is 0.28, 0.04, and 0.03 respectively. These data indicate that professional schools and communities are medical One of the major research hotspots in integrated research is an important support for the practice of integrated medicine and sports. The frequency of medical schools is relatively high. There are two main points in the research of medical schools. The first is to reform the teaching plan of the medical school, cultivate excellent medical and physical talents, and inject fresh blood for the development of healthy China. The second is to reform the school physical education curriculum by applying the teaching method of combining medical and physical education, thereby enhancing the physical fitness of students. The community is also an important support for the practice of the medical-physical integration model. The community is the basic unit of residents' lives and is closely connected with people's lives. The practice of integrating medicine with sports in the community can directly publicize the concept of integrating medicine with sports, increase people's awareness of this, and help the development of the model of integrating medicine with sports [7]. Researchers have also formed preliminary suggestions for the construction of integrated medical and physical therapy for different groups of people in the community. However, it is worth noting that most of the research on the integration of medicine and the body in the community is in the urban area, and there is little involvement in the grass-roots community. It is necessary to pay attention to the development of the model of the integration of medicine and the body in the grassroots community.

3. Analysis of Research Frontiers and Development Trends

Table 2. Keyword emergence information in the literature from 1998 to 2020 (top 20)

| No. | Key Words                              | Emerging Intensity | Time Span     | No.  | Key Words                | Emerging Intensity | Time Span     |
|-----|----------------------------------------|--------------------|---------------|-----|-------------------------|--------------------|---------------|
| 1   | Combination of Medicine and sport      | 9.3154             | 2010-2015     | 11  | Exercise prescription  | 1.2401             | 2015-2015     |
| 2   | National Fitness Medical school        | 2.3912             | 2016-2016     | 12  | Feasibility             | 1.2258             | 2016-2016     |
| 3   | Urban community                        | 2.2691             | 2006-2014     | 13  | Community Sports Public Service | 1.2258 | 2016-2016     |
| 4   | Community                              | 1.5646             | 2017-2017     | 14  | Strategy                | 1.2258             | 2016-2016     |
| 5   | Talent development Higher medical schools Health promotion model movement | 1.4723             | 2018-2018     | 15  | Teaching mode          | 1.2149             | 2011-2011     |
| 6   | Health                                  | 1.3299             | 2011-2011     | 16  | National Traditional Education Residents | 1.1781 | 2017-2017     |
| 7   | model movement                          | 1.3169             | 2014-2014     | 17  | Aging population Scientific fitness | 1.1781 | 2017-2017     |
| 8   | movement                                | 1.2776             | 2014-2014     | 18  | Residents              | 1.1781             | 2017-2017     |
| 9   | community                               | 1.2728             | 2016-2016     | 19  | Aging population Scientific fitness | 1.1781 | 2017-2017     |
| 10  | Physical Education                      | 1.2728             | 2011-2011     | 20  | Scientific fitness     | 1.1781             | 2017-2017     |

Source: According to CiteSpace software keyword highlighting test results. Researchers can scientifically understand the development and trends of the research field by grasping the research frontier, predict the future research direction, and then promote the research to develop in
a more in-depth direction. The keyword Burst Detection function in CiteSpace can identify the research frontiers of integrated medical and physical research, thereby predicting the future development direction of integrated medical and physical research. The article uses keyword emergence detection to obtain the top 20 highly emergent words shown in Table 2. The research frontier is reflected in these keywords. By analyzing the age span, mutation intensity, and similarity of 20 keywords, the author tries to propose the future development direction of the current medical and physical integration research mainly in the following two aspects.

3.1. Institutions in Various Fields Carry Out the Reform of Integrating Medical and Physical Education to Cultivate Professional Talents

It can be seen from the table that the keywords “talent training”, “higher medical schools”, “physical education courses” and “teaching models” are prominent, reflecting the reform of integrating medical and physical education in various professional colleges and The importance of “integrated” compound talents. The cultivation of “medical and physical integration” compound talents has high-tech content, and requires talents to have both basic skills and specialized professional skills; master medical technology and understand the physical therapy skill model[8]. The combination of medical and physical talents is an objective requirement for the implementation of the Healthy China 2030 strategy, and an important guarantee for improving the physical fitness of the whole people, improving the quality of life, and promoting the overall development of social health services. At present, the training of medical-physical talents is in the exploratory stage, and the teaching mode is still single, which is the traditional "medical-related major + social sports knowledge" model, and has not formed a comprehensive curriculum model[9]. The teaching staff of the combination of medical and physical education in related majors is weak, and there is a lack of a scientific professional teaching evaluation system. The social and economic construction in the new era urgently needs compound talents of "integration of medical and sports", and there is a long way to go to cultivate professionals in the integration of medical and sports.

3.2. Enhance the Idea of Promoting Health through Sports and Building A Healthy China

It can be seen from the table that the “health promotion model” and “exercise” have a higher prominence intensity, reflecting the importance of scholars on health issues and using exercise to promote health. The construction of a healthy China strategy is a current reality. It focuses on the role of physical fitness, strengthens sports guidance, and promotes the integrated development of physical fitness and medical culture, and promotes the formation of a disease management and health service model that integrates medicine and sports to give full play to science for all The positive role of fitness in health promotion, chronic disease prevention and rehabilitation[10]. Actively advocate a healthy and civilized lifestyle, establish the concept of general health and health, and promote the in-depth integration of national fitness and national health. It is urgent to promote the integration of medicine and sports. The means of sports are rich and varied exercises, and the means of medicine are various prescriptions. Through the combination of sports and medical systems[11], the scientific level of national fitness is improved, and the health concept of national fitness is formed, thereby providing methodological research and practical paths for building a "healthy China".

4. Conclusions and Reflections

The article uses the rural public health literature in the CNKI database as the data source, uses CiteSpace software to draw and visualize the knowledge map, and draws the following conclusions:

4.1. Research Hotspots of the Integration of Medicine and Sports

The exploration of the integration of medicine and sports under the background of healthy China, the practice support of the integration of medicine and the community, and the in-depth research of the integration of medicine and sports from theory to path are the main research hotspots in this field. As the background and ultimate goal of the research on the integration of medicine and sports, Healthy
China promotes integration of medicine and sports into the national health work and provides people with better health services. The implementation of the integration of medicine and sports is of great significance. Medical colleges, sports colleges, and communities are important support for the implementation of the medical-physical integration model. The main task of relevant professional colleges is to cultivate outstanding medical-physical professionals. The community is an important testing place for the medical-physical integration model.

4.2. Frontiers of Research on Integration of Medicine and Sports

The development direction of the field of integration of medicine and sports in my country is mainly concentrated in three aspects: First, colleges and universities in various fields carry out the reform of integration of medicine and sports to cultivate professional talents. The combination of medical and physical talents is an objective requirement for the implementation of the Healthy China 2030 strategy, and an important guarantee for improving the physical fitness of the whole people, improving the quality of life, and promoting the overall development of social health services. The second is to improve the people's concept of promoting health through exercise and build a healthy China. Actively advocate a healthy and civilized lifestyle, establish the concept of general health and health, and promote the deep integration of national fitness and national health.

The article data comes from the CNKI database. However, due to the uneven quality of the literature in the selected data, it may lead to deviations in the research and analysis. Future research can choose a variety of research and analysis software to confirm each other and ensure the research as much as possible, Authenticity and reliability.

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