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The Course Design of "Movement and Myofascial Chain" Improves the Level of Exercise Rehabilitation of Medical Students

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ABSTRACT

As the central theme of The Times, innovation has put forward new requirements for the development of integrated traditional Chinese and Western medicine. Through investigation, it was found that as an emerging theory, the course development of motor fasciology was in a blank state. This study analyzed the current situation and influencing factors of motor fasciology of undergraduates in a medical college by questionnaire survey. To design the basic theoretical framework of curriculum design based on Taylor's goal model, choose the teaching content, method, and teaching evaluation of constructivism learning theory, combined with the six steps of medical curriculum design, the standard design of "sports and muscular chain" course in medical college was carried out, including the nature and objectives of the course, teaching content, teaching method, school allocation, and teaching evaluation. Expert consultation was used to demonstrate the critical elements of the course, and finally, the curriculum standards of movement and myofascial chain for medical students were determined. The educational experiment scheme was used to evaluate the effect of the curriculum. The effect of the exercise and myofascial chain curriculum standards was evaluated through a mixed research design combining quantitative and qualitative research, and an experimental evaluation tool was developed. The changes in exercise rehabilitation knowledge and skills based on exercise and the myofascial chain were analyzed before and after the course. Semi-structured personal interviews were conducted to understand the gains and changes in course learning and the evaluation and suggestions for the course. The Movement and Myofascial Chain courses can change students' cognition of exercise rehabilitation, improve students' ability to deal with sports injuries, and broaden students' horizons, enhancing physical literacy by deepening medical students' understanding of exercise rehabilitation, equipping them with practical skills to address sports injuries, and broadening their perspectives on integrated healthcare practices in both Chinese and Western medicine.

Key words: Course Design, Physical Literacy, Myofascial Chain, Exercise Rehabilitation

INTRODUCTION

As the trend leader of the times, higher education schools should train students to become outstanding experts in human body work in the future: plastic surgeons, rehabilitation therapists, sports coaches, fitness coaches, psychotherapists, physical therapists, and massage therapists. Schools should develop students' creative thinking, open up students horizons, and let students learn to look at problems in a dialectical and unified way. Use micro-needling, manipulation, moxibustion, acupotomy, dry acupuncture, injection, and lysis. It is just a different technique. There are many "technologies" but few "dao." Grasping and adjusting the structure of this "dao" can make it easier for the East and the West to communicate.

In the future, medicine around structural integration may become a real opportunity for integrating Chinese and Western medicine (Wiles et al., 2015). This research combines this "Tao" to broaden students' horizons and uses qualitative case studies to find answers to research questions. The purpose of this qualitative study is to determine that Movement and Myofascial Chain theory is one of the theoretical models that can be mastered by sports-related majors (Liu, 2012). The research provides a new theoretical basis and ideas for innovation, collaboration, and integration of knowledge for sports-related majors.

This study emphasizes the development of physical literacy as a foundational element in training future experts in human bodywork fields. The research promotes a holistic approach that bridges Eastern and Western medicine by integrating the concept of "dao" with diverse techniques like micro-needling, manipulation, and moxibustion. Through

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the Movement and Myofascial Chain theory, this physical literacy framework broadens students' horizons, enabling them to adopt a unified, dialectical view in understanding and practicing bodywork. This innovative approach fosters knowledge integration, collaboration, and adaptability, setting a new standard for sports-related and health professions.

RESEARCH OBJECTIVE

This study aims to develop and evaluate a comprehensive curriculum framework for the "Movement and Myofascial Chain" course to enhance physical literacy among medical students. Specifically, it seeks to establish curriculum standards that integrate theoretical and practical knowledge of motor sociology, guided by Taylor's goal model and constructivist learning principles. By implementing a mixed-methods approach, this research aims to analyze the impact of the curriculum on students' understanding of exercise rehabilitation, their ability to manage sports injuries, and their perspectives on integrating traditional Chinese and Western medicine.

LITERATURE REVIEW

Taylor's Target Pattern

American scholar Ralph Tyler put forward the goal model based on the goal as the basis and core of course design, course design theory around the determination, realization, and evaluation of course goals. Taylor's goal model mainly operates and develops around four basic questions. Including: 1) What learning goals students should achieve. 2) What educational experiences are provided to achieve learning goals. 3) How to organize these educational experiences. 4) How to judge whether these goals are achieved, according to these four essential questions, the course design process can be summarized into four stages: determining educational goals, selecting learning experiences, organizing learning experiences, and implementing educational evaluation, called the Tyler rationale (Zhong, 1989). This theory provides a basic conceptual framework for course design, which is universal.

This study uses Taylor's goal model as the basic theoretical framework for course design. It researches the course design of the "Movement and Myofascial Chain" in medical schools around four essential questions, namely: 1) The construction of teaching objectives, the proposed design of "Movement and Myofascial Chain" What is the goal of the "Chain" course? 2) Construction of teaching content: What educational experience can be provided to achieve these course goals? 3) Design of teaching methods: How can these educational experiences be effectively organized? 4) Teaching feedback/evaluation strategy: How do we determine that these goals are being achieved?

This study adopts a structured, multi-phase methodology to enhance and refine the existing basketball elective curriculum for Chinese college students. It aims to correct curriculum deficiencies and elevate teaching quality and efficacy.

Constructivist Learning Theory

Constructivist learning theory is a theory about knowledge and learning, which became popular in the 1980s and is an essential branch of cognitive learning theory. Constructivism emphasizes learners' initiative and believes that learning is a process in which learners generate meaning and construct understanding based on original knowledge and experience. The prominent representatives are Piaget, Kornberg, Sternberg, Katz, and Vygotsky (Kala et al., 2010).

The Movement and Myofascial Chain course design is a learner-oriented course design with experiential-centered teaching activities and educational content with the Movement and Myofascial Chain as the theme. Therefore, to guide the construction of the Movement and Myofascial Chain course with constructivist learning theory should start from the following points (Zhen et al., 2018):

1. Based on the learner's previous experience, fully carry out learning situation analysis and integrate it into course design. As far as the Movement and Myofascial Chain is concerned, students' knowledge of the Movement and Myofascial Chain, background experiences related to the myofascial Chain, such as clinical experience and clinical treatment experience, and students' attitude toward the myofascial Chain are all part of the course design. The entry point and important factors of.
2. Guided by teachers and guided by student experience. The meaning and value of the Movement and Myofascial Chain are not objective truths. They will be given subjective meanings due to different cognitions and understandings of individuals. Professor-style courses do not promote students' active experience and cognition and cannot resonate. On the contrary, an experience-based course design can promote a deeper understanding of students, triggering individual in-depth thinking in the experience and ultimately gaining something. In other words, students' life experience, growth background, and thinking mode are all prerequisites and factors teachers should consider in course design. Let students feel attentive and share with them so that the true meaning of the course can penetrate the students' lives so as to be internalized and absorbed.
3. With the Movement and Myofascial Chain as the theme, cooperative learning is the leading factor. The Movement and Myofascial Chain can use various experiential activities, role-playing, group discussions, practical visits, discussions, scenario simulations, etc., in the form of communication, debate, coordination, and other cooperative learning forms, individuals can more clearly define their own The attitude of the Movement and Myofascial Chain, examining one's cognition, promotes individuals to construct a more reasonable knowledge structure and a more optimized processing ability to deal with exercise rehabilitation diseases.

Guide the Construction Process of the Training Project with the "Six-Step Method of Medical Course Construction"

Johns Hopkins University Kern and other scholars published "Course Development for Medical Education: A Six-step Approach" in 1998 and proposed the "Six-step Method of Medical Course Construction" (Lynn, 2010). This method is

based on the teaching philosophy proposed by Hilda Taba, which proposes that teaching should achieve specific set goals rather than impart knowledge. They advocated that the medical course should be linked to health care needs. The assumptions of this course construction method are:

1. Educational courses/training programs have specific training goals (even if they are not clearly stated);
2. Medical educators are responsible for meeting the needs of learners, patients, and society;
3. Medical educators should be responsible for the effects of teaching and training activities;
4. A rigorous and systematic course/training project construction method helps to realize the above assumptions.

Step 1: Identify the problem and assess the overall needs

Determine the needs or problems the course/training program needs to meet or solve, such as the health care needs of a specific cultural background; ensure that medical staff have certain capabilities, etc. Clarifying the problem helps to determine the objectives of the course/training project and evaluation strategy. Comprehensive assessment questions include Movement and Myofascial Chain data on the question's impact on patients, healthcare workers, and society. Assessing overall needs should answer the following questions: How is the problem currently solved? What is the best Way to solve this problem? The gap between the current solution and the best method is the needs assessment.

Step 2: Assess the specific needs of learners

First, determine the target group of the course/training program. Consider whether training interventions for this target population can help solve healthcare problems. Fully understand the relevant information of the target population and determine the most critical training content. The information that needs to be understood includes similar training you have participated in before, knowledge and skills you have, self-perceived deficiencies and needs, training methods and strategies you are willing to choose, obstacles, facilitating factors, coercive factors, etc., to participate in training; Available resources, such as clinical experience, information resources, faculty, network, etc. The methods for assessing needs are informal discussions or formal interviews, focus group interviews, questionnaire surveys, direct observation methods, examinations, etc.

Step 3: Formulate training goals and objectives

Training goals are overall goals, and goals are specific and measurable. The formulation of training goals and objectives helps to determine the training content and divide the training focus, provide a reference for choosing appropriate and effective training methods, guide the evaluation of the project and learners, and publicize the objectives of the training project to others. The Purpose of training should have five essential elements: Who? When? Doing what? How to do? To what extent? The words used should be clear and specific. For example, a fifth-grade medical student needs to perform a lumbar puncture at the end of the neurology rotation, which a professional physician evaluates to meet the requirements of the technical operation standard list.

Training goals can be divided into individual learner-level goals, learner-level goals, and training project-level goals. According to the progress of the training, training process goals, and ending goals can be divided. They can also be divided into cognitive and emotional goals, Purpose, psychological Purpose, etc.

Step 4: Build a training strategy

The training strategy includes training content and training methods. The training content refers to the project's specific materials, and the training method refers to how the content is presented. The training content should correspond to the objectives established in the third step. The selection of training methods should meet the following requirements: maintain the consistency of training objectives and content; comprehensively use multiple training methods; consider feasibility and resource availability.

Step 5: Implement training

Firstly, the resources needed for implementation should be determined: human resources, such as faculty, management assistance, and patient cooperation; time: teacher's time arrangement and learner's time arrangement; facilities: space, training tools, clinical venues; funding: Direct expenditure, hidden expenditure. The second is to get help, including internal support: request the cooperation of the dean of the college, the hospital administrative department, department managers, project leaders, learners, etc.; external support: the government, professional social organizations, funds, etc. It should anticipate possible obstacles and formulate solutions.

Step 6: Evaluation and feedback

Evaluation and feedback are the end of the project construction cycle and the beginning of guiding the improvement project into the next cycle. Evaluation results can be used to seek support from all aspects of the project, evaluate individual results, achieve external needs, and lay the foundation for reporting and results publication. Before evaluation, appropriate measurement methods should be selected, evaluation tools should be developed, and the best evaluator and evaluation should be determined Way. Ethical principles need to be considered when evaluating. The evaluation steps are collecting data, analyzing data, and reporting results.

Research Context at Home and Abroad

According to preliminary statistics, there are currently more than 200 institutions conducting fascia research internationally, involving more than 60 countries, such as the Vermont University School of Medicine, the Harvard University School of Medicine, the Ulm University School of Medicine in Germany, and the Vrije University School of Human Sciences in the Netherlands. The team is the most eye-catching. In these institutions, scholars from different fields are carrying out systematic research on fascia topics in a planned way, and their academic influence continues to expand. A new subject with fascia as the research object has begun to take shape (Yu et al., 2018).

Inspired by the thinking of traditional Chinese medicine and combined with the results of modern life science and medical research, Professor Yuan Lin proposed that the network of connective tissue and fascia scaffolds throughout the body may constitute an independent functional system with the participation of the nervous system and immune system - the human body support reserve system., participate in the maintenance of the life cycle, and maintain the

stability of the body's internal environment. To this end, he boldly proposed the concept of "fasciology," believing that in addition to a functional system composed of relatively well-differentiated functional cells, the human body also has a support and reserve system composed of a non-specific connective tissue scaffold network, which is the mainstay of the body's maintenance—the material basis for a longer life cycle (Feng et al., 2013). The "fasciology" proposed by Professor Yuanlin has positive significance and reference value for the current booming research on fascia.

METHODOLOGY

Research Design

This research was divided into three phases, including the introductory information study of the course, the development of the course, and the implementation of the course. In the first stage, understand the current status of the development of the myofascial chain of undergraduates in medical schools, influencing factors, and demand analysis of students' exercise rehabilitation knowledge and skills. In the second stage, according to the needs of medical students for exercise rehabilitation, the teaching plan of "Movement and Myofascial Chain" was preliminarily designed with Taylor's goal model theory as the guidance, the constructivism theory as the core, and the six-step method of medical course construction, formulate the content, teaching methods, teaching hours and assessment methods through the evaluation of the expert group. In the third stage, quasi-experimental courses, evaluation of students' knowledge and skills examination results, and self-test scale; a semi-structured interview outline was used to evaluate the teaching quality of the course.

Participants

In the first stage, 120 second-year clinical students in a medical university. In the second stage, five senior rehabilitation medicine experts and physical education and training experts with specific research on sports and the myofascial chain. In the third stage, with the support of the Rehabilitation Department of the First Affiliated Hospital of Xinxiang Medical University, two rehabilitation medicine teachers and three professional physical education teachers were selected by directional sampling, thirty clinical medical students.

Instruments

Seven main instruments were used in the study to illustrate: a student questionnaire, an expert assessment form, eight teaching plans, a theory test, a skills assessment, a self-assessment scale of exercise rehabilitation knowledge and skills based on Movement and Myofascial Chain, and an Outline of semi-structured individual interviews.

Procedures

Movement and Myofascial chain promote improving students' knowledge and skills in exercise rehabilitation. It is a research and development (R&D) project with three phases. The first stage results and fundamental research analysis included literature analysis and analysis of curriculum impact factors and demand survey results. The second stage of course development includes the basic situation of experts, the results of expert consultation on course objectives, course content, teaching methods, assessment criteria, and assessment tool expert consultation results. The third phase of implementation results and analysis is divided into quantitative research and analysis, qualitative research and analysis.

In the basic research stage, based on a literature review, a large-sample cross-sectional survey was used to understand the development status of movement and myofascial chain in medical college undergraduates, and its influencing factors and pathways were analyzed.

In the course development stage, the "six-step method of medical curriculum construction" was used as the theoretical guidance, and the teaching project on coping with sports injury and rehabilitation was constructed by referring to the results of the pre-survey of sports injury and rehabilitation teaching demand. Then, the teaching program was revised and improved through the expert group meeting method (Bai, 2011).

Based on the results of previous theoretical research, the course "Movement and Myofascial Chain" was implemented as an undergraduate elective course in a medical university from October 2023 to December 2023, and an educational experiment was designed to conduct empirical research on it.

Data Analysis

Quantitative research and statistical analysis

SPSS was used to input and analyze the data. Continuous data are described as mean ± standard deviation and median (interquartile range), and categorical variables are described as frequencies and frequencies. K-S test method was used to test the normality of the data. According to the results of the normality test of the data, a paired sample t-test or Wilcoxon correlation sample signed rank test was used to compare the changes in students 'self-evaluation familiarity with knowledge and skills before and after the course. The topic analysis summarizes the suggestions and opinions of the students on the course project.

Analysis and quality control of qualitative research data

After each interview, the recording materials were promptly transcribed into transcripts. Key nonverbal behaviors such as tone, speed of speech, or silence should be marked in the transcribed data, and all events that occurred during the interview should be noted in the interview notes. Each transcribed piece of data was numbered, the time and place of the interview recorded, and the general information of the interviewees sorted out. The original recording materials were properly preserved after collation for later retrieval.

Colaizzi's (1978) content analysis method was used to analyze the transcribed interview data. The specific steps included: (i) Carefully and repeatedly read the transcribed interview data to understand the real meaning expressed; (ii) xtract significant statements from the transcribed data;

(iii) Coding the meaningful statements; (iv) Classify the coded code to find the login category; (v) All the codes and categories were comprehensively analyzed, and the theme (or sub-theme) was extracted to form the overall description framework; (vi) Return the theme frame to the interviewees for verification (Chen et al., 2011).

RESULTS

The study is research and development. To develop the course "Movement and Myofascial Chain" to improve students' knowledge and skills of exercise rehabilitation. According to the knowledge framework of the course "Movement and Myofascial chain", the researchers presented the data analysis results in the following order:

Reliability reflects the measurement results rather than the stability of the questionnaire and will change with different times and respondents. Therefore, the reliability value of the questionnaire in this group should be re-reported after each use. The internal consistency reliability coefficients of the survey results of 100 respondents are shown in Table 1.

As can be seen from Table 2, the results of the questionnaire show that there are 0 items with a score higher than 3 points (some understanding) in the scores of the selected subjects on each ability; There are nine items with a score lower than 3 points, between "some understanding" and "not very understanding"; The remaining 13 items scored between "very little understood" and "not very well understood." The results show that students generally have low knowledge and skills based on the Movement and Myofascial chain.

Table 3 shows the results of Pearson correlation analysis among the modules. There was a significant correlation between the fascial chain questionnaire score and the stretching questionnaire score, the fascial chain training questionnaire score, the exercise ability assessment questionnaire score, and the patient questionnaire score (p <.05).

Figure 1 shows the types of courses students are willing to take. As can be seen from the figure, 65% (n=65) thought it should be combined with physical education classes, 27% (n=27) thought it should be set as a compulsory course, 72% (n=72) thought it should be set as club training, and 44% (n=44) thought it should be set as an optional course. The proportion of club training is the highest, followed by the combination of physical education. Considering the control of independent variables, the research group discussed physical education.

Figure 2 shows that in terms of teaching methods, 73% (n=73) believe that theoretical teaching should be adopted, 83% (n=83) choose skill teaching, 51% (n=51) choose scenario simulation training, and 42% (n=42) choose video teaching and other assistance. The teachers of the research group will combine the above four methods with the comprehensive selection of teaching content and characteristics.

The IOC statistical results of the value assignment to each item of the course objectives by the experts in the two rounds of consultation. The final teaching objectives are shown in Table 4.

Guided by the "six-step method of medical course construction," this part developed the "Movement and Myofascial chain teaching project" by studying the ability system constructed in the first step, combined with literature analysis, questionnaire survey, and other methods. Using expert investigation and demonstration, the teaching program was revised after consulting expert opinions and suggestions. The final teaching scheme was divided into eight modules, including four theoretical and four skill modules. In terms of teaching methods, lecture method, game method (knowledge competition), demonstration method, situational

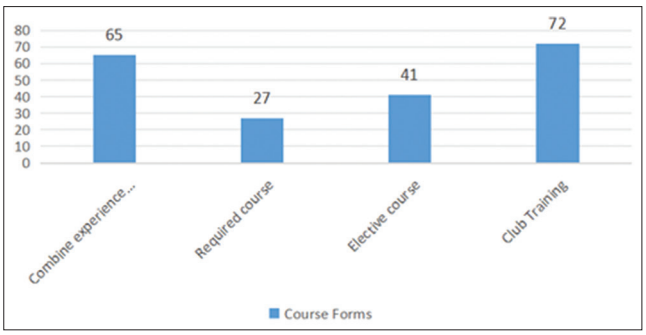

Figure 1. Type of course

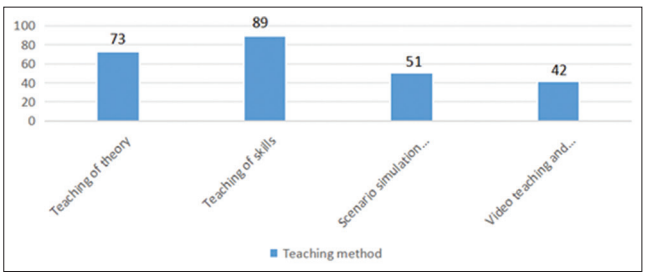

Figure 2. Teaching methods

Table 1. Internal consistency reliability coefficient of questionnaire survey results (n=100)

Total questionnaire (Dimension)	***NO.***	***Cronbach's α***
Total Questionnaire	22	0.831
Dimension of knowledge	12	0.825
Fascial chain questionnaire: Items 1 to 4	4	0.867
Stretching questionnaire: Items 5 to 9	5	0.781
Fascial chain training questionnaire: Items 10 to 12	3	0.753
Dimension of skill	10	0.757
Exercise ability assessment questionnaire: Items 13 to 20	8	0.744
Case questionnaires: 21, 22	2	0.806

Table 2. Analysis of the results of the questionnaire survey on students' motor fasciology ability

Items	Results of consultation		
	Mean	*SD*	*CV*
1	2.43	0.495	0.204
2	1.67	0.511	0.306
3	1.27	0.444	0.350
4	1.57	0.534	0.340
5	2.25	0.684	0.304
6	2.22	0.672	0.303
7	2.1	0.608	0.290
8	2.17	0.649	0.299
9	2.25	0.684	0.304
10	2.45	0.497	0.203
11	2.45	0.497	0.203
12	2.29	0.516	0.225
13	1.5	0.500	0.333
14	1.59	0.492	0.309
15	1.36	0.480	0.353
16	1.67	0.470	0.282
17	1.55	0.497	0.321
18	1.53	0.499	0.352
19	1.38	0.485	0.352
20	1.42	0.494	0.348
21	1.56	0.496	0.318
22	1.46	0.498	0.341
Total	40.14	4.583	0.114

teaching method, video teaching method, practice method, group discussion method, group task method, case deduction method, and other methods were integrated, and the simple theoretical teaching method was weakened. Skill operation and situational teaching were emphasized. The database of teaching projects included a teaching knowledge manual, skill manual, skill operation video, teaching slides, discussion questions, theoretical examination paper, skill assessment standard, and semi-structured interview outline. The following quasi-experimental verification study will further test the effectiveness and pertinency of the teaching program, that is, whether it can effectively improve the ability to deal with the Movement and Myofascial chain.

Table 5 shows the score distribution of theoretical assessment results. Ten were rated as "excellent" with more than 85 points, 16 were rated "good" with scores between 70 and 85, and four were evaluated as "qualified" with scores between 60 and 70.

Tables 6, 7, and 8 show that the high errors in assessing range of Motion (ROM) measurement mainly focus on the correct placement of joints during measurement, which leads to data reading errors.

Table 9 shows that since the normality test results showed that all the data did not meet the normality, the Wilcoxon signed rank test of related samples was used to compare the differences in the ability scores before and after the course. The scores of all abilities after the course were higher than before, and the differences were statistically significant.

According to Colaizzi's (1978) content analysis, meaningful statements were extracted from the transcribed interview data of 10 students. After coding and classification, the data could be summed up into 37 categories. A total of 19

Table 3. Correlation analysis between each knowledge skill modules of movement and myofascial chain

Module	Myofascia chain	Stretching	Myofascial chain training	Exercise ability assessment	Case of motor joint injury
Myofascia chain	1				
Stretching	.365*	1			
Myofascial chain training	.512*	.364*	1		
Exercise ability assessment	.394*	.212*	.436*	1	
Case of motor joint injury	.849*	.320*	.238*	.289*	1

* Significant correlation was found at the 0.05 level (bilateral)

Table 4. The course objectives

Category	Consultation content
Intelligence domain	1 Understand the concept, composition and characteristics of fascia
	2 Understand the concept of myofascial chain and meridian
	3 Understand joint hypermobility and lack of mobility: effects on function, movement, and participation
	4 Understand misconceptions about stretching and future trends
	5 Master the principles of myofascia training
	6 Master the four aspects of the crossbow effect and fascia training
Skills domain	1 Master the application of FMS functional action screening
	2 Master motor ability assessment
	3 Use the trigger point to relax the fascia
	4 Use fascial chain thinking to analyze cases of motion joint disease

Table 5. Distribution of scores after the theory examination

Score (points)	Grade	Frequency	Percentage (%)
60 ~ 70	Up to standard	2	6.7%
70 ~ 85	good	16	53.3%
More than 85 points	excellent	12	40%

Table 6. Number and proportion of errors in each step of shoulder joint motion (ROM) measurement (n=10)

Item	Content and scoring criteria	Number of errors	PCT (%)
Quality requirement	Dress neatly, look well, speak well, be kind, check your identity	0	0
Evaluate	Assess the extent of impaired range of motion	0	0
	Assess the patient's cooperative attitude	0	0
Preparation before operation	Environmental preparation	0	0
	Preparation of materials: universal protractor, treatment bed	0	0
Shoulder joint flexion and extension	Position: Sitting or standing with arms at side and elbows straight	0	0
	Determine the axis position: acromion	0	0
	Positioning of the fixed arm: parallel to the middle axillary line	4	40%
	Moving arm placement: parallel to the longitudinal axis of the humerus	3	30%
Shoulder joint adduction and abduction	Correct ROM measurement	0	0
	Correct reading of scale	0	0
	Position: Sitting or standing with arms at side and elbows straight	5	50%
	Determine the axis position: acromion	5	50%
Internal and external rotation of shoulder joint	Positioning of the fixed arm: parallel to the middle line of the body	1	10%
	Moving arm placement: parallel to the longitudinal axis of the humerus	4	40%
	Correct ROM measurement	4	40%
	Correct reading of scale	4	40%

Table 7. Number and proportion of errors in each step of elbow and wrist range of Motion (ROM) measurement (n=10)

Item	Content and grading criteria	Number of errors	PCT(%)
Quality requirements	Dress neatly and appearance generous, appropriate language, amiable attitude, check identity	0	0
Evaluation	The extent of joint range of motion impairment was assessed	0	0
	Assess the patient's cooperative attitude	0	0
Preparation before operation	Environment preparation	0	0
	Preparation: universal protractor, treatment bed	0	0
Elbow flexion and extension	Position: supine or sitting or standing, arms in anatomical position	0	0
	Determine the axis position: elbow flexion, extension	0	0
	Fixed arm placement: parallel to the longitudinal axis of the humerus	0	0
	Position of mobile arm: parallel to longitudinal axis of radius	0	0
Wrist joint palmar flexion, dorsal extension	Measure ROM correctly	0	0
	Read the scale correctly	0	0
	Position: sitting or standing, forearm fully pronated	5	50%
	Determine the axis position: the styloid process of the ulna	5	50%
Radial deviation and ulnar deviation of wrist joint	Position of fixed arm: parallel to the long axis of radius	3	30%
	Position of mobile arm: the long axis of the fifth metacarpal is parallel	2	20%
	Measure ROM correctly	3	30%
	Read the scale correctly	5	50%

categories belonging to the first part of the interview, "harvest and growth," were further summarized into five sub-themes and two themes after analysis. The number of categories belonging to the second part of the interview, "evaluation and

Table 8. Number and proportion of errors in each step of knee and ankle range of Motion (ROM) measurement (n=10)

Item	Content and grading criteria	Number of errors	PCT(%)
Quality requirements	Dress neatly and appearance generous, appropriate language, amiable attitude, check identity	0	0
Evaluation	The extent of joint range of motion impairment was assessed	0	0
	Assess the patient's cooperative attitude	0	0
Preparation before operation	Environment preparation	0	0
	Preparation: universal protractor, treatment bed	0	0
Knee flexion and extension	Position: prone, side or sitting on the edge of a chair	0	0
	Determine the axis position: lateral condyle of femur	1	10%
	Position of fixed arm: longitudinal axis of femur	3	40%
	Position of mobile arm: longitudinal axis of tibia	4	40%
Dorsiflexion and extension of ankle joint	Measure ROM correctly	0	0
	Read the scale correctly	0	0
	Position: Supine neutral position at ankle	3	30%
	Determine the axis position: the junction between the axis of the longitudinal axis of the fibula and the outer edge of the foot	3	30%
Ankle varus and valgus	Position of fixed arm: parallel to the longitudinal axis of fibula	1	10%
	Position of the mobile arm: parallel to the longitudinal axis of the fifth tuber	3	30%
	Measure ROM correctly	1	10%
	Read the scale correctly	5	50%

Table 9. Data analysis of self-rating exercise rehabilitation knowledge and skills Scale based on myofascial Chain

NO.	Pre-course tests		Post-course tests		*p*
	X±S	*M (Q 1, Q 3)*	*X±S*	*M (Q 1, Q 3)*	
1	3.20±0.40	3 (3,3)	4.77±0.42	5 (4.83,5)	<.001
2	2.43±0.50	2 (2,3)	4.83±0.37	5 (5,5)	<.001
3	2.33±0.47	2 (2,3)	4.67±0.47	5 (4,5)	<.001
4	2.37±0.48	2 (2,3)	4.93±0.25	5 (5,5)	<.001
5	2.40±0.49	2 (2,3)	4.87±0.34	5 (5,5)	<.001
6	2.37±0.48	2 (2,3)	4.77±0.42	5 (4.83,5)	<.001
7	2.53±0.50	3 (2,3)	4.77±0.42	5 (4.83,5)	<.001
8	2.37±0.48	2 (2,3)	4.73±0.44	5 (4.18,5)	<.001
9	2.33±0.47	2 (2,3)	4.73±0.44	5 (4.18,5)	<.001
10	2.40±0.49	2 (2,3)	4.73±0.44	5 (4.18,5)	<.001
11	2.33±0.47	2 (2,3)	4.80±0.40	5 (5,5)	<.001
12	2.53±0.50	3 (2,3)	4.50±0.50	4.25 (4,5)	<.001
13	2.40±0.49	2 (2,3)	4.87±0.34	5 (5,5)	<.001
14	2.60±0.49	3 (2,3)	4.90±0.30	5 (5,5)	<.001
15	2.40±0.49	2 (2,3)	4.87±0.34	5 (5,5)	<.001
16	2.43±0.50	2 (2,3)	4.93±0.25	5 (5,5)	<.001
17	2.30±0.46	2 (2,3)	4.77±0.42	5 (4.83,5)	<.001
18	2.33±0.47	2 (2,3)	4.70±0.46	5 (4,5)	<.001
19	2.37±0.48	2 (2,3)	4.70±0.46	5 (4,5)	<.001
20	2.30±0.46	2 (2,3)	4.67±0.47	5 (4,5)	<.001
21	Total	47.5 (45,52)	95.50 ± 5.73	97.5 (94.25,99)	

suggestions," was 26, which could be summarized into eight sub-themes and three themes after analysis.

Some students suggested inviting excellent rehabilitation teachers into the classroom made them feel the diversity,

advancement, and development of exercise rehabilitation work. The students thought they had formed a deeper understanding of exercise rehabilitation and were full of expectations for future work.

DISCUSSION

Starting from the three-stage study process of training second-grade medical students to learn Movement and Myofascial Chain to improve their knowledge and skills in exercise rehabilitation, it is a course that cultivates students' exercise rehabilitation ability. Practical application is perfect, so it is a beneficial course for teachers in medical schools and sports-related majors, who can apply it to improve students 'cognition of exercise rehabilitation and improve students' exercise rehabilitation knowledge and skills, discussed below:

This research is the first study of a myofascial-guided exercise rehabilitation course, which breaks the existing boundaries in exercise health and exercise rehabilitation research. Combining human anatomy and TCM meridians opens a new understanding of TCM, concretizing and visualizing the actual anatomical structure, and will be more widely used. A more direct way is needed for more people to come into contact with the myofascial chain, understand its system and way of thinking, and combine it with practical use. Future research on sports fascia will have a profound impact on sports-related majors.

Movement and Myofascial Chain is a skill-based course. The teaching method is based on constructivism, combines experiential learning and cooperative learning, carries out the idea of students 'main body, pays attention to students' experience, and emphasizes the learning process and practice. The "Ability Questionnaire to Deal with sports injuries" formed by the transformation of the ability system is the first evaluation tool at home and abroad focusing on the knowledge and skills of Movement and Myofascial chain and sports injury. It has good reliability and validity, strong operability, and professional application value. Traditional assessment is challenging to cover the comprehensive knowledge, pay attention to more is the focus and difficulty of learning, researchers, in order to comprehensively measure the learning effect, according to the movement of fascia course content design based on movement rehabilitation knowledge skills from the scale, for the system of knowledge skills assessment results, have a more comprehensive grasp. The self-measurement meter has strong pertinence and poor practicability for other courses.

The sports fasciology developed in this study provides new curriculum resources for training sports rehabilitation talents and social sports workers. The students who participated in the course project were all clinical medical students who had studied anatomy and physiology courses. The rich learning experience affected the course effect and positively or negatively affected the measurement indicators of other outcome variables. The second experimental study was conducted by the medical university where the researchers were located. Several experts and professors in sports and rehabilitation medicine were invited for guidance, and significant support was received from the course venues and facilities. Therefore, the applicability of this course scheme in other colleges and universities needs to be tested through subsequent research or practice.

CONCLUSION

This study demonstrates that the "Movement and Myofascial Chain" course project effectively enhances students' physical literacy by deepening their understanding and application of theoretical knowledge and practical skills in sports injury and rehabilitation. The quasi-experimental results highlight that the course significantly improves students' competencies in managing sports rehabilitation, offering a well-structured, clear, and engaging curriculum. These features cater to students' learning needs, suggesting that the course framework can successfully apply to diverse student groups. Educators can utilize this adaptable approach to foster student engagement and skill acquisition across different educational contexts, reinforcing the value of physical literacy in various disciplines.

From a policy perspective, the study emphasizes integrating exercise rehabilitation education into public health curricula to meet the rising demand for physical literacy and preventative healthcare skills. The research contributes theoretically by affirming the role of motor sociology in rehabilitation education, providing fresh insights while supporting existing theories in movement sciences. Socially and culturally, this curriculum may help shape a broader understanding and acceptance of integrative health practices, aligning with "Healthy China 2030" goals to advance a holistic view of health. Promoting physical literacy as a foundation for lifelong health across Eastern and Western paradigms can influence cultural perceptions, supporting a more unified approach to wellness and preventative care.

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