

Characteristic Development of Sports Rehabilitation Major in Medical Colleges

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Abstract: Sports rehabilitation, as an important branch of the medical field, is committed to promoting the rehabilitation and improvement of human function through exercise and rehabilitation methods. The development of traditional sports rehabilitation majors' lacks practical operations, students lack practical abilities, and the curriculum is relatively single, lacking specificity. The research on the characteristic development of sports rehabilitation majors in medical colleges is based on the increasing demand for sports injuries and rehabilitation in current society, as well as the insufficient practice of sports rehabilitation majors. It aims to explore how to better carry out the construction and teaching practice of sports rehabilitation courses, and enhance students' professional literacy and practical abilities. Before implementing the characteristic development strategy, the percentage of students with a practical score exceeding 82 was only 8.20%. After implementing the characteristic development strategy, the percentage of students with practical scores exceeding 82 points increased by 26.3% to 34.50%. The research on the characteristic development of sports rehabilitation in medical colleges has broad social and educational significance, which can meet social needs, improve the competitiveness of medical colleges, and promote health education and scientific research.

1. Introduction

The sports rehabilitation program offered by medical colleges plays an irreplaceable role in solving the problems of aging population and increasing chronic diseases in China. With the continuous improvement of people's requirements for fitness, rehabilitation, and other aspects, sports rehabilitation has become an important discipline to meet this need. However, the development of major medical colleges in this area varies, and some schools have not yet fully developed their potential in this area. In this context, it is necessary to strengthen research on the characteristic development of sports rehabilitation majors in medical colleges.

With the aging and growing population, healthcare is facing an urgent shortage of doctors, which is crucial for the fields of physical medicine and rehabilitation. Because the skills of physical doctors in managing chronic diseases and functional outcomes are particularly relevant to the elderly population. Petriceks Aldis H. aims to document and analyze the number of physical

medicine and rehabilitation graduate medical education programs and positions recognized by the Medical Education Accreditation Committee. The results indicate that there has been an increase in physical medicine and rehabilitation graduate medical education, especially in pediatric rehabilitation and sports medicine. As professional and demographic trends shape this important medical profession, the future identity of physical medicine and rehabilitation would continue to develop [1]. The recovery of anterior cruciate ligament reconstruction requires an intensive postoperative rehabilitation process. Although the guidelines outline evidence-based rehabilitation recommendations, the actual practice model of physical therapists is still unclear. Greenberg Elliot M analyzed the current clinical practice as it is related to the progress of rehabilitation after anterior cruciate ligament reconstruction and the use of time and objective criteria [2]. Chan Catherine studied the safety and tolerability of an active rehabilitation program for adolescents with slow recovery from motor related concussions, and evaluated the therapeutic effect of active rehabilitation. The rehabilitation plan includes clinical sub symptom threshold aerobic training and coordinated exercises. The results indicate that active rehabilitation therapy has a higher safety, tolerance, and potential therapeutic effect on adolescents with symptoms after persistent concussion [3]. Popkin Charles A found that nearly 60 million children participate in some organized sports activity. This has led to an increase in sports related injuries, but the reasons are complex and multifaceted. The increase in sports injury rates is attributed to multiple variables, and this trend varies in terms of individual and team sports, as well as gender. Lack of diversified activities among teenagers can lead to sports injuries [4]. In the past, the sports rehabilitation major was mainly offered in sports colleges, but in recent years, with the continuous increase in social demand, more and more medical colleges have also begun to offer sports rehabilitation majors, making the development of this major increasingly mature. In the medical field of China, the development of sports rehabilitation is not yet very complete, but in developed countries such as Europe and America, it has become an independent discipline and has been widely applied and promoted.

2. Current Situation of Sports Rehabilitation Major

Sports rehabilitation is a comprehensive medical profession whose main task is to prevent, treat, and rehabilitate sports injuries, diseases, and disabilities through sports and related technical means [5-6]. With the improvement of people's health awareness and the popularization of sports, the incidence of sports injuries and sports related diseases is also increasing year by year. Therefore, sports rehabilitation has gradually become a highly concerned profession in the medical field, and the development of sports rehabilitation is of great significance for promoting the development of the health industry [7].

2.1 Single Teaching Method

The object of rehabilitation is not only the disease, but also the integrity of the entire individual. Their physiological, psychological, social, and economic abilities are guaranteed to be fully recovered, improving their quality of life [8].

Table 1: Degree of singularity in teaching methods

Single degree	Number of people	Percentage
Very single	121	36.12%
Relatively single	96	28.66%
General	61	18.21%
Rich	37	11.04%
Very rich	20	5.97%

This article conducts a survey and analysis of 335 students majoring in sports rehabilitation at a medical college. They believe that the degree of singularity in teaching methods is shown in Table 1:

As shown in Table 1, the number of students who believe that teaching methods are very single is 121, accounting for 36.12%, with the highest number. The number of students who believe that teaching methods are very diverse is only 20, accounting for 5.97%. It can be seen that the teaching methods in sports rehabilitation are not very rich.

The cultivation of rehabilitation professionals is still in the exploratory stage, and there is a lack of unified talent cultivation plans. Each school plans based on the curriculum scope taught by teachers who have directly transferred from clinical practice. Teachers lack the experience of going out for further education and learning, which leads to many shortcomings in the training plan for rehabilitation talents. The self-transformation of rehabilitation teachers has not yet been completed, and the cultivation plan emphasizes theory over practice, lacking comprehensive cultivation of students' overall quality level. The formulation of talent cultivation plans is not based on market research and lacks scientific argumentation.

2.2 Low Practical Level of Students

During school, attention should be paid to the balanced development of theory and practice. This article leverages the advantages of a comprehensive university in the school, relying on medical schools and affiliated hospitals to achieve the integration of teaching and training, and is based on the discipline of physical education. Sports and rehabilitation, as well as sports and health promotion, can be organically combined, and the school hospital can be used as a place for practical exercises. It is combined with daily teaching to train students on how to combine knowledge with action. The student's practical performance is shown in Figure 1:

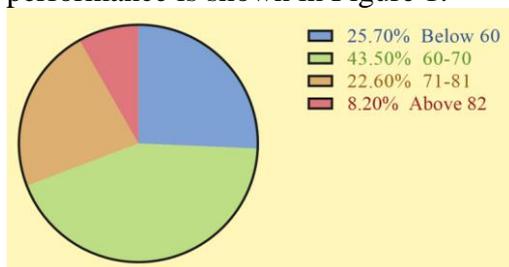


Figure 1: Student practice score

As shown in Figure 1, the percentage of students with practical scores below 60 is 25.70%, with the highest percentage being 43.50% between 60 and 70. The percentage of people who score over 82 is only 8.20%. This also indicates that students' professional practice needs to be strengthened.

The classroom is mainly focused on hands-on operation by teachers and observation by students, lacking practical opportunities, resulting in a lack of close integration between theory and practice that students have learned in the first three years. This is mainly reflected in the fact that although students have a reserve of rehabilitation professional knowledge before entering clinical internships, most students do not have the operational ability of rehabilitation professional skills.

Graduates can work in medical institutions, as well as in various professional sports training bases, large sports and fitness venues, sports and leisure venues, and health insurance departments to provide guidance and services related to health science and rehabilitation sports [9-10]. After entering the clinical internship, students have improved their rehabilitation professional skills through observation and continuous practical exercise, but the degree of improvement and skill projects rely on specific exercises during the internship. They lack the ability to effectively connect

clinical knowledge with rehabilitation professional knowledge and skills when facing clinical cases and their students' rehabilitation professional thinking ability is insufficient.

3. Development Strategies for Sports Rehabilitation Professional Characteristics

3.1 Comprehensive Courses

The sports rehabilitation major in medical colleges should have its own characteristics, and must have specialized knowledge covering multiple disciplines such as physiology, kinematics, rehabilitation therapy, sports biomechanics, and mental health [11-12]. This comprehensive teaching model would help students lay a solid foundation and lay a solid foundation for future rehabilitation practices.

It aims to develop a core discipline that includes courses in physiology, sports science, rehabilitation therapy, and mental health. By categorizing the teaching of each semester, students can have a gradual learning process. It advocates interdisciplinary collaboration and combines multiple disciplines to improve students' overall quality. Through interdisciplinary research and projects, students are encouraged to collaborate and research in different fields. The scope of courses offered is very broad, with the aim of improving students' basic understanding of biomedicine.

The schematic diagram of the comprehensive course is shown in Figure 2:

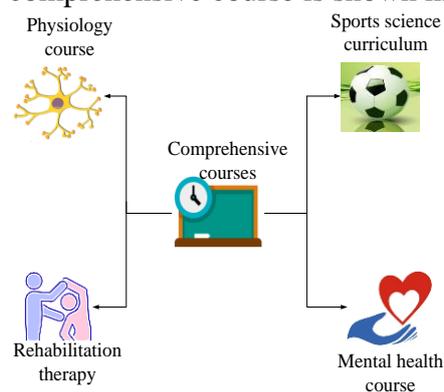


Figure 2: Schematic diagram of comprehensive courses

Physiology courses would provide students with a deeper understanding of human bodily functions, including nerves, muscles, cardiovascular systems, respiration, and more. Understanding physiological changes and needs during recovery is crucial. In addition, physiology courses can also help students understand the impact on their bodies when sports injuries occur.

Sports science courses provide students with a deeper understanding of sports and sports biomechanics. Sports science is a discipline that includes sports biology, biomechanics, and sports physiology, helping students understand the effects of exercise on the body and develop reasonable exercise training plans for them. This is very important for rehabilitation physicians to ensure that patients can safely perform during the rehabilitation process [13].

Rehabilitation therapy is an important aspect of this major, aimed at training students' clinical practice abilities. It includes rehabilitation assessment, treatment techniques, formulation and execution of exercise rehabilitation plans, medical recording and communication skills, and students would learn how to establish individual treatment plans tailored to the individual needs and rehabilitation objectives of patients.

The mental health course would assist students in understanding the psychological problems that patients may encounter during rehabilitation. By understanding the emotional and psychological

needs of patients and providing them with more comprehensive rehabilitation services, students would learn how to deal with issues such as anxiety, depression, and recovery expectations.

It combines the teaching content of various disciplines to provide students with comprehensive rehabilitation training. These professionals can provide high-quality rehabilitation for patients of different ages, backgrounds, and physical conditions to help them reintegrate into society and improve their quality of life. This comprehensive education would play a positive role in promoting the rehabilitation industry in China, in order to adapt to the diverse requirements of society for rehabilitation work and promote the continuous development of rehabilitation disciplines and practices.

3.2 Innovative Educational Methods

The use of modern educational methods such as virtual reality and simulation technology is a strategy for cultivating the characteristics of sports rehabilitation majors. This method can effectively improve students' practical operational abilities and adapt well to the actual conditions of patients.

Virtual reality and simulation technology provide students with a more realistic rehabilitation experience. In traditional rehabilitation teaching, students mainly rely on methods such as "seeing" and "listening" to learn theoretical knowledge. Through virtual reality and simulation technology, students can experience the entire process of rehabilitation firsthand. This immersive learning approach can enhance students' understanding and understanding of rehabilitation, and enable them to better master rehabilitation skills and strategies.

Virtual reality and simulation technology provide students with a good learning environment, especially for beginners, rehabilitation poses some risks and challenges. It utilizes virtual simulation technology to enable students to teach and practice in a safe simulation environment, thereby avoiding potential risks to real patients. Students can practice repeatedly to gradually familiarize themselves with rehabilitation procedures and enhance their confidence and professional competence. In traditional classroom teaching, teachers are in a dominant position, and students can only passively receive and impart knowledge in the classroom. Through virtual reality and simulation technology, students can actively participate, explore, and discover, thereby improving their ability to learn independently. Students can choose different scenarios and conduct simulation experiments based on their own needs and interests to improve their rehabilitation skills and professional standards.

3.3 Rehabilitation Practice

To enable students majoring in sports rehabilitation to apply the theories and techniques they have learned to practical clinical work, it is necessary to provide them with a large number of internship and practical opportunities. The cooperation between medical colleges and rehabilitation centers is a crucial step, and schools should actively collaborate with local hospitals, rehabilitation centers, sports training centers, and other units to form a collaborative model of internship and practice. Through collaboration with these institutions, students can gain a deeper understanding of the actual situation of patients and apply the knowledge and skills learned in the classroom to practical situations.

Schools can regularly organize internships to provide students with opportunities to intern at medical colleges and rehabilitation centers. The internship period can be a short-term summer internship or a long-term one, depending on the conditions of the institution and cooperating units. During this period, students are able to personally participate in the work of the rehabilitation team and work with experts to observe and participate in the actual rehabilitation of patients, thereby

improving their practical operational skills and adaptability. In addition, experts from medical schools and rehabilitation centers can also be invited to hold lectures and seminars for students, allowing them to understand their clinical experience and expertise. This exchange method allows students to recognize the challenges and opportunities they face, broaden their horizons, and lay the foundation for future practical work.

Encourage students to actively participate in academic conferences and special lectures in various fields, and strengthen communication and cooperation with peers. Students can enhance their academic level and professional image by publishing papers, hosting and participating in seminars. In addition, this course also provides students with an important way to timely grasp the latest developments in recovery technology and contributes to their future career development.

4. Effect of Development Strategies for Sports Rehabilitation Specialty Characteristics

4.1 Students' Interest in Learning

Cultivating teaching staff from various aspects and methods can combine bringing in and going out, encouraging university teachers to communicate with each other and with rehabilitation institutions in society. At the same time, it invites experts from medical institutions and medical care elderly care service institutions to provide guidance to the school, consolidating the foundation of teachers' professional skills. Experts and professional mentors from rehabilitation and elderly care centers can be hired to conduct course research and development, professional training, and practical tasks combining student engineering and learning. It further encourages young teachers to enter relevant rehabilitation institutions and positions for internships, and strengthens the practical skills of professional teachers. In addition, professional teachers should also encourage students to participate in the popularization of health rehabilitation knowledge and the organization of elderly activities in elderly care institutions that integrate medical and nursing care. It has completed the zero distance connection between schools and enterprises in terms of teaching staff, gradually building a dual teacher team.

The learning interests of students before the implementation of the strategy are shown in Table 2:

Table 2: Student's learning interest before strategy implementation

Degree of interest	Number of people	Percentage
Very high	21	6.27%
Relatively high	36	10.75%
General	92	27.46%
Low	99	29.55%
No interest	87	25.97%

As shown in Table 2, only 6.27% of students had a very high interest in learning before the implementation of the strategy; the proportion of students with high interest in learning is only 10.75%; the proportion of people who are not interested is 25.97%.

The learning interests of students after the implementation of the strategy are shown in Table 3:

As shown in Table 3, 31.94% of students have a very high interest in learning after the implementation of the strategy; 36.12% have a high interest in learning. The proportion of people who are not interested is 8.96%.

The advancement of the rehabilitation service industry requires a large number of professional talents and relevant practitioners, which would undoubtedly promote the improvement of relevant education. The demand for talent has put forward new requirements for the structural adjustment of higher education, and has promoted the construction of the higher education system, the

construction of disciplines and majors, and the adjustment of educational structure. The development and optimization of majors, levels, types, and regional structures in rehabilitation higher education. It helps to enhance rehabilitation human resources to meet the conditions for the development of rehabilitation service industry, optimize resource allocation, and further reserve human resources for the development of rehabilitation service industry.

Table 3: Student's Learning Interest after Strategy Implementation

Degree of interest	Number of people	Percentage
Very high	107	31.94%
Relatively high	121	36.12%
General	45	13.43%
Low	32	9.55%
No interest	30	8.96%

4.2 Students' Practical Abilities

Rehabilitation graduates can not only choose grassroots medical institutions such as communities, sports and healthcare institutions, and sanatoriums for their careers, but also consider comprehensive hospitals and rehabilitation specialized institutions, which do not require too detailed professional and technical division of labor. In the current stage of the early development of the rehabilitation medical market, in order to achieve a better transition, the training standards for rehabilitation medical professional education in China should not only meet the unified standards of the Ministry of Education for health talents, but also move towards cultivating innovative rehabilitation medical talents with a focus on physical therapy, which combines occupational therapy and speech therapy theory. The practical performance of students after implementing the strategy is shown in Figure 3:

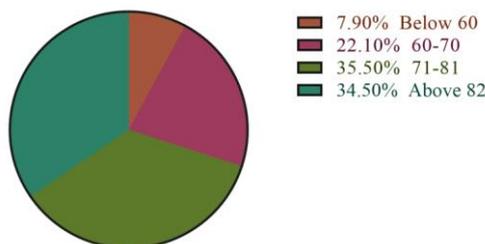


Figure 3: Student's practical performance after implementing the strategy

As shown in Figure 3, the percentage of students with practical scores below 60 is 7.90%. The percentage of people with scores between 60 and 70 is 22.10%, while the percentage of people with scores above 82 is 34.50%. After implementing the strategy, students' practical performance has been greatly improved.

Providing a wide range of internship and practical opportunities is crucial for improving the practical abilities of students majoring in sports rehabilitation. In the practical process, students can apply the knowledge learned in the classroom to a real clinical environment, gain a deep understanding of the practical operations and skills of rehabilitation therapy, and thus cultivate stronger practical abilities. It provides a wide range of internship and practical opportunities, which is crucial for improving the practical abilities of students majoring in sports rehabilitation. In the practical process, students can apply the knowledge learned in the classroom to a real clinical environment, gain a deep understanding of the practical operations and skills of rehabilitation therapy, and thus cultivate stronger practical abilities.

Through internships, students are able to combine the theories learned in the classroom with practical clinical scenarios, deeply understand the practical operations and skills of rehabilitation therapy, and have a high level of hands-on ability. Providing students with more internship and practical opportunities is the key to improving their practical skills. Through internships, students can combine the theories learned in class with practical clinical scenarios, deeply understand the practical operations and skills of rehabilitation therapy, and have high hands-on abilities.

5. Conclusions

With the changes in modern lifestyles and advances in medical science, the demand for chronic diseases, sports injuries, and rehabilitation has sharply increased globally. The research on the characteristic development of sports rehabilitation in medical colleges provides useful information and suggestions for students, medical institutions, and society in the field of rehabilitation. By understanding the unique development of different schools, it can better meet the needs of the rehabilitation field, improve the quality and competitiveness of the rehabilitation profession, and provide better support for rehabilitation patients. This study is expected to promote progress in the field of rehabilitation to meet the growing demand for rehabilitation.

References

- [1] Petriceks Aldis H., Hannah A. Hales., Sakti Srivastava. "Physical medicine and rehabilitation: trends in graduate medical education and subspecialization amid changing demographics." *American journal of physical medicine & rehabilitation* 98.10 (2019): 931-936.
- [2] Greenberg Elliot M., Eric T. Greenberg., Jeffrey Albaugh., Eileen Storey., Theodore J. Ganley. "Rehabilitation practice patterns following anterior cruciate ligament reconstruction: a survey of physical therapists." *Journal of Orthopaedic & Sports Physical Therapy* 48.10 (2018): 801-811.
- [3] Catherine C., Grant L. Iverson., Jacqueline Purtzki., Kathy Won., Vivian Kwan., Isabelle Gagnon., et al. "Safety of active rehabilitation for persistent symptoms after pediatric sport-related concussion: a randomized controlled trial." *Archives of physical medicine and rehabilitation* 99.2 (2018): 242-249.
- [4] Popkin Charles A., Ahmad F. Bayomy., Christopher S. Ahmad. "Early sport specialization." *JAAOS-Journal of the American Academy of Orthopaedic Surgeons* 27.22 (2019): e995-e1000.
- [5] Hall Mederic M., Bernhardt David T., Finnoff Jonathan T., Hoffman Douglas F., Hrubes Melody R., Mautner Kenneth R., et al. "American Medical Society for Sports Medicine sports ultrasound curriculum for sports medicine fellowships." *Clinical journal of sport medicine* 31.4 (2021): e176-e187.
- [6] Jildeh Toufic R., Muhammad J. Abbas., Leena Abbas., Kenneth J. Washington., Kelechi R. Okoroha. "YouTube is a poor-quality source for patient information on rehabilitation and return to sports after hip arthroscopy." *Arthroscopy, Sports Medicine, and Rehabilitation* 3.4 (2021): e1055-e1063.
- [7] Brotherton Sarah E., and Sylvia I. Etzel. "Graduate medical education, 2018-2019." *Jama* 322.10 (2019): 996-1016.
- [8] Baugh Christine M., Emily Kroshus., Bailey L. Lanser., Tory R. Lindley., William P. Meehan. "Sports medicine staffing across National Collegiate Athletic Association Division I, II, and III schools: evidence for the medical model." *Journal of athletic training* 55.6 (2020): 573-579.
- [9] Humphries David., Rod Jaques., and Hendrik Paulus Dijkstra. "A Delphi developed syllabus for the medical specialty of sport and exercise medicine." *British Journal of Sports Medicine* 52.8 (2018): 490-492.
- [10] Shaheen Waleed M., Iyad A. Yousef. "The Role of Sports Rehabilitation Specialist in Elevating the Level of Footballers from the Perspective of the Players in Jerusalem City." *Elementary Education Online* 20.5 (2021): 5572-5572.
- [11] Memon Amir Raoof., Ishtiaq Ahmed., Nabaha Ghaffar., Kainat Ahmed., Iqra Sadiq. "Where are female editors from low-income and middle-income countries? A comprehensive assessment of gender, geographical distribution and country's income group of editorial boards of top-ranked rehabilitation and sports science journals." *British Journal of Sports Medicine* 56.8 (2022): 458-468.
- [12] Han Alex., Alexios G. Carayannopoulos. "Readability of Patient Education Materials in Physical Medicine and Rehabilitation (PM&R): A Comparative Cross-Sectional Study." *PM&R* 12.4 (2020): 368-373.
- [13] Cushman Daniel M., Christiansen Jacob., Clements Nathan D., Cunningham Shellie., Teramoto Masaru., McCormick Zachary L. "Infections after large joint or bursa injection: a survey of 554 sports medicine physicians." *American Journal of Physical Medicine & Rehabilitation* 98.12 (2019): 1106-1109.