A Study on the Mismatch between the Supply and Demand of Courses in the Rehabilitation Therapy Program from the Perspective of Job Competency: A Case Study of a University in Yunnan

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Abstract

Objective: To analyze, from the perspective of job competency, the reasons for the mismatch between the curriculum offered in the rehabilitation therapy program and job requirements, and to propose a plan for optimizing the curriculum structure. Methods: In May 2025, an online questionnaire survey was conducted among undergraduate students, hospital-based and industry practitioners, and faculty members. The questionnaire covered seven aspects, including curriculum-job alignment, the coverage of new-technology courses, teaching method preferences, industry employment standards, and assessment methods. A total of 164 valid questionnaires were collected. Results: 76.83% of respondents believed that the curriculum was "highly" or "basically" aligned with industry needs, but 54.26% reported either having systematically studied intelligent rehabilitation courses or having no contact at all with them. Respondents mainly preferred real-scenario clinical teaching (31.10%) and scenario simulation (28.05%). In students' self-assessments, the competency considered most lacking was clinical practice (42.68%). Regarding assessment methods, the most preferred options were formative assessment (26.83%), case analysis (18.90%), and objective structured clinical examination (OSCE) (17.68%). The most preferred distinctive directions were intelligent rehabilitation and medical-engineering integration (44.51%) and geriatric rehabilitation and integrated medical and elderly care (31.71%). Conclusion: The fundamental cause of the supply-demand mismatch lies in the nature of the curriculum, with the core issue being the gap between "proficiency in operation" and "clinical judgment". The curriculum cluster should be restructured through a platform-plus-module model, the curriculum format should be transformed through authentic cases and real-scenario teaching, and competency development should be guided by formative assessment and OSCE.

Keywords

Rehabilitation therapy, Job competency, Curriculum reform, Assessment methods

Introduction

For the rehabilitation therapy major, the core of job competency is a comprehensive ability "oriented toward job requirements and capable of performing clinical rehabilitation work", which goes beyond the complete mastery of disciplinary knowledge. The new medical science proposes the integration of medical engineering, medical theory, and medical literature, further changing the external environment of the curriculum. Curriculum reform has become a fundamental component of medical education innovation. With the implementation of the Healthy China policy and the public's increasing emphasis on health, the demand for rehabilitation medical professionals is increasing year by year. Therefore, a large number of studies have been conducted on pathways to improving the quality of rehabilitation medical education. For instance, Gagnon et al. adapted the World Health Organization (WHO) rehabilitation competency framework (RCF) for entry-level physical therapy practice. This demonstrated how a competency-based framework can be tailored to specific institutional contexts to standardize and enhance rehabilitation education [1]. Zhou et al. implemented a context-specific adaptation of the RCF in undergraduate medical education, combining an RCF-based theory course with case-based learning, and found significant improvements across 13 of 15 competency indicators among students [2]. At the curricular level, Fontanier et al. examined a national reform of physical therapist

education in France and found that embedding evidence-based practice throughout the curriculum improved graduates' evidence-based practice (EBP) knowledge. However, a gap remained between knowledge acquisition and routine clinical application [3]. These studies have provided direction for the training of rehabilitation professionals and the reform of curricula. However, common problems persist, including the disconnection between teaching objectives and industry demands, the separation of teaching methods from competency development, and the disconnect between teaching evaluation and the learning process. Therefore, this paper analyzes the mismatch between course offerings and job requirements, the differences between students' needs and those of employers, and the course structure and evaluation methods. This analysis provides a basis for the revision of the training program for rehabilitation therapy professionals, the construction of course groups, and the reform of assessment methods.

Participants and methods

The main respondents in this survey were 132 students majoring in rehabilitation therapy (80.49%), including 34 freshmen, 37 sophomores, 21 juniors, and 40 seniors, who had direct experience with the course offerings. The rest were hospital practitioners, industry personnel, professional teachers, and other relevant individuals who could provide criteria for assessing demand. The types of affiliated units included specialized rehabilitation hospitals, rehabilitation departments of tertiary hospitals, elderly care institutions, and community health service institutions. This study was conducted using online questionnaires in May 2025 and covered seven aspects, including the degree of course matching, coverage of new technology courses, requirements for teaching methods, industry employment standards, and assessment methods. A total of 164 valid questionnaires were collected, and responses to multiple-choice questions were counted by the number of selections.

Results

Curriculum and industrial new technology coverage

In terms of respondents' preference for the degree of match between courses and industry demands, 67 respondents rated it as "highly matched", accounting for 40.85%, and 59 respondents rated it as "basically matched", accounting for 35.98%. A total of 126 respondents, accounting for 76.83%, fell into these categories. Those who reported having systematically studied courses such as intelligent rehabilitation, rehabilitation engineering, rehabilitation big data, and virtual reality rehabilitation numbered 65, accounting for 39.63%. The categories "slightly involved", "heard but not offered", and "absolutely not" accounted for 42, 33, and 24 respondents, respectively. In summary, approximately 60.00% of the respondents had not received industry-related new technology courses. The results of these two sets of data suggest that intelligent rehabilitation content courses are mostly offered in higher grades, while lower grades mainly offer basic courses. Therefore, the proportion of industry-related new technology courses is relatively high. This also indicates an imbalance in the supply of such courses. These courses should be included in course schedules or practical teaching across all grades.

Practical requirements of teaching methods

The most requested teaching method was "clinical real-life teaching", selected by 51 respondents and accounting for 31.10%. Those who chose "scenario simulation" numbered 46, accounting for 28.05%. "Virtual simulation" and "case teaching" were selected by 24 and 21 respondents, respectively, together accounting for 27.44%. The least selected methods were "online and offline hybrid" and "problem-based learning/case-based learning (PBL/CBL) teaching", with a total of 22 respondents, accounting for 13.41%. The first two methods together accounted for nearly 60.00%, indicating that students prefer courses taught through real-life scenarios rather than through lectures.

Demand for capacity supply

In their self-evaluations, students rated "clinical practical skills" as the most lacking ability, with 70 respondents accounting for 42.68%. "Doctor-patient communication" followed with 38 respondents, accounting for 23.17%. "Innovative thinking" with 25 respondents, accounting for 15.24%; and "application of intelligent devices" with 20 respondents, accounting for 12.20%. The least lacking abilities were "multidisciplinary collaboration" with 6 respondents, and "community service" with 5 respondents. This indicates that students place greater emphasis on improving clinical practical skills, which may be related to course assessment methods that mainly focus on checking operational steps.

Sampling bias in the assessment method

Regarding whether current evaluations can fully reflect their own abilities, 72 respondents chose "completely capable" accounting for 43.90%. 65 respondents chose "able to some extent" accounting for 39.63%; and a total of 137 respondents chose these options, accounting for 83.54%. Regarding ways to strengthen evaluations, 44 respondents chose "process-based assessment" accounting for 26.83%. 31 respondents chose "case analysis" accounting for 18.90%. 29 respondents each chose "OSCE assessment" and "humanistic communication evaluation". 17 respondents chose "teamwork evaluation" and 14 respondents chose "industry participation evaluation". This indicates that current evaluations mainly reflect consistency between assessment and teaching content, rather than consistency between assessment and job requirements. The sampling method used in assessment influences the direction of students' efforts. Future curriculum reforms should focus on strengthening the "process-based assessment" and "case analysis" methods.

Specialized directions and course resources

The most selected characteristic directions for emphasis were "intelligent rehabilitation and medical engineering integration" with 73 respondents accounting for 44.51%. "Geriatric rehabilitation and medical care integration" with 52 respondents accounting for 31.71%. "Traditional Chinese medicine integration in rehabilitation" with 22 respondents accounting for 13.41%, and "community and grassroots rehabilitation" with 14 respondents accounting for 8.54%. This indicates that more intelligent rehabilitation-related equipment and engineering faculty should be added. At the same time, joint efforts with communities or institutions should be made to establish elderly rehabilitation-dependent care scenarios and long-term follow-up bases, and to make full use of resources to create distinctive courses.

Discussion

The dislocation occurred in "course nature" rather than "course quantity"

The degree of alignment between the courses and new industry technologies reached 76.83%, and the coverage rate of intelligent courses was 39.63%. This indicates that the course settings generally cover the routine requirements of the positions, but the nature and supply of the courses remain imbalanced. This also explains why 8.54% of respondents chose "the courses are updated slowly" suggesting that students do not consider the courses to be outdated. They believe that some courses "were taught but not used". If the subsequent course reform only adds new courses without changing the nature of the courses, it will take up excessive practical study hours, and the mismatch may become more severe instead.

The gap between "skillful operation" and "clinical judgment"

In terms of skill improvement, students' self-assessments rank clinical practical operation as the top priority. However, the industry believes that graduates' main deficiency lies in clinical thinking. Moreover, clinical thinking must be developed through continuous clinical practical operations. The curriculum should incorporate clinical diagnostic thinking exercises into every clinical operation training session. For example, using common clinical cases, students should be asked to describe the causes and pathogenesis and make diagnoses. Alternatively, they should be provided with changes in the condition and required to adjust the treatment plan.

Intelligent technology is a new variable, but it is not the only variable

Regarding the establishment of new technology courses for the rehabilitation industry, intelligent rehabilitation offerings such as rehabilitation engineering, rehabilitation big data, and virtual reality (VR) rehabilitation remain insufficient. For different grade levels, the most reasonable approach is to "embed" these technologies within existing courses rather than create separate ones. For example, digital assessment tools can be incorporated into assessment courses; parameters and data interpretation for intelligent devices can be included in treatment courses; and practical applications of intelligent equipment can be explored in graduation projects, avoiding proliferation of new courses. This embedded strategy supports progressive curricular development while conserving resources and preventing curriculum fragmentation.

Why professional competence tops the list in recruitment

Industry recruitment places the greatest emphasis on professional qualities. In actual rehabilitation scenarios, professional qualities are specifically manifested as informed consent, privacy protection, and emotion

management. These behaviors directly affect patients' safety and the risk of disputes. Employers can quickly understand a candidate's professional qualities and comprehensive abilities through observation during a short-term probation period. Therefore, if professional qualities are assessed only through theoretical knowledge in the final exam, students will interpret them as "memorized items for the exam" rather than "daily actions to be performed in the workplace".

Evaluation reform serves as the practical driving force for curriculum reform

Based on the survey results, the highest-ranked evaluation reform options were process-based assessment, case analysis, and OSCE. This indicates that students have recognized the shaping effect of assessment on their learning behaviors. The difficulty of the evaluation reform lies not in the technology, but in the cost. Process-based assessment mainly requires tools and manpower for process recording, while OSCE requires venues, standardized patients, and scoring training. The evaluation reform can be piloted in small-scale courses first to form a replicable evaluation model and then gradually applied to other courses, avoiding deviations in implementation caused by a one-time rollout.

The optimization path of the course structure

Constructing a course group structure consisting of platforms and modules

Platform courses cover functional assessment, physical factors, occupational therapy, exercise therapy, speech and swallowing therapy, and clinical thinking fundamentals, thereby addressing common abilities. Module courses are organized into four directions: intelligent rehabilitation, traditional Chinese medicine rehabilitation, geriatric rehabilitation, and community rehabilitation, thereby addressing direction-specific abilities. Students can choose one of these directions for in-depth study based on their career development plans or personal preferences. The advantage of this structure is that total study hours can be controlled. New content is incorporated into the modules rather than being included entirely in compulsory courses, thus avoiding the compression of practical sections. Relevant research on teaching platform construction has also demonstrated its pedagogical value. Xie et al. evaluated an artificial intelligence (AI)-driven smart learning platform in cardiopulmonary physiotherapy education. They found that students using the platform reported significantly higher levels of perceived learning value, group interaction, and knowledge breadth compared with those receiving conventional teaching. This indicates that such platforms can effectively enhance knowledge acquisition among rehabilitation medicine students [4].

Integrating a real case database with practical teaching

Based on the actual clinical scenarios identified in the survey results, the most cost-effective approach is to build a case repository rather than to expand hospital wards. The cases should include assessment data, treatment plans, changes in the course of the disease and outcomes, as well as decision-making issues. Each case primarily addresses three questions: the cause of the disease, the current symptoms and treatment, and how to adjust the treatment plan when conditions are limited. The case repository is maintained jointly by school teachers and base instructors and is updated every semester, creating a cycle in which clinical problems enter the classroom and classroom discussions return to clinical practice. This approach is supported by systematic evidence on case-based learning (CBL) in health professional education. A best evidence medical education (BEME) systematic review of 104 studies concluded that students overwhelmingly enjoy CBL and perceive it as enhancing their learning [5]. More recently, a systematic review of 34 studies in physiotherapy education found that active and case-based learning strategies, including problem-based learning, were consistently associated with increased satisfaction, reflective practice, and usability in the development of clinical reasoning [6].

Balancing practice ratio and course form

Among the options for the theory-to-practice ratio, the most frequently selected option was 4:6. If the total study hours remain unchanged, the proportion of theoretical teaching can be reduced by compressing repetitive theoretical content. Declarative content in textbooks can be converted into online self-study and pre-class tests, while class time can be primarily used for case discussions and clinical skills training. Each practical training session should include assessment, treatment planning, and reassessment. This course format enables students to acquire more clinical practical skills within

the same total study hours. This course format is consistent with the logic of outcome-based education (OBE), which organizes teaching around clearly defined exit competencies rather than around the mere coverage of disciplinary content. A systematic review of outcome-based education in health professions training found that OBE is associated with improved student competencies, including practical skills and overall professional preparedness [7]. Similarly, a simulation-based mastery learning module grounded in outcome-based education achieved uniformly high skill acquisition among physical therapist students, with mean total scores rising from 67.60% to 91.40% after iterative training and assessment rounds [8].

Reforming the assessment methods

Final assessment methods vary, but the methods that can most directly reflect students' comprehensive clinical skills are process-based assessment, case-analysis assessment, and OSCE stations. Three assessment support indicators should be established: process records, including classroom performance, case documentation, treatment plans, feedback, and reassessment. Case-analysis assessment should use common clinical cases and require students to formulate assessment plans and treatment ideas. OSCE stations should mainly cover assessment, operation, communication, and emergency response. The key to these three supporting aspects is that the scoring standards are observable and reproducible, thereby avoiding the dominance of subjective impressions in assessment results. Studies have shown that the OSCE tests clinical abilities by simulating clinical scenarios, and that its objectivity depends substantially on examiner training and station design rather than on checklist length alone [9]. Recent work in physiotherapy education further demonstrates that simulation-based stations can reliably assess interpersonal skills such as communication and empathy when integrated with case-based written components, with interrater reliability ranging from 0.73 to 0.86 [10]. This supports the use of OSCE stations covering assessment, operation, communication, and emergency response as described above.

Developing specialized curriculum packages

Focusing on intelligent rehabilitation and geriatric rehabilitation, intelligent rehabilitation will be integrated with medical engineering, and geriatric rehabilitation will be combined with medical care and elderly care. Each focus area will establish a course package comprising two to three module courses, related comprehensive practical training projects, and practical teaching in hospitals and communities. With support for traditional Chinese medicine rehabilitation and community and grassroots rehabilitation, courses will be delivered through special lectures or elective course modules, thereby ensuring distinctive course features.

Conclusion

This study indicates that the curriculum supply for the rehabilitation therapy major basically meets the routine requirements of relevant positions. The mismatch mainly occurs at the levels of curriculum nature and evaluation methods. Systematic learning of intelligent rehabilitation courses is not widely popularized. Students' ability to diagnose and treat common clinical cases needs improvement. The proportion of professional qualities in curriculum assessment is not prominent. Assessment methods do not meet position requirements. To address these problems, countermeasures involving a "platform plus module" curriculum group, a real-case library, a 4:6 practice ratio, and three assessment methods are proposed. These measures can improve the nature of the curriculum without increasing the total study hours. Subsequent research can compare course pilot programs and track graduate adaptability to positions to test the actual effect of the above schemes on competence, and further discuss differences in module selection among different regional universities.

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Conflicts of Interest

The authors declare no conflict of interest.

References

[1] Gagnon, K., Stewart, E., Waddell, C., Garrigues, A., Austin, M. (2026) Competencies in context: adapting the World Health Organization rehabilitation competency framework for entry-level physical therapy practice. *Archives of Physical Medicine and Rehabilitation*, 107(2), 198-206.

[2] Zhou, S., Zhang, Y., Yang, Y., Liu, J., Qi, W. (2025) Implementing the WHO rehabilitation competency framework in undergraduate medical education: a context-specific adaptation for neurorehabilitation training. *Frontiers in Neurology*, 16, 1704836.

[3] Fontanier, V., Delforge, E., Opplert, J., Eon, P., Grangié, G., Bruchard, A., Laplaud, D. (2026) Impact of entry-level curriculum reform on evidence-based practice competencies in physical therapists: a cross-sectional study. *Physical Therapy*, 106(7), pzag062.

[4] Xie, Q. R., Jones, A. Y., Jiang, Z., Sheng, B., Wang, X. L., Luo, J., Huang, J. (2026) Enhancing cardiopulmonary physiotherapy education with an AI-driven smart learning platform: a quasi-experimental study. *BMC Medical Education*, 26, 700.

[5] Thistlethwaite, J. E., Davies, D., Ekeocha, S., Kidd, J. M., MacDougall, C., Matthews, P., Clay, D. (2012) The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Medical Teacher*, 34(6), e421-e444.

[6] Ndacayisaba, G., Vanderweyen, J., Mapinduzi, J., Nduwimana, I., Sinzakaraye, A., Deboeck, G., Van Cant, J. (2026) Effectiveness of various pedagogical tools to enhance clinical reasoning in physiotherapy: a systematic review. *Physiotherapy Theory and Practice*, 1-15.

[7] Tan, K., Chong, M. C., Subramaniam, P., Wong, L. P. (2018) The effectiveness of outcome based education on the competencies of nursing students: a systematic review. *Nurse Education Today*, 64, 180-189.

[8] Tappan, R. S., Roth, H. R., McGaghie, W. C. (2025) Using simulation-based mastery learning to achieve excellent learning outcomes in physical therapist education. *Journal of Physical Therapy Education*, 39(1), 40-48.

[9] Cade, A. E., Mueller, N. (2024) Measuring the quality of an objective structured clinical examination in a chiropractic program: a review of metrics and recommendations. *Journal of Chiropractic Education*, 38(1), 9-16.

[10] Augeard, N., Miller, J., Bostick, G., St-Onge, C., Tousignant-Laflamme, Y., Hudon, A., Wideman, T. H. (2025) Development of a pain management competency assessment for physiotherapy students: Integrating simulation and written assessments. *Canadian Journal of Pain*, 9(1), 2512728.