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The Application of Moston Reciprocal Teaching Method in College Basketball Skills Teaching

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Abstract: The Moston reciprocal teaching method is one of eight student-centered approaches to physical education proposed by American sports educator Musca Moston in his teaching book physical education, the basic idea is to divide the students into two groups in physical education. The teachers will explain and demonstrate the movements, and then practice separately in groups. In view of the low participation and poor interaction of students in traditional teaching methods, this study aims to change this phenomenon through this new teaching method. The subjects of this study were Beijing University of Chemical Technology students in public sports basketball classes. This study conducted a 16-week teaching experiment on 30 college students through a variety of scientific research methods, including literature, questionnaire, statistical and experimental methods, in which the experimental group adopted the Moston reciprocal teaching method and the control group adopted the traditional teaching method. The results showed that the experimental group was significantly better than the control group in terms of basketball skills. This finding supports the effectiveness of the Moston reciprocal teaching method in improving students' basketball skills and learning motivation. This study suggests that more interactive and participatory teaching methods should be adopted in college physical education, and calls for more extensive research on the applicability of the Moston reciprocal teaching method in different sports and different student groups. Through these findings, this study provides a new perspective and practical guidance for the reform of college physical education.

Keywords: Moston Reciprocal Teaching Method; College Student; Basketball Skills; Learning Interests

1. Preface

1.1 Research Background

In college physical education, the traditional teaching ideas, teaching methods have not adapted to the needs of the development of the times. At present, there are many problems in physical education in our country, one of the most outstanding problems is how to train students' survival ability and life-long physical ability. In the traditional view of knowledge, the school curriculum is based on knowledge to evaluate students' learning, and students' own needs, interests and character of the attention is relatively low. Over time, students' performance in class will become more negative. Even some people, simply did not participate in any class, which caused low motivation of students, seriously affecting the quality of the classroom.

1.2 Research Significance

The reciprocal teaching method in Mauston is one of the “People-oriented” teaching modes in physical education proposed by Muscat Moston in his book physical education in 1971, teachers will explain, demonstrate and train students in groups. The aim is to let students learn from each other and help each other. The central idea of reciprocal teaching in Mauston is to enhance students' self-confidence by enabling them to better grasp and understand what they have learned in the process of teaching and learning from each other.

The reciprocal teaching method in Mauston is a brand-new teaching method. Applying it to the physical education teaching in ordinary universities is a very valuable topic for improving the comprehensive quality of students. Through the research on the basketball course of Beijing University of Chemical Technology public physical education, we found that this method can

enhance the students' ability to communicate and cooperate with each other, at the same time can also enable students to master sports technology to get better play. In traditional classroom teaching, teachers often play a leading role, while students, as the object of learning, can only passively accept knowledge and skills. Mauston's reciprocal approach transforms students' roles into those of teachers and students, thus increasing their sense of participation and responsibility. Through this research, we found that this method not only improved the technical level of students, but also exercise their team spirit, communication skills and problem-solving ability, effectively tap the potential of students.

1.3 Research Status

Gu believes that the reciprocity teaching method emphasizes that in the teaching process, students' subjectivity should be fully brought into play, allowing them to help each other so that their learning skills can be fully utilized, which is consistent with the fundamental concept of teaching reform [1]. Wei believes that the interactive teaching method integrates modern educational concepts, strengthens the interaction among students, and plays a positive role in promoting the development of students' personalities. It also exercises students' ability to discover, analyze, and solve problems in the learning process, reflects students' subjectivity, and cultivates students' practical abilities [2]. Jiang stated that in various teaching methods such as new teaching textbooks, reviewing textbooks, and cluster teaching of textbooks dominated by skills such as difficult beauty and competitive skills, and textbooks dominated by physical fitness, are all adaptable. [3] Wang's research shows that the reciprocity teaching method is suitable for teaching technical movements, which is conducive to cultivating students' spirit of collaboration, competitive consciousness, and the spirit of continuous progress, thus further improving students' core qualities such as sports ability, healthy behavior, and sports morality [4].

Wayne believes that in traditional teaching methods are drill-style teaching, although traditional teaching methods provide a variety of contact skills, but in the use of school sports and sports environments, it does not show the ability of students to apply these skills in complex game situations, therefore, we need to innovate and apply reasonable teaching model to change this situation. [5] Dimitrios compared the effects of reciprocal and self-examination teaching methods on students' skills, and the results showed that student-centered reciprocal teaching method had a positive effect on students' autonomy and motor skills. [6] Oguzhan adopted a reciprocal teaching approach that brought students closer together. For beginners, reciprocal teaching method is an effective teaching method from beginner to proficient in movement technique. [7] Compared with imperative teaching, beginners are more inclined to reciprocal teaching, in the teaching process, the use of reciprocal teaching is conducive to students to master basic skills.

To sum up, sports experts believe that the use of reciprocal teaching methods in the teaching process can make students more aware of the essentials of technical actions, therefore, it plays a very good role in promoting the mastery of sports skills. The above research ideas provide the theoretical basis and experience for this study. [8-11]

2. Research Objects and Methods

2.1 Research Objects

This paper takes the application of Moston reciprocal teaching method in the teaching of public physical basketball courses in Beijing University of Chemical Technology as the research, takes 30 students participating in the school's public physical basketball teaching courses as the experimental object, and takes the changes of basic basketball skills before and after 16 weeks and the changes of interest in learning basketball courses as the investigation object.

2.2 Research Methods

2.2.1 Literature Review

Search and collect relevant information in China National Knowledge Infrastructure, HP Chinese Science and Technology Journal, and Wanfang Database, using "Moston Reciprocal Group", "Moston Reciprocal Teaching", and "Basketball Teaching" as keywords for search, trace and find relevant literature, and then organize and analyze the relevant information, the research needs of this article, and integrate

the information to provide a theoretical basis for the writing of this thesis.

2.2.2 Experimental Method

(1) Purpose of the Experiment

The purpose of the experiment is to test whether the Moston Reciprocal Teaching helps students better master the basic skills of basketball, such as dribbling, shooting, and passing, and to compare its effectiveness with traditional methods. These goals aim to verify the practical application value of the Moston Reciprocal Teaching Method in physical education teaching.

(2) Experimental Design

① Grouping: 30 students are randomly divided into an experimental group and a control group. The experimental group adopts the Moston Reciprocal Teaching Method, where are divided into groups, and each student takes turns playing the role of the teacher and the learner, teaching and learning basketball skills from each other. Emphasis is placed interaction and feedback among students, with the coach's role mainly being guidance and correction. The control group adopts traditional teaching methods, with the coach leading all training and students learning skills through imitation and repeated practice. Coaches provide direct guidance and feedback, and students practice more individually.

② Experimental Time: 16-week training course, 2 training sessions per week, each lasting 90 minutes.

③ Experimental Location: Outdoor basketball court of Beijing University of Chemical Technology.

(3) Experimental test index

Spot Shooting: Shooting from a fixed point, recording the hit rate, to test the students' shooting accuracy. The number of hits out of 30 is used as the evaluation criterion.

Dribbling Around Obstacles: Set up obstacles and require students to dribble around the cones within a specified time, with the shortest time to successfully navigate the obstacles as the criterion for judgment.

Passing Accuracy: Test the accuracy and power control of by passing to a stationary or moving target, with the accuracy of 30 passes used as the evaluation criterion.

(4) Experimental intervention program

The experimental plan is shown in Table 1.

Table 1. Experimental Scheme Design

Teaching stage	Experimental group	Control group
Preparations before teaching	Coach and students are trained in the Moston Reciprocal Teaching Method to ensure they understand the principles and implementation steps of reciprocal teaching. Prepare necessary teaching and facilities, such as basketballs, marking cones, scoreboards, etc.	Ensure that coaches have the experience and skills of traditional teaching. Prepare the same teaching materials and facilities.
Teaching implementation	Group teaching: Divide students into groups of 4-5. Designate different students to play the role of teacher in each class, teaching specific skills such as dribbling, shooting, etc. Role rotation: Ensure that every student has the opportunity to play the role of both teacher and student to promote the development of comprehensive skills. Interactive feedback: Encourage students to provide positive feedback and constructive criticism within the group, while the coach is responsible for supervising and providing professional feedback. Practical application: arrange a competition between groups before the end of each class, allowing students to apply the skills they have learned in actual combat.	Coach-led: The coach leads the course, teaching basketball skills through demonstration and explanation. Individual training: Students mainly learn and master skills through imitation and practice. Group practice: Group practices and small-scale matches are arranged to allow students to practice skills in actual combat.
Evaluation and adjustment	Regularly assess students' mastery of skills and teaching effectiveness, and adjust the teaching plan as needed.	Regular skills tests are conducted to assess students' learning progress and teaching effectiveness. Teaching content and methods are adjusted according to students' progress and feedback.

2.2.3 Mathematical Statistics

The data obtained in the experiment and the analysis of the questionnaire feedback were sorted and analyzed, and the difference of the data obtained was detected by software such as Excel 2019 and SPSS 2.0, provide an effective data base.

3 Research Results and Analysis

3.1 Comparison of Basic Basketball Skills between the Experimental Group and the Control Group before the Experiment

Table 2. Distribution of Basic Basketball Skills before the Experiment in the Experimental and Control Groups

Test item	Experimental group	Control group	difference	P
Spot Shooting	13/30	14/30	1	0.257
Dribbling Around Obstacles	30.36±4.21	31.45±3.55	1.09	0.142
Passing Accuracy	16/30	17/30	1	0.342

Note: P < 0.05, indicating that the data are different; P < 0.01, indicating that the data are significantly different; P > 0.05, indicating that the data are not different.

Before the experiment, the experimental group and the control group were compared in terms of basic basketball skills, including three items: spot shooting, dribbling around obstacles, and passing accuracy. The results showed that there was no significant difference in the performance of the two groups in these skills before the experiment which provided a balanced starting point for the subsequent experiment. As shown in Table 2, there was no significant difference in the average score of shooting at a fixed point between the experimental group and control group before the experiment (P=0.257), and the average time of dribbling around obstacles also showed no significant difference between the two groups (P=0.142). The average score of passing accuracy also did not show a significant difference (P=0.342). From the test results, the data before the experiment showed that the two groups of students had a similar level of basic basketball skills, which provided a fair basis for the subsequent implementation of the teaching method.

3.2 Comparison of Basic Basketball Skills of the Experimental Group Before and after the Experiment

Table 3. The Basic Skills of Basketball in the Experimental Group before and After the Experiment

Test item	Before the experiment	After the experiment	difference	P
Spot Shooting	13/30	18/30	5	0.001
Dribbling Around Obstacles	30.36±4.21	28.44±4.11	1.92	0.015
Passing Accuracy	16/30	20/30	4	0.025

Note: P < 0.05, indicating that the data are different; P < 0.01, indicating that the data are significantly different; P > 0.05, indicating that the data are not different.

By comparing the results of the basketball basic skills test before and after the experiment, it can be observed that there is a significant improvement in overall. As shown in Table 3, there has been a marked progress in the three aspects of basketball skills: spot shooting, dribbling around obstacles, and passing accuracy. improvement in the results after the experiment shows a statistically significant difference compared to the results before the experiment, with P values all less than 0.05, and less than 0.01 for spot shooting and passing accuracy. These results indicate that the Moston reciprocal teaching method effectively promoted the learning of basketball skills among students and improved their basketball technical level. In addition, application of the teaching method may also have encouraged students to help each other and fostered a spirit of teamwork.

3.3 Comparison of Basic Basketball Skills between the Control Group before and after the Experiment

Table 4. The Basic Skills of Basketball in the Control Group before and after the Experiment

Test item	Before the experiment	After the experiment	difference	P
Spot Shooting	14/30	15/30	1	0.115
Dribbling Around Obstacles	31.45±3.55	30.12±3.55	1.33	0.214
Passing Accuracy	17/30	19/30	2	0.041

Note: P < 0.05, indicating that the data are different; P < 0.01, indicating that the data are significantly different; P > 0.05, indicating that the data are not different.

As shown in Table 4， the improvement in the control group's spot shooting from 14/30 before the experiment to 15/30 the experiment, with a difference of 1, and a P value of 0.115, showed no statistically significant difference. In terms of dribbling around obstacles, the average time was reduced from 31.45 seconds to 30.12 seconds, with a difference of 1.33, but the P value was 0.214, indicating that this

improvement was not statistically significant. In terms of passing accuracy, the control group improved from 17/30 to 19/30, with a difference of 2, and a P value of0.041, showing a statistically significant difference. Although the control group improved in all test items, only the passing accuracy showed a statistically significant difference. This may indicate that even without the application of the Moston reciprocal teaching method, students can improve their basketball skills to a certain extent through regular training. However compared with the experimental group, the control group's improvement was smaller, which further indicates that the Moston reciprocal teaching method may have a positive impact on improving basketball skills.

3.4 Comparison of Basic Basketball Skills between the Experimental Group and the Control Group after the Experiment

Table 5. The Situation of Basic Basketball Skills in the Experimental Group and the Control Group after the Experiment

Test item	Experimental group	Control group	difference	P
Spot Shooting	18/30	15/30	3	0.026
Dribbling Around Obstacles	28.44±4.11	30.12±3.55	1.68	0.015
Passing Accuracy	20/30	19/30	1	0.034

Note: $P < 0.05$, indicating that the data are different; $P < 0.01$, indicating that the data are significantly different; $P > 0.05$, indicating that the data are not different.

In the overall comparative analysis of the basic basketball skills of the experimental group and the control group after the experiment, As shown in Table 5, the data showed that the group had a significant improvement in basketball skills compared to the control group after applying the Moston reciprocal teaching method. Specifically, the experimental group scored 3 points than the control group in spot shooting, the average time of dribbling around obstacles was 1.68 seconds faster than the control group, and the accuracy passing was also 1 point higher than the control group. These improvements were all considered statistically significant, with P values of 0.026, 0015, and 0.034, all less than 0.05. Through the data in Table 3-4, the overall of the experimental group in basic basketball skills significantly exceeded that of the control group, which may indicate that the Moston Reciprocal Teaching Method is effective in improving students' basketball skills. This teaching method enhances interaction and cooperation in the classroom, stimulates students' learning motivation, and thus promotes the mastery and improvement of skills.

4 Conclusions and Recommendations

Moston reciprocal teaching method is a brand-new teaching method. Through this research, we found that this method not only improved the technical level of students, but also exercise their team spirit, communication skills and problem-solving ability, effectively tap the potential of students.

4.1 Conclusions

(1) The Moston Reciprocal Teaching can significantly improve students' basketball skills, including shooting, dribbling, and passing.

(2) The Moston Reciprocal Teaching Method can significantly enhance' interest in learning, increase classroom engagement, and boost learning motivation.

(3) The Moston Reciprocal Teaching Method, by promoting interaction and cooperation students, helps to cultivate students' teamwork and social skills.

4.2 Recommendations

(1) The Moston Reciprocal Teaching Method should be adopted one of the important teaching methods. The curriculum should include interactive activities and cooperative learning tasks to promote communication and teamwork among students.

(2) It is encouraged university physical education teachers adopt the Moston Reciprocal Teaching Method to enhance students' classroom engagement and improve learning outcomes. The introduction of this teaching method should take into the characteristics and needs of different student groups to achieve personalized teaching.

(3) It is suggested that more extensive research be conducted to explore the application effects of Moston Reciprocal Teaching Method in different sports and at different educational stages. This will help to verify the universality and adaptability of this teaching method and

provide and empirical support for broader teaching reforms.

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