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Developing Injury Prevention and Rehabilitation Program Added in Basketball Class for College Students

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Abstract

Background: Basketball is deeply loved by students in college sports, but because of its strong antagonism, it is easy to cause various sports injuries to students, this will not only affect the daily life and study of middle school students but also dampen their enthusiasm to participate in sports activities and bring negative effects to students. So, it is necessary to design a college basketball rehabilitation course from the perspective of human growth and development, basketball teaching law, and sports injury risk assessment, the analysis of basketball courses integrated with the rehabilitation movement can reduce the sports injury risk of students in basketball courses.

Method: The Methodology of the study was to conduct experimental teaching after the completion of a college basketball rehabilitation course by conducting an expert Delphi method survey on the content of the course and the course design, the test values of FMS, and YBT of college students before and after the experiment were tested by T-test.

Results: (1) The Kendall coefficients were 0.528 for curriculum design and 0.648 for rehabilitation exercise specialists. Are less than 0.25. (2) The FMS value of a college basketball course integrated with rehabilitation movement was significantly higher than that of a general college basketball course ($P = 0.001 < 0.01$) and the injury risk value of YBT was significantly lower, $p = 0.009$ for LA, $P = 0.000$ for RA, $p = 0.000$ for LL, $p = 0.001$ for RL, $p = 0.004$ for LRD ($p = 0.000 < 0.01$) and $p = 0.016$ for ARD ($P <; 0.05$) only for left-right arm difference risk. (3) The scores of college basketball courses integrated with rehabilitation movement were significantly higher in shooting ($P = 0.034 <; 0.05$) and passing skill ($p = 0.033 < 0.05$) than in the control group

Conclusion: (1) 9 rehabilitation actions can reduce the risk of a sports injury; (2) The college basketball rehabilitation program is acceptable. (3) The risk of sports injury in the experimental group was significantly reduced after the experiment. (4) After the experiment, the scores of basketball examinations in the experimental group were significantly improved in the aspects of shooting, passing, and receiving the ball.

Keywords: Rehabilitation Program; Basketball Class; FMS; YBT

Introduction

Basketball is a popular ball game in teenagers' studies and life. However, basketball is also a very easy to occur injury in collective sports. (Wang Daobin, 2022) and Li Xuejun (2016) believe that the high incidence of basketball injuries is due to the strong antagonism of basketball, especially the high degree of antagonism in the course of the game, during the competition, students will jump, twist and push frequently, which leads to an increase in students' injuries. Fang Haiping (2017) believes that basketball itself has strong antagonism, which makes it very easy for students to have various sports injuries, which not only affects the daily life and study of middle school students but also affects the development of sports, it can also

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discourage them from participating in sports. And sports injury rate of a large increase in the physical and mental impact of students cannot be ignored. (Zong, Qi, &Xiao. 2015)

In the field of sports injury reduction, scholars (Zhou, &Zhong, 2010) have studied the causes of sports injuries, the classification of sports injuries, and the prevention of sports injuries, such as the study of risk factors for athletics competitor sports injury, this paper studies from six dimensions: body shape and function factor, physical ability factor, training organization factor, psychological factor, environmental factor, and self-management factor. Hu Yonghong (2017) believes that the content of injury reduction should include the basic knowledge and theory of sports in the curriculum. Feng Xue (2020) believes that state screening and evaluation is the precondition of rehabilitative physical training, and that rehabilitative corrective training is the bridge between functional impairment and specialized rehabilitative training. The latter mainly includes the content of basic sports skills, and the latter mainly includes the assessment of the risk of injury and the methods of reducing the risk of injury. Feng Xue (2020) also pointed out that when athletes are injured and unable to participate in normal training, rehabilitation training becomes a bridge for the athletes to go back to the training ground. Rehabilitation training is a fusion of sports and health. The third section of the sixth chapter of the outline of our "Healthy China 2030" program points out that "Strengthen the integration of physical and medical care and non-medical health intervention", that is to say, it emphasizes the view that "Exercise is a good medicine".

In the field of physical education, the teaching content of physical education courses positively responds to the development of the outline, for example, Yuan Yimin, et al. (2022) incorporated the related physical movements of eye care into the teaching of physical education, improving the subjects' vision. But a small number of teachers in peacetime have a certain amount of knowledge of rehabilitation action. Also, more or less into the classroom training, but as a set of systematic sports function program teaching is not perfect. (Wang, &Su, 2022) So how determining the effectiveness of teaching content and choosing appropriate evaluation methods in physical education is the key part.

In summary, It is a very complicated task to establish a set of injury reduction teaching from elementary school basketball to college basketball injury reduction, which requires us to spend a lot of time and sufficient funds to collect data for research. In addition, the injury reduction program must integrate the evaluation methods of different disciplines to establish a basketball curriculum learning program suitable for high-risk groups. To do this, we had to build an injury mitigation program for one program (basketball teaching) and then roll it out to all programs across the sport. Based on this purpose, this study selects the college basketball teaching injury reduction program as a representative project to lay a foundation for other sports, which can significantly reduce the risk of injury in basketball, thereby improving the health of college students. This topic constructs the injury reduction plan for college basketball classroom teaching from the perspective of China's healthy physical education curriculum model, and to a certain extent, further broadens and innovates the research field and vision of the classification of physical education classroom teaching behavior.

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Research Objectives

1. To Construct a set of rehabilitation injury reduction actions ;
2. To determine the effectiveness of basketball courses integrated into rehabilitation movements;
3. To verify the effectiveness of the new curriculum in reducing the risk of sports injury.

Literature Review

This study mainly focuses on the construction of an injury reduction program integrated into the basketball curriculum and the determination of basketball risk thresholds. Before this, the relevant literature was divided into eight parts for review

The concept of sports injury in "Sports Health Science" refers to various injuries that occur in the human body during sports activities, mainly soft tissue injuries. Among them, chronic injuries related to sports characteristics are also called sports technology diseases. It occurs mainly in the human motor system but also includes damage to the blood vessels and nervous system. (Zhao, Zhang, ＆Liu, 2018)

1. Research status of sports injuries in physical education courses

Regarding the research on sports injuries in physical education teaching, the earliest literature in my country is "How to Prevent Sports Injuries in Physical Education Teaching" (Kang, 1986). Sheng Ying (2020) combined the theoretical knowledge of sports medicine injury with physical education teaching to study common sports injuries in physical education teaching. Li Jian (2020) explores the feasibility of using VR technology to prevent sports injuries in physical education and has a positive effect on preventing sports injuries in physical education through the use of VR technology.

2. Research status of sports injury risk assessment

1) Functional Movement Screening (FMS), Functional Movement Screening (FMS) is a set of tests to assess the basic movement patterns of the human body. (Cook, G., Burton, L., & Kiesel, K.,2021). In Western developed countries, functional movement screening is a means to predict the potential injury risk of athletes and guide preventive training programs. It is widely used in competitive sports.

2) Star Offset Balance Test (SEBT)： SEBT is widely used in clinical and scientific research, and studies have shown that it can distinguish lower extremity injuries (yes/no), such as ankle instability (Shi, et al., 2019) Because of the influence of fatigue on the test results, it is necessary to simplify the SEBT.

3) Y Balance Test (YBT), YBT is a simplified version of SEBT, which only retains 3 directions of front, back and outside, and back and inside among the 8 directions, (Cook, G., Burton, L., & Kiesel, K., 2021) The test tool is also changed into YBT kit equipment from the "meter" grid formed by SEBT's tape.

4) Landing Error Scoring System (LESS), LESS is a movement test that assesses the dynamic alignment of the lower extremities of exercisers and was first described in the literature by Padua et al. (2009) LESS is often used as a clinical tool to identify high risk of non-contact sports injuries and to quantify changes in neuromuscular and biomechanical performance after intervention in different sports and levels of athletes. (DiStefano, et al., 2018)

5). FMS+YBT: Gao Xiaolin, Xu Hui, Huang Peng, et al (2017) used FMS plus YBT to predict injury risk together. Among they found that when the two types of screening were used simultaneously,

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the prediction accuracy was higher than that of a single test. (Tang, & Zhong,2019)

3. Construction of sports injury reduction plan

In terms of competitive sports, Liang Fei and Wang Songtao (2018) believe that the occurrence of sports injuries in athletes has the "item group phenomenon". That is to say, the injuries of each item within the item group are significantly similar, the ranking order of the injured parts of different items is generally the same, and the number of injuries and the injury rate has similar common characteristics; the injury laws of the items among the item groups are different, the ranking order of the injured parts of the items is inconsistent, and the injury rate is different. In school physical education, there are many studies on the reduction of sports injuries in physical education teaching. Liu Yi (2020) believes that improving sports concepts can reduce sports risks, but qualitative analysis is also based on improving sports skills.

4. Research on sports injuries in school sports basketball

Zhang Zhenqiang (2020) studied sports injuries in basketball teaching in elementary schools from the characteristics and causes of injuries, the occasion, time point, location, general category, and emergency methods of sports injuries. Xie Yonglong (2017) added basketball teaching design and students' personal physical factors to the analysis of sports injuries in primary school basketball teaching. Zeng Xiong (2017) pointed out that sports damage may interfere with the physical growth of middle school students, and also cause certain damage to their psychological development. Injuries will make students fearful of basketball sports and greatly reduce their interest in basketball courses, which will hinder the promotion of "Little Basketball" sports on campus. However, Cui Kai's (2017) study found that the injuries in basketball teaching for middle school students are basically minor, and it only takes a period to fully recover, and some of them do not even affect normal basketball activities. A small number of students have suffered moderate injuries, and only a very small number of students have serious injuries such as fractures, which require a long recovery period before they can play basketball. Song Xiangli (2016) analyzed factors such as external environment, basketball court, unreasonable dress, and sports injuries caused by light interference in basketball teaching in rural middle schools. Xie Yiran (2018) believes that in addition to insufficient preparation activities and attention, poor physical fitness, and insufficient basketball skills, sports injuries in middle school basketball teaching are also important reasons for the lack of safety awareness in the process of basketball.

The research on injury reduction in college basketball teaching is mostly limited to questionnaires, classification of basketball injuries, and non-teaching factors in basketball teaching. Of course, some scholars have discussed the risk prediction of basketball sports. For example, Zhu Chenglin and others (2021) conducted a Y-balance test on basketball college students who had trained for 2.5 years in the School of Physical Education of Changjiang University. The risk is relatively high, and basketball students are advised to strengthen strength exercises on the weaker legs. And this research is based on this basis to carry out in-depth practical teaching experimental research.

5. Current status of FMS testing in sports injury risk assessment

From the literature reviewed, there are 14 studies on FMS involving the total score of FMS in predicting the risk of sports injury, (Shi, et al., 2019). Among them, Kolodziej M, and Jaitner's (2018) research shows that the total score of FMS is Risk factors for injury ($p<0.05$), believed that the FMS cut-off value was significantly associated with damage ($p<0.05$), that is, the value below the cut-off

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value was high risk, and the value above the cut-off value was low risk and considered the correlation between FMS single action score and injury, and FMS single action was a risk factor for injury ($p<0.05$) Some experts aimed at the relationship between the left and right asymmetry of five movements in FMS and injury. The results of both studies showed that FMS score asymmetry was a risk factor for injury ($p>005$). (Mokha, Sprague, &Gatens, 2016; Gao, et al., 2018)

6. Human Movement Rehabilitation Theory

"Rehabilitation" refers to the restoration of health, which is to restore and rebuild the lost functions as soon as possible and as far as possible through various methods such as medicine, education, and society in a comprehensive and coordinated manner, so that they can return to life and return to society (Feng, 2020). The concept of human recovery is based on human health, and only unhealthy organisms need recovery. The methods and means of rehabilitation are targeted.

During the Three Kingdoms period, Hua Tuo created the "Five Animals", which formed e ancient medical gymnastics, and is also widely used in modern times to strengthen the body. "Ancient and Modern Books Collection - Medical Ministry Complete Records" lists rehabilitation methods for many diseases. In the 5th century BC, the Greek Herodikos used body movements as a therapy for dyskinesia (Shen, &Zhang, 2017). Li Hui and Wu Baoai (2019) conducted an 8-week sports rehabilitation training intervention for 32 basketball players from Shanxi University and Shanxi University of Finance and Economics in the Northwest Division of the Chinese University Basketball League in 2015, 6 times a week, 20- 30 minutes, the results showed that the intervention training effectively reduced the acute injury rate. Today, the "Integration of Physical Education and Medicine" in the "Healthy China 2030 Outline" further organically combines sports and medical care, emphasizing the importance of sports rehabilitation.

7. Curriculum Design of Basketball Physical Education

For example, Yang Chengrong and others believe that the game teaching mode is used to improve the fun of teaching, the music teaching mode can achieve efficient classrooms, and basketball preparation activities for various balls can improve the teaching quality of basketball lessons. (Yang, Li,&Guo, 2020) Lu Yangtao and Huang Zhaoyuan (2022) selected 11 men's basketball students from Changchun Normal University as experimental subjects and analyzed the changes of 7 FMS action patterns before and after the experiment and their impact on the special project through 8 weeks of corrective training. It is believed that corrective training can improve the movement patterns of basketball-specific students and reduce the asymmetry of movements in a targeted manner.

8. Literature review summary

All of these realities mean that incorporating sports rehabilitation knowledge into basketball is an important job. In addition, the theory of basketball special technology has been developed in a mature system, but the teaching of sports injury prevention is still in the original situation that usually relies on experience. Therefore, developing a plan that incorporates sports rehabilitation knowledge into basketball courses will reduce the risk of basketball players and improve their physical health. These documents provide all relevant basketball curriculum instructional design construction methods and sports injury risk assessment systems. Accordingly, this study has the relevant data to carry out the basketball curriculum research incorporating sports rehabilitation knowledge.

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Conceptual Framework

The research title "Developing Injury Prevention and Rehabilitation Program Added in Basketball Class for College Students" was designed as followed

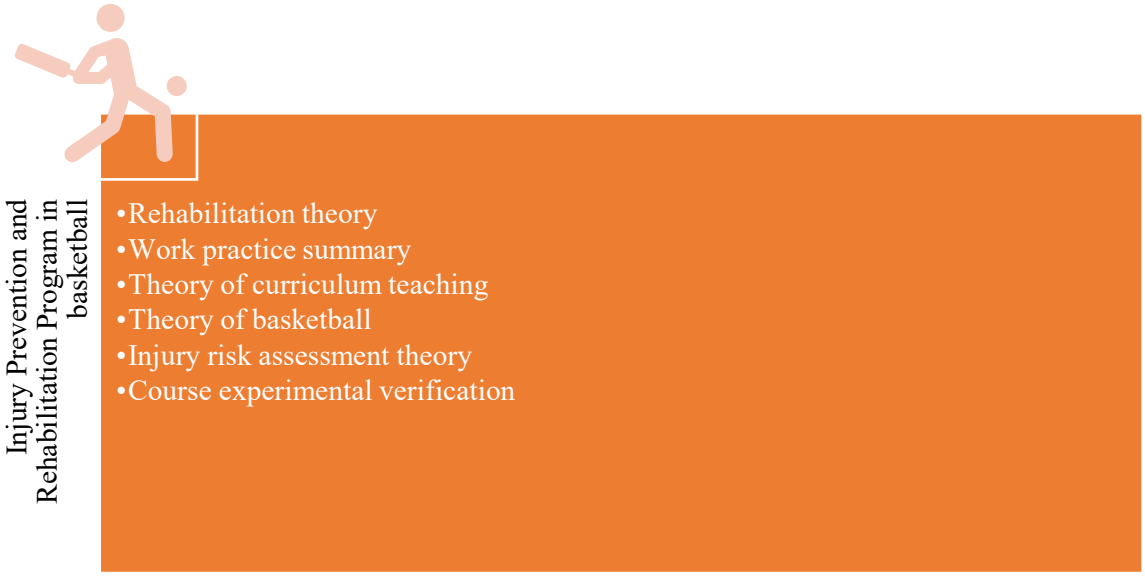

Figure 1 Conceptual Framework

Methodology

1. **Population and sample**

1.1 Sample of experts: The total number of experts is 19, all experts have been working in this field for more than 10 years. According to the research needs, there are four types of experts, including physical education experts, basketball coaches, college basketball teachers, and sports human science experts. The distribution of experts mainly includes basketball teaching, basketball training, sports rehabilitation, measurement, and evaluation.

1.2 Experimental sample: cluster sampling is a kind of sampling method. The advantage of cluster sampling is convenient and economical. For the study, cluster sampling was selected (Yang Xiuqin, 2008), those students with a clear understanding of the purpose of the study and the experimental procedures submitted a signed consent form and met the following criteria. The students were screened for (1) Any muscle pain or physical injury, and (2) The mean FMS for injury risk was less than 14; (3) No basketball foundation, that is, no basketball course or basketball training.

1.3 For subjects who chose to take a college basketball course, they selected 80 students who had consistently low FMS scores among 180 male subjects. By systematic random sampling, 80 students were divided into two groups, the first group was the traditional group (control group, CG), the second group was the basketball course with rehabilitation movement (experimental group, EG), and the total FMS scores of the control group and the experimental group were the same.

2. Research Instrument

2.1 The first questionnaire: Expert open-ended questionnaire. To widely solicit expert opinions, the first round of the questionnaire used a closed-phase questionnaire. After each index of the

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questionnaire, choose five options: "Very suitable, very suitable, suitable, unsuitable, very unsuitable". At the end of the questionnaire, there was an expert evaluation, and after the questionnaire, the expert was asked to explain the rehabilitation actions that needed to be adjusted, modified, added, or deleted. In this round of the questionnaire survey, the average number is greater than the 3.5 first round of indicators screening criteria.

2.2 The Second Questionnaire: Rating Scale questionnaire, there are five options, namely very suitable, very suitable, suitable, not suitable, and very unsuitable. The selection criteria for the second round of indicators include the Kendall coefficient of the indicators, the test of consistency of the experts with the results of the assessment, and the average score of the experts for each indicator. Details are as follows: the greater the degree of integration, the better the evaluation of experts on curriculum design. Kendall coefficient greater than 0.5, P less than 0.05 is acceptable.

2.3 The third teaching experiment results, using the FMS test and YBT to measure the students before and after the experiment, and then using statistical T-test for analysis, $p < 0.05$ was a significant difference and $P < 0.01$ was a very significant difference.

3. Data collection

3.1 The first round of the questionnaire: choose a suitable for basketball teaching rehabilitation injury reduction action, and collect the questionnaire. According to the expert opinion to modify the questionnaire, preliminary determine into the rehabilitation of basketball teaching design.

3.2 The Second Round Questionnaire: invited 19 experts to the curriculum teaching design and the integration of rehabilitation movement score.

3.3 Before the experiment: through FMS and YBT to test the experimental subjects, select the appropriate experimental subjects.

3.4 After the experiment: FMS and YBT were tested, and the data before and after the experiment were t-tests.

4. Data Analysis: Data analysis was performed using spss26.0 software. (Independent samples t-test; Paired sample t-test; descriptive statistics).

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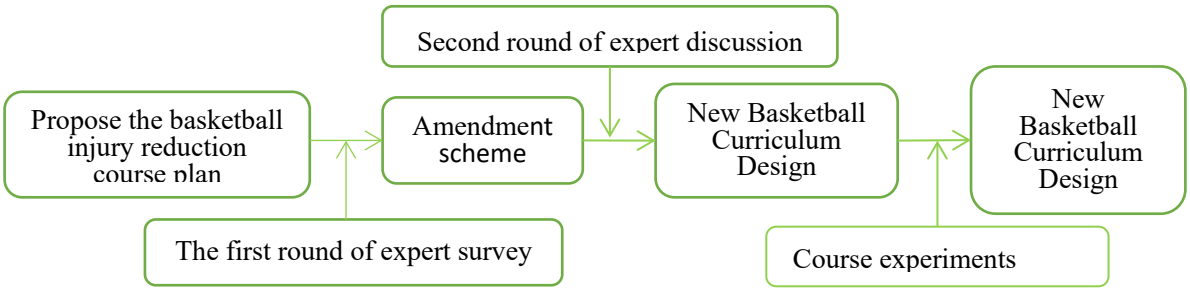
Results

The research results include the process of research methods, the effectiveness of integrating rehabilitative movements into physical education, and the experimental results of the experimental group and the control group.

1. Research process



Figures2 Research flow chart

After each round, the rehabilitation movement and the curriculum design were adjusted, and the main opinions and statistical results of the experts were Delphi method back to the experts, therefore, the expert opinions after each round of questionnaire will be more and more concentrated, and finally get into the rehabilitation of college general basketball teaching program. (Figure 2）

2. Results of the expert surveys

This round carries on the questionnaire survey to 19 experts, issues 19, and the valid questionnaire 19. From Table 1, we know that Leg control drop, Holding the ball with both hands around the neck, Holding the ball with both hands around the waist, Holding the ball with both hands around the waist, single Leg triple jump, Back-to-back squat dribble, Balance the ball with both feet and dribble, balance Ball dribble on one-foot, prone crawl, Supine crawl, 9 recovery moves with high recognition, SD > 3.5, CV <25%.

Table 1 The expert responded to the rehabilitation movement (First round)

Movement	Sd	Median	IQR	(CV)
Leg control drop	4.105	4.000	2.000	21.32%*
Control leg resistance to fall	3.000	3.000	0.000	22.22%
Dribble with your legs	2.632	3.000	1.000	22.70%
Dribbles the leg to resist the fall	2.842	3.000	2.000	33.71%
Holding the ball with both hands around the neck	4.263	4.000	1.000	13.18%*
Holding the ball with both hands around the waist	4.158	4.000	0.000	12.06%*
dribble hop	3.263	4.000	2.000	26.72%
single leg triple jump	4.737	5.000	1.000	9.55%*
squat against the wall	2.947	3.000	2.000	26.46%

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Movement	Sd	Median	IQR	(CV)
Back-to-back squat dribble	4.737	5.000	1.000	9.55%*
Balance the ball with both feet and dribble	4.158	4.000	2.000	20.06%*
Balance ball dribble on one foot	4.7899	5.000	0.000	8.75%*
prone crawl	4.579	5.000	1.000	13.26%*
Supine crawl	4.684	5.000	1.000	10.20%*

Sd>3.5,CV<0.25 with*

After statistical analysis of the data from the experts' second feedback, it can be seen from Tables 2, Table 3, and Table 4 that, the consistency coefficient of the experts on the rehabilitation movement and the course design after the integration of basketball teaching is 0.684 (W = 0.684) and 0.528 (W = 0.528), P values are all less than 0.01 (p = 0.000), indicating that the indexes are well coordinated and the course design is effective. The average score of 9 basketball rehabilitation actions and course design experts is more than 3.5, and the coefficient of variation is less than 0.25. So, research design of 9 basketball rehabilitation movements and the curriculum design of 5 aspects have been recognized by experts.

Table 2 Results of the expert surveys (Second round)

Movement	S.D.	Median	IQR	Coefficient of variation
Supine crawling	5.0000	5.000	0.000	.00000*
Prone crawling	4.7368	5.000	1.000	0.0219*
Control leg fall	4.2105	3.000	0.000	0.0292*
Holding the ball with both hands around the neck	4.2632	4.000	1.000	0.0299*
Holding the ball with both hands around the waist	4.2105	4.000	1.000	0.0352*
One-leg dribble jump	4.1579	4.000	0.000	0.0201*
Two-foot balance dribble	4.1580	4.000	1.000	0.0318*
Disadvantaged lower limb balance dribble	4.8421	5.000	0.000	0.0178*
Back-to-back dribble	3.8947	4.000	0.000	0.0270*

Sd>3.5,CV<0.25 with*

Table 3 Experts' Reliability and Validity of Curriculum Design

Curriculum design	S.D.	Median	IQR	Coefficient of variation
Course objectives	4.9474	5.0000	0.0000	0.0464*
Criterion for curriculum	4.7895	5.0000	0.0000	0.0875*
Course content	4.3684	4.0000	1.0000	0.1135*
Course structure	4.5263	5.0000	1.0000	0.1133*

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Curriculum design	S.D.	Median	IQR	Coefficient of variation
Course evaluation	4.7368	5.0000	1.0000	0.0955*

Sd>3.5,CV<0.25 with*

Table 4 Kendall of basketball teaching and course design

	Kendall	χ2	p
rehabilitation movement（9）	0.684*	104.042	0.000**
curriculum design（5）	0.528*	50.192	0.000**

K>0.5 with *, P<0.01 with **

3. Information of test samples

Before the experiment, the test values of FMS and YBT of the two groups of college students were tested by independent samples t-test, P > 0.05, and the average values of FMS were the same between the two groups, it can be considered that there is no statistical difference in sports injury risk between the two groups. (Table 5)

Table 5 FMS and YBT injury risk of college students before the experiment (n=80)

Group		M	SD	s - d	P
FMS	EG	12.93	0.000	0.462	1.000
	CG	12.93			
YBT-LA	EG	0.922	0.009	0.007	0.173
	CG	0.912			
YBT-RA	EG	0.911	0.007	0.007	0.278
	CG	0.903			
YBT-LL	EG	0.889	0.012	0.013	0.365
	CG	0.901			
YBT-LR	EG	0.869	0.005	0.001	0.701
	CG	0.874			
YBT-ARD	EG	2.835	0.624	0.818	0.194
	CG	3.653			
YBT-LRD	EG	6.242	1.366	0.914	0.505
	CG	7.157			

P<0.05 with *, P<0.01 with **

4. Statistical comparison of injury risk between EG and CG

According to Table 6, after eight weeks of the experiment, the average number of FMS before and after the experiment increased from 12.93 to 16.13, and the P value was 0.000 less than 0.001, indicating a very significant change. There is also a significant change in the value of YBT.

Table 6 T-test of paired samples to EG before and after the experiment (n=40)

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Group		M	SD	s - d	df	P
FMS	EG	12.93	2.564	0.405	39	0.000**
	EG	16.13				
YBT-LA	EG	0.922	0.039	0.006	39	0.000**
	EG	0.959				
YBT-RA	EG	0.911	0.041	0.006	39	0.000**
	EG	0.954				
YBT-LL	EG	0.889	0.061	0.009	39	0.000**
	EG	0.943				
YBT-RL	EG	0.869	0.067	0.010	39	0.000**
	EG	0.952				
YBT-ARD	EG	2.835	2.948	0.466	39	0.354
	EG	2.397				
YBT-LRD	EG	6.242	5.788	0.915	39	0.000**
	EG	2.375				

P<0.05 with *, P<0.01 with **

From Table 7 after 8 weeks of the experiment, the average FMS values of the experimental group and control group were 16.13 and 14.60 respectively, however, the two groups obtained a P value of 0.001 less than 0.01 by independent sample t-test. On another YBT test, the risk of injury in the upper and lower limbs of the experimental and control groups was lower than that of the control groups, with P = 0.009 for LA, P = 0.000 for Ra, p = 0.000 for LL, and p = 0.001 for RL, all of which were less than 0.001, the P values of ARD and LRD were 0.016 and 0.004.

Table 7 EG and CG Independent sample t-test after the experiment (n=80)

Group		M	SD	s - d	df	P
FMS	EG	16.13	1.525	0.405	78	0.001**
	CG	14.60				
YBT-LA	EG	0.959	0.020	0.007	78	0.009**
	CG	0.927				
YBT-RA	EG	0.954	0.028	0.006	78	0.000**
	CG	0.933				
YBT-LL	EG	0.943	0.032	0.006	78	0.000**
	CG	0.922				
YBT-RL	EG	0.952	0.020	0.005	78	0.001**
	CG	0.936				
YBT-ARD	EG	2.397	1.310	0.530	78	0.016*
	CG	3.707				
YBT-LRD	EG	2.375	1.242	0.413	78	0.004**
	CG	3.617				

P<0.05 with *, P<0.01 with **

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From Table 8, the experimental group and the control group were better than the control group in the scores of shootings and passing in the four items of the basketball test, the p-value was 0.034 and 0.033, respectively, which was less than 0.05. But there was no difference between running and cross-charging.

Table 8 EG and CG Independent sample T-test (n=80)

Basketball test	Group	M	SD	S-d	P
Shoot	EG	83.63	4.700	2.175	0.034*
	CG	78.93			
Run the basket	EG	78.97	0.475	2.634	0.857
	CG	78.50			
Pass the ball	EG	83.75	5.250	2.415	0.033*
	CG	78.50			
Cross fast break	EG	79.85	3.775	2.502	0.135
	CG	76.08			

P<0.05 with *, P<0.01 with **

Discussion

In the IOC stage, all rehabilitative actions are based on literature (Zou Chaoao, 2022;) and work experience, combined with in-depth interviews, the author cut down and adjusted the order of the rehabilitation movement which is suitable for the injury reduction of basketball, and designed the rehabilitation time of each course to be 30 minutes according to the needs of college basketball course, exercise for 30 minutes on homework. Experts are concerned that too much movement can degrade the quality of the sports and that the methods used to measure injury are not accurate enough. There is no literature to show that these rehabilitative moves are effective in improving the performance of college students in basketball classes. Only two dissertations (Li Hui,2018; Ruan,2018) have examined whether these rehabilitative movements have an opportunity to affect the teaching of other sports courses, and are from the point of view of physical fitness research.

Neuromuscular training is an integrated concept, this study aims to improve the biomechanical changes of lower limbs, improve the neuromuscular control and dynamic stability of the affected area, reduce the risk of sports injury, and improve the overall performance of the motor function.

Pan Zhong (2019) research points out that in the process of college basketball teaching and competition training, sports college athletes appear sports injury probability that is much lower than other college athletes. The reason may be related to the sports college students to receive the knowledge of injury prevention and sports before receiving some injury reduction action.

In recent years, the application of rehabilitative movement in reducing sports injury is mainly manifested in training and competitive sports, because more and more scholars have realized that the reduction of sports injury must start from human own factors. Chen Zichen (2021) believes that functional exercise can improve the performance of college basketball students.

FMS and YBT have been used to determine injury risk (Johnston W, et al., 2019; Cook, G., Burton, L., & Kiesel, K., 2021) or injury rehabilitation (Stiffler, et al. 2017). The test assesses participants' balance, functional symmetry, and injury risk in the anterior, posteromedial, and posterolateral

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directions. Su and others (Su, Yang, &He. 2021) argue that the performance of YBT in the sports population is influenced by both biological and kinematic factors, the training factors include sports events, position on the field, competition level, training methods, sports fatigue and so on.

Song Ziyu and Tan Xuesi (2022) point out that FMS and YBT can complement each other, the combination of FMS and YBT can improve the accuracy of sports injury risk prediction, which is used to evaluate the basic motor ability and motion control ability of the human body.

After 8 weeks, there were significant differences in FMS and YBT between the experimental group and the control group ($P < 0.01$), which showed that the risk value of sports injury in the two groups was very significant after basketball teaching integrated with rehabilitation movement. And the two groups in the basketball curriculum test shooting and passing the ball on the significant difference. ($P < 0.05$)

Conclusion

The university basketball course designed by researchers can effectively reduce the risk of sports injury. Researchers developed basketball courses that incorporate rehabilitative movements to reduce the risk of sports injury and improve course performance in basketball techniques compared with traditional basketball teaching.

Recommendation

1. By selecting athletes with low risk of sports injury and testing their DNA, we can find out the genetic risk of the athletes and carry out individualized training to prevent sports injury and disease, to provide new energy for sports to improve health.

2. Through the risk screening combined with sociological factors to establish the risk assessment model of basketball sports injury.

3. Through the network course to promote rehabilitation sports injury action, reduce the risk of injury in basketball.

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