

Reform and Innovative Exploration of the Teaching Model for Sports Rehabilitation Technology



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Abstract: Sports Rehabilitation Technology is a crucial professional course for students majoring in sports rehabilitation, essential for building clinical thinking and mastering clinical rehabilitation skills. This course demands the integration of theory and practice, emphasizing the cultivation of practical skills. This article delves into the current status of teaching modes in the field of Sports Rehabilitation Technology, proposing practical approaches for innovating the teaching model. These include optimizing the practical teaching system, enriching teaching methods through case-oriented approaches, enhancing the construction of online network resources, and innovating a multi-dimensional teaching evaluation system. Furthermore, the article analyzes potential challenges in reforming and innovating the teaching model, offering countermeasures aimed at improving the teaching quality of Sports Rehabilitation Technology and providing references for the reform and innovation of its teaching practices.

Keywords: sports rehabilitation technology; teaching model; reform and innovation;

Introduction

Under the strategic guidance of Healthy China, rehabilitation work serves as a crucial avenue to promote public health, playing a significant role in addressing the challenges of social aging, enhancing health literacy, and preventing diseases. In recent years, the sports rehabilitation major has flourished, with numerous universities across the country offering this program. The concept of "exercise is medicine" has gradually gained widespread recognition, representing a pivotal embodiment of the integration of sports and medicine advocated by the Healthy China strategy. Sports Rehabilitation Technology, as a core curriculum in the sports rehabilitation major, aims to foster students' clinical thinking and clinical rehabilitation skills, with its teaching quality directly influencing the professional literacy and clinical practice abilities of future rehabilitation therapists. Currently, the quantity and quality of rehabilitation therapists in China fall far short of meeting medical needs, thus necessitating

enhanced cultivation of rehabilitation-related talents.

The Sports Rehabilitation Technology course has been offered for a considerable period, yet traditional teaching methods tend to be teacher-centered, emphasizing the imparting of theoretical knowledge while overlooking the cultivation of students' practical abilities and comprehensive qualities. Under this model, students often passively receive knowledge, lacking opportunities for active exploration and independent thinking. Moreover, the disconnect between theoretical instruction and practical operation results in difficulties for students to effectively apply their knowledge in clinical settings after graduation, thereby impeding their professional development and employment prospects.

Therefore, actively exploring reforms and innovative approaches to the teaching mode of the Sports Rehabilitation Technology course is of significant practical and long-term importance in enhancing the comprehensive qualities of rehabilitation professionals and promoting the in-depth development of the Healthy China strategy.

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1. Innovative Practice Paths for the Reform of Teaching Modes in Sports Rehabilitation Technology Courses

1.1 Optimizing the practical system to enhance the combat-oriented level of experimental teaching

The study of sports rehabilitation technology demands the integration of theory and practice, emphasizing the cultivation of students' practical skills. Therefore, to enhance students' mastery of practical sports rehabilitation techniques, the teaching model should prioritize optimizing the practical teaching system. Firstly, the proportion of practical class hours should be increased in the curriculum design. Sports rehabilitation technology is a crucial discipline that introduces commonly used skills in rehabilitation clinics, which involve numerous practical skills requiring repeated practice for proficiency. Currently, the practical class hours offered in universities are relatively insufficient, often limiting students to merely mimic the teacher's demonstration within a short period, without fully grasping the essential movements.

Secondly, strict control over the quality of practical training is essential. Teachers should clarify the main content of the course based on the syllabus before teaching, and personally demonstrate and explain the operational steps and precautions to students during experimental teaching. Highlighting the basic concepts and principles of the techniques will allow students to grasp the key learning points promptly through teachers' demonstrations (Guan, 2019). For each specific practical training technique, teachers should provide standardized training guidance, suggestions, and requirements to facilitate students' preview and after-class review. In cases where class sizes are large, small-group teaching should be implemented, considering that many practical training contents require individual guidance and correction from teachers. The class size should be kept below 30 students to ensure a "small but elite" teaching environment.

Thirdly, the forms of practical training should be diversified. The practical forms of sports rehabilitation should not be confined to in-class practical exercises alone, but should encompass three crucial components: clinical observation, practical training, and clinical internship. Typically, clinical internships for sports rehabilitation students occur

during the fourth year of university. However, students tend to forget the rehabilitation skills they learned earlier due to a lack of long-term practice. Therefore, timely clinical observation is particularly crucial. Based on the teaching experience of the author's institution, students are required to undergo a two-month hospital internship during their winter and summer vacations each academic year. This effectively cultivates students' clinical thinking and practical abilities, while also clarifying their learning direction. In selecting internship hospitals, the school should provide support. While many universities have their own affiliated hospitals, those without should actively strengthen the construction of off-campus training bases. Additionally, strengthening ties with tertiary hospitals can provide students with better hospital conditions for internships.

1.2 Guided by clinical cases: Enriching teaching methods and promoting the deep integration of theory and practice

Under the guidance of modern teaching concepts, the diversity and innovation of teaching methods are crucial for enhancing the quality of education. Currently, several prevalent teaching methods include traditional lecturing, role-playing, scenario simulation, Problem-Based Learning (PBL), case-based teaching, and the integration of the internet with flipped classroom teaching. In the context of sports rehabilitation technology, the teaching objectives aim to enrich students' theoretical knowledge and cultivate their practical abilities, with the selection of appropriate teaching methods being pivotal to improving training efficiency. Given the strong clinical practical nature of this field, a teaching approach oriented by clinical cases is particularly significant.

1.2.1 Case-based learning (CBL)

Derived from and evolving from Problem-Based Learning (PBL), CBL has emerged as an innovative teaching modality. Its core lies in guiding teachers to deepen their theoretical knowledge in clinical practice, thereby enhancing students' practical abilities and overall literacy. The application of CBL in medical education boasts numerous advantages, chiefly its strong practicality, effectively highlighting and interconnecting each knowledge point within clinical cases. This facilitates students' construction

of a comprehensive knowledge system, cultivates their abilities to analyze and resolve real-world problems, and significantly contributes to the enhancement of their practical skills (Rebbapragada, 2020; Zhao et al., 2022). In the clinical case teaching of sports rehabilitation technology, teachers integrate clinical cases into their instruction, selecting representative and inspiring cases to elaborate on key points and conduct in-depth analysis. This approach enables students to comprehend the principles and methodologies behind the cases, thereby deepening their understanding and retention of theoretical knowledge. Concurrently, the introduction of clinical cases also fosters students' clinical thinking and problem-solving abilities.

In recent years, an increasing number of teachers have begun exploring the combined application of CBL with other teaching methods, such as the integration of CBL with Seminar teaching (Li et al., 2024) or case-scenario simulation teaching (Qin et al., 2023). Research has found that this combined approach offers more advantages than its individual counterparts. The two methods complement each other, enhancing the practicality and flexibility of rehabilitation clinical skills while consolidating theoretical knowledge. This approach broadens students' thinking space, sharpens their mastery of key concepts, and improves their dialectical thinking abilities. Additionally, it fosters interactive learning between students and teachers, promoting a tighter integration of theory and practice in rehabilitation medicine education. This also provides insights for future innovations in teaching modalities, suggesting the potential for integrating more novel teaching methods with CBL.

1.2.2 Information search and analysis skills (ISAS)

The ISAS method emphasizes student-centeredness, where teachers drive the teaching process through specific tasks, encouraging students to exercise initiative and creativity in the process of learning, summarizing, and improving. Teachers collect clinical cases and cutting-edge research closely related to the curriculum, assigning specific tasks to guide students in conducting information search and analysis. Students are required to propose solutions to specific sports injuries or rehabilitation issues. In class, teachers

organize group discussions, preparing clinical typical cases or allowing students to share cases encountered during internships. The cases are then thoroughly discussed and analyzed, integrating professional knowledge and literature retrieval. This interactive teaching method not only deepens students' understanding of professional knowledge and fosters clinical thinking, but also cultivates their team collaboration skills and communication techniques (Hu, 2018).

1.2.3 Role-playing method

The role-playing method, a socio-psychological technique established by American psychiatrists in 1960, involves individuals temporarily assuming the social position of another and acting according to the required manner and attitude of that position, aiming to enhance understanding of others' social roles and one's own role, thereby learning to perform one's role more effectively. In teaching practice, the role-playing method emphasizes students' experience and participation. By simulating real-life scenarios, students are guided to immerse themselves as participants, integrating their subject knowledge and practical experience to achieve internalization of knowledge and emotional elevation through hands-on experience (Wang et al., 2024).

During the role-playing process, teachers design lesson plans and case studies beforehand, guiding group leaders to organize discussions among members to determine role content and script development. Subsequently, roles are assigned within the group, simulating authentic rehabilitation therapy scenarios that include multiple roles such as patients, family members, and therapists. Groups rotate in conducting role-plays, while other students evaluate the performers. After the role-playing session, the teacher facilitates a discussion, summarizing students' feelings and insights, and evaluating the compliance of role-playing with teaching objectives.

Compared to traditional teaching methods, the role-playing method effectively enhances students' ability to identify and solve problems, while implicitly promoting their interpersonal communication skills and awakening their active learning consciousness. Through practical teaching using the role-playing method, students are empowered with greater initiative and a sense of participation, which not only stimulates their

profound interest in practical projects but also significantly cultivates their team spirit and collaborative abilities, laying a solid foundation for future clinical practice.

1.3 Enhancing online resource construction to expand student learning paths and resources

With the continuous development of information technology, online learning has become a crucial pathway for students to acquire knowledge. The field of sports rehabilitation technology demands a comprehensive set of skills and knowledge, closely intertwined with disciplines such as anatomy, physiology, sports biomechanics, human development, and rehabilitation evaluation. In terms of content, the construction of educational resources for sports rehabilitation technology should primarily focus on relevant theories and operational techniques, while also encompassing fundamental course knowledge such as anatomy, physiology, sports biomechanics, human development, and rehabilitation evaluation (Xie, 2020). Additionally, a clinical case resource library should be established.

In the establishment of online resources, it is essential to actively introduce high-quality course resources from platforms like MOOCs, Rain Classroom, Zhihuishu, and Chaoxing Learning. Taking the Chaoxing Learning platform for sports rehabilitation technology at author's institution as an example, teachers create a dedicated teaching column in their personal space on the platform, including sections for "chapters," "resource library," "case library," and "reference materials." Resources such as teaching slides, videos, and case studies are uploaded to these sections. Teachers can utilize these resources to organize classes, and students can revisit and consolidate their learning in the course column after class. Moreover, teachers can release assignments in the course column to assess students' progress, utilizing the platform's statistics on accuracy and error rates to gauge students' comprehension and provide targeted explanations and analysis of common mistakes. The format of online assignments should be diversified, allowing students to upload images, text, and videos, especially for practical courses, where uploading practice videos is an excellent method to assess students' mastery of practical skills. By uploading these videos, students not only organize and summarize their knowledge,

but also create a video resource library for reviewing practical skills.

1.4 Innovating a multidimensional teaching evaluation system to comprehensively and objectively assess students' overall quality

Evaluation is a direct reflection of teaching effectiveness. Given the integration of theory and practice in sports rehabilitation technology, the evaluation system should be multidimensional. It should encompass theoretical assessment, practical training evaluation, and process-based evaluation. Theoretical assessment is typically completed through final examinations, while practical training evaluation comprises on-site assessments of students' simulated clinical skills and the performance of their internship reports. The practical training evaluation should have detailed criteria, scoring students on "practical skills, relevant theories, and clinical communication abilities" using a hundred-point system, aiming for quantitative, objective, and standardized teaching. Internship reports should not be limited to written formats; instead, students should be encouraged to submit feedback in the form of images and video clips to online learning platforms, diversifying the evaluation method. Process-based evaluation should cover students' daily attendance, classroom participation, discipline, and homework performance. Homework assignments can be innovative and diverse, including group projects, video submissions, and online quizzes. Through this multidimensional evaluation system, students are encouraged to prioritize both knowledge and skill acquisition, fostering the comprehensive development of professional abilities and personal qualities.

2. Examination of Challenges in Innovating Teaching Modes and Coping Strategies

2.1 Challenges faced

The introduction of new teaching modes poses certain challenges to both teachers and students. For teachers, firstly, the lack of teaching resources can be a hindrance to the innovation of teaching modes. Due to limited experimental conditions or insufficient teaching staff in some institutions, it may be difficult to implement "small-class" teaching, thus making it challenging to provide precise and effective guidance on each student's practical operation abilities.

Secondly, the new teaching modes require teachers to possess higher professional literacy and teaching abilities to adapt to new teaching methods and tools:

(1) High demand for integrating theory and practice: The new teaching modes emphasize the integration of theory and practice, focusing on enhancing clinical practical abilities. For instance, in teaching the application of proprioceptive neuromuscular facilitation (PNF), teachers need to not only explain the basic theory and technical principles, demonstrate, and guide students in practical operations, but also select appropriate movement patterns based on different case characteristics. This requires teachers to possess solid theoretical knowledge and rich practical experience.

(2) High demand for communication skills: The new teaching modes encourage students to identify problems and participate in discussions, requiring teachers to possess stronger communication skills. During group discussions, teachers need to patiently listen to students' opinions, provide timely feedback and guidance to ensure the effectiveness of the discussion.

(3) Significant investment in online resource development: Establishing an online case database requires teachers to extensively collect clinical cases and select those that closely align with the course content, enabling students to think critically and expand their knowledge. Additionally, collecting online course materials is a significant challenge. Given the late development of sports rehabilitation technology in China and the influx of new technologies in recent years, its teaching resources are not yet fully developed. Searching for relevant teaching resources on the internet often yields limited and varying quality slides, videos, and other materials, which fail to meet students' learning needs. Teachers often have to record and edit their own videos to establish online resources, which requires a significant amount of time and effort. Furthermore, learning to use online teaching platforms can be a challenge for some teachers, especially for veteran professors with rich teaching experience.

For students, the new teaching modes require them to prepare relevant knowledge and consult literature after class, which increases their learning burden to a certain extent. Additionally, group discussions or assignments may result in situations

where most of the work falls on one individual within the group due to varying abilities and unclear division of labor, leading to limited participation from other group members.

2.2 Coping strategies

To address the aforementioned potential challenges, a series of coping strategies need to be implemented. Firstly, in terms of the teaching staff, it is crucial to introduce and cultivate teachers with interdisciplinary knowledge and innovative capabilities. The construction of a "dual-qualified" teaching team should be strengthened (Song & Wan, 2024). Schools should continuously improve the teaching evaluation mechanism by regularly organizing teachers to participate in hospital training, seminars, workshops, and other activities. Teachers should be encouraged to participate in various sports rehabilitation skill training and professional qualification examinations to enhance their professional literacy and teaching abilities. Practical teaching should also keep abreast of the current societal demands for sports rehabilitation professionals, actively investigate the skill requirements of internship and work bases for students, and implement targeted cultivation based on the school's teaching resources to meet social and market needs. For veteran teachers, their role in mentoring and guiding new teachers should be fully utilized, while enhancing their training in using online teaching platforms.

Secondly, to address the issue of insufficient teaching resources, it is necessary to strengthen cooperation between schools, universities, and enterprises. Through the joint construction and sharing of practical teaching bases and online teaching resources, the maximum utilization of resources can be achieved. For the establishment of online resources, institutions should establish dedicated research projects and special teams for online resource development, providing financial and technical support. Additionally, strengthening the sharing of achievements among institutions can help improve the online resources for sports rehabilitation technology.

For students, clarity in task allocation and collaboration is crucial. During group discussions or assignments, each student should have a clear role and responsibility to foster their teamwork spirit and

collaboration abilities. To stimulate students' interest and motivation, teachers can design engaging and challenging learning tasks and activities, establish an incentive mechanism, and reward and recognize outstanding students to enhance their learning enthusiasm.

Summary

As a core curriculum for rehabilitation students, the innovation and development of the teaching model in sports rehabilitation technology are particularly crucial, and the journey of exploration is never-ending. With the continuous advancement of new technologies such as artificial intelligence and big data, teaching model innovation will encounter numerous opportunities and challenges. We can leverage these technologies to develop more intelligent and personalized teaching systems and tools, providing students with a more efficient and convenient learning experience. Simultaneously, it is essential to be mindful of the potential impact of new technologies on teaching models, promptly adjusting teaching strategies, introducing diverse educational concepts and methods, and enriching teaching content and formats to adapt to new teaching environments and demands. Through continuous innovation and practice in teaching models, we will undoubtedly cultivate more rehabilitation professionals with high-quality skills, contributing significantly to the in-depth development of the Healthy China strategy.

Conflict of Interest

The author declares that she has no conflicts of interest to this work.

References

- Guan, Z. (2019). Reform of simulated clinical practice teaching mode in sports rehabilitation therapy techniques. *Contemporary Sports Technology*, 9(06), 210, 212.
- Rebbapragada, N. (2020). Case-based learning: A student experience. *The Clinical Teacher*, 17(5), 571-572.
- Zhao, Y., Liu, W., Wang, Z., Chen, X., Zhao, J., & Zhou, X. (2022). The Value of CBL-Based Teaching Mode in Enhancing Medical Students' Achievement Rate, Practical Ability, and

Psychological Quality. *Contrast Media & Molecular Imaging*, 2022, 2121463.

- Li, N., Lan, B., Di, X., Cao, L., Ma, C., Shang, C., ... Han, D. (2024). Application of Case-Based Learning Combined with Seminar Teaching Method in Rehabilitation Medicine Teaching. *Western Quality Education*, 10(05), 178-181.
- Qin, X., Liang, Z., Bi, X., Li, K., & Yang, S. (2023). Application of Case-Based Learning Combined with Simulation Teaching Method in Rehabilitation Practice Skills Courses. *China Continuing Medical Education*, 15(01), 96-100.
- Hu, G. (2018). Teaching reform and innovation of sports therapy techniques in vocational rehabilitation programs. *Modern Vocational Education*, (24), 170-171.
- Wang, J., Wang, B., Liu, D., Zhou, Y., Xing, X., Wang, X., & Gao, W. (2024). Video feedback combined with peer role-playing: A method to enhance the teaching efficacy for medical undergraduates. *BMC Medical Education*, 24(1), 73.
- Xie, R. (2020). Construction of online teaching resources for vocational rehabilitation therapy technology majors: A case study of kinesiology techniques. *Invention and Innovation*, (08), 61.
- Song, Y., & Wan, D. (2024). Key characteristics and practical implications of the evaluation criteria for "double-qualified" teachers in American vocational education. *Modern Education Management*, 1-10.

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