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RESEARCH ARTICLE

TEACHING REFORM AND PRACTICE OF SPORTS PHYSIOLOGY COURSE BASED ONOBECONCEPT- TAKING THE PHYSICAL EDUCATION MAJOR OF SICHUAN UNIVERSITY OF ARTS AND SCIENCES AS AN EXAMPLE

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Abstract

College students majoring in physical education attach great importance to skill learning and underestimate the learning of core professional courses,a vital path restricting their comprehensive professional growth and success. A significant foothold of teaching reform is improving their enthusiasm and learning effectiveness in learning basic professional theories, and achieving their ability to learn and love learning. An 8-week teaching reform of sports physiology based on the OBE concept was implemented for 112 college students majoring in physical education in 2022. It was found that the intervention significantly improved the ability of college students majoring in physical education to explain knowledge points in a complete, scientific, and targeted manner and significantly improved their written language expression ability and logical ability in organising language. This has significant practical value for becoming a qualified physical education teacher in the future.Future research will conduct multidimensional and comprehensive evaluations of the effectiveness of teaching reforms based on this foundation and trackrelevant information such as student employment.

Introduction:-

The importance of “sports physiology courses”lies in a deep understanding of the human body's physiological responses and adaptation mechanisms during exercise, providing scientific basis and guidance for sports training, rehabilitation, and health promotion.Studying exercise physiology enables students to master knowledge of energy metabolism, changes in muscle strength and endurance during exercise, adaptation of the cardiovascular system, and exercise's impact on other body systems. This helps improve exercise performance and training effectiveness, prevent sports-related injuries and diseases, and promote personal health and quality of life.Research has shown that studying exercise physiology courses can help students better understand the effects of exercise on the body and apply it to practical exercise training and rehabilitation[2].In addition, “sports physiology courses”also cultivate students' scientific research abilities and critical thinking, enabling them to design experiments and analyse data independently. The teaching methods of “sports physiology courses” are also constantly improving, shifting from traditional theoretical knowledge transmission to student-centred educational methods.This teaching method focuses on cultivating students' practical abilities and comprehensive qualities. Through case studies, experimental practice, and team cooperation, students can apply theoretical knowledge to practical situations to improve problem-solving

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skills and innovative thinking.In summary, “sports physiology courses” are essential in providing scientific basis and guidance and cultivating students' practical ability, critical thinking, and innovation abilities,laying a foundationfor future career development and personal growth.

The core concept of OBE (Outcomes Based Education) is education oriented towards learning outcomes.It emphasizes cultivating students' learning outcomes and abilities rather than just focusing on the teaching process. The OBE philosophy believes that students should achieve established goals and standards through learning and be able to apply the knowledge they have learned to solve practical problems. The core viewpoints of the OBE concept include the following aspects:1.Learning outcome-oriented:OB Eemphasises the learning outcomes of students, which are the knowledge, skills, and abilities that students should possess.The goals and evaluations of teaching should be clearly defined and matched with students' learning outcomes. Students' learning process should revolve around achieving these learning outcomes.2.Reflect the student-centered position:OB Eplaces students at the centre of education.Education should be designed and implemented based on the needs and characteristics of students. Teachers should pay attention to individual differences among students, provide personalised teaching support, and encourage students to actively participate in learning and develop their self-learning abilities.3.Application-oriented:OB Eemphasizesapplying learned knowledge and skills in practical situations.Students should be able to apply their learned knowledge to solve practical problems and cultivate innovative thinking and problem-solving abilities. Teaching should encourage students to engage in practical applications and practices to enhance the effectiveness and practicality of learning.4.Teaching evaluation:OBE believes evaluation should be closely integrated with learning outcomes.Teachers should use various evaluation methods to evaluate students' learning outcomes, including exams, project assignments, practical performance, etc. The evaluation results should be provided to students to help them understand their learning situation and provide further learning guidance.In summary, the core concept of OBE is to place students' learning outcomes and abilities at the core of education, emphasising individual differences and learning needs of students and emphasising the application of learned knowledge and skills in practical situations to promote their comprehensive development and realise their potential.

The “sports physiology courses” in physical education are essential to cultivating students' understanding and ability to apply sports physiology knowledge and theory. Currently, “sports physiology courses” teaching mode mainly focuses on traditional face-to-face teaching, supplemented by experimental and practical teaching.Regarding teaching, “sports physiology courses” usually adopt traditional face-to-face teaching methods, with teachers mainly imparting knowledge to students through lectures, textbook interpretation, and case analysis. At the same time, teachers will organise students to participate in experiments and practical activities so that students can deepen their understanding and application of sports physiology knowledge through hands-on practice.Students have difficulty mastering the theoretical knowledge of sports physiology, especially in understanding some complex physiological processes and mechanisms. In recent years, in the teaching practice of courses, course teachers have found that under existing conditions, studentshave significant problems such as unclearanalytical thinking,incomplete viewpoints, poor logical language organisation, and the need to improve their oral and cohesive expression. Therefore,this study will focus on student-centred, application-oriented, and learning outcome-oriented reforms in sports physiology teaching practice to improve students' learning enthusiasm and effectiveness.

Reform and Practice Plan

Research subjects

The research subjects are 112, Class 3-6 studentsof the Physical Education major at Sichuan University of Arts and Sciences in 2022. These students belong to the same group and entered university through the college entrance examination, with no significant difference in learning and problem-solving abilities.

Implementation Measures for Reform

In order to better highlight the student-centred concept, the course underwent an 8-week teaching practice reform from Chapter 10,"Physical Fitness" in thepractical section of Sports Physiology,to Chapter 15", Environment and Exercise". The specific operation methodrequires students to preview the relevant content of the next class before class fully. The teacher repeatedly discussed searching for relevant information and organising language cases and related requirementsin the previous teaching process.Each class requires understanding which knowledge points are the fundamental and complex points of the course and why they are the fundamental and challenging points. As a teacher, how should you explain them?How can the knowledge points learned be used reasonably to explain phenomena in sports practice?

Moreover,relevant knowledge should be used to guide sports practice scientifically.After each student finishes speaking in each class, the teacher will evaluatethe strengths and areas that need improvement during the trial teaching process so that similar situations do not occur during the second attempt.This experiment is designed with two opportunities for each participant to give a trial lecture, and the teacher will complete the evaluation and recording on the spot.

Evaluation indicators and methods

The evaluation is mainly based on the following dimensions: completeness, scientificity, logical language, and analysis of whether it is relevant to the topic and whether accurate written language is used for expression. The Levi's5-point scale is used to evaluate students' individual and overall performance. The scoring method for individual performance is to assign a score of 1-5 points from low tohigh. For example, if the presentation of knowledge points is complete,assign a score of 1-5points from strongly disagree to agree strongly.

Data processing

This study is aself-comparison experiment before and after,so it does not involve the control group.Descriptive statistics are representedby mean±standard deviation, and paired t-tests are used to compare data before and after intervention.$P \leq 0.05$ is considered to have significant differences before and after intervention.

Result:-

After eight weeks of intervention, it was found that this student-centred teaching practice reform significantly improved students' learning enthusiasm and ability.This ismainly reflected in significantly improving students mastery of the completeness and scientificity ofknowledge points, with the highest increase in logical language expression, reaching 94%. It is also significantly improved in answering questions or explaining problems encountered in sports practice.However, in terms of case analysis, although there has been improvement, there is no statistical difference. Please refer to Table1 for details.

Table1:- Changes in various indicators before and after intervention (M±SD).

Variables	Pre (n=112)	Post(n=112)
The knowledge points (key and difficult points) discussed are complete.	2.2±0.7	3.4±0.5**
The knowledge points (key and difficult points) discussed arescientifically reasonable.	2.1±0.4	3.8 ±0.6**
The knowledge points (key and difficult points) explained have goodlogical language.	1.8±0.7	3.5±0.4***
Case analysis and sports practice answersare scientifically reasonable.	2.0±0.6	2.5±0.3
Use written language to standardise and reasonably explain phenomena in sports practice.	2.1±0.5	3.1±0.9*

Note：*：P<0.05，**：P<0.01，***：P<0.001。

Discuss:-

The factors that affect the effectiveness of teaching reform based on the OBE concept include the following aspectsof professional competence and ability: The teacher's understanding and application ability of the OBE concept plays an essential role in the effectiveness of teaching reform.Teachers need to have in-depth professional knowledge and teaching skills, accurately set learning goals, design effective evaluation methods, and flexibly adjust according to students' learning situations.In the teaching process, the need for flexible adjustments based on students' learning situations has been reached at the teacher level.Student learning motivation and participation: Student learning motivation and participation significantly impact the effectiveness of teaching reform. If students are not motivated to pursue learning goals or lack enthusiasm to participate in classroom activities, the effectiveness of teaching reform may be limited[5,6]. The physical education major is influenced by traditional thinking, emphasising the learning of sports skills while neglecting the learning of theoretical knowledge. This process of thinking and cognitive change requires sufficient time to be realised.Previous teaching practice has taught us that career planning for first-year college students this morning can help improve their learning motivation and increase their enthusiasm and initiative in learning theoretical knowledge.Evaluation methods and feedback mechanisms:OBE emphasises the evaluation of students' actual abilities and outcomes. Therefore, the quality of evaluation methods and feedback mechanisms is crucial for the effectiveness of teaching reform. A practical

evaluation method should match learning objectives, accurately measure student learning outcomes, and provide targeted feedback on time[7,8].This is also a major highlight of this teaching reform, which is to allocate more time for students to prepare,for teachers to provide timely feedback, and to conduct follow-up and evaluation in the later stage.However, in the process of discussing teaching reform, if an online feedback record system can be established for teachers and students to view at any time, it may achieve more significant results in promoting teaching reform support from schools and education systems: The level of support from schools and education systems for teaching reform can also affect its effectiveness. If schools and education systems can provide necessary resources and support, including training, curriculum design guidance, and evaluation tools, then the effectiveness of teaching reform may be better[9].A collective effort has been made at the school levelto provide teachers with various learning opportunities and platforms.

Limitations of this study:Limitations of sample selection: Taking the physical education major of Sichuan University of Arts and Sciences as an example, the sample selection range is limited and cannot represent the situation of other schools or majors.Therefore, the universality of research results may be limited to some extent. Limitations of data collection: This study may only rely on questionnaire surveys or interviews to collect data, and the subjective intentions and errors of the respondents may influence the authenticity and objectivity of these data. In addition, there may be issues with incomplete or inaccurate information collection. Limitations of research methods: This study may have only used one qualitative or quantitative research method without comprehensively applying multiple research methods, which may lead to an incomplete understanding and interpretation of the problem. Limitations of time and resources: Due to time and resource limitations, this study may not be able to conduct long-term follow-up observations or experimental research, thus making it impossible to comprehensively evaluate the effectiveness and impact of the reform and practice of sports physiology courses. Limitations of consistency in research results: The results of this study may be influenced by individual differences and environmental variables, resulting in limited consistency in the results. Therefore, more validation and replication studies are needed to increase the reliability and stability of the research results. Future research directions can include the following aspects:Expanding the sample range: Similar studies can be conducted in other universities or physical education majors to increase the universality and reliability of research results. Data collection methods can be used in addition to questionnaire surveys, interviews, field observations, experimental research, and other methods can be combined to obtain more comprehensive and objective data.Comprehensive application of different research methods: Qualitative and quantitative research methods, such as mixed research methods, can comprehensively explain the effects and impacts of teaching reform and practice in sports physiology courses.Increase long-term tracking observation: Long-term tracking observation can be conducted to evaluate the persistence and sustained effects of sports physiology curriculum reform and practice. Effect evaluation research: Effect evaluation research can be conducted to evaluate the effectiveness and impact of sports physiology curriculum reform and practice through indicators such as student performance, learning motivation, and learning interest.

Conclusions:-

Through the 8-week teaching reform of the “sports physiology courses”based on the OBE concept, the ability of sports education major college students to explain knowledge points in a complete, scientific, and targeted manner has been significantly improved. The written language expression ability and logical language organisation ability of college students majoring in sports education have been greatly improved, which has significant practical value for becoming a qualified sports teacher in the future.Considering that this study is a preliminary exploration at a shallow level, future research needs to use a moremultidimensional and scientific scale to evaluate the effectiveness of teaching reform and the changes in the learning motivation of college students.

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