



## Physical Education Course Based on Self-Regulated Learning to Improve Students' Physical Literacy

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### Abstract

**Background and Aim:** This study adopts the teaching mode of self-regulated learning to change the traditional physical education teaching methods, so as to improve the physical literacy of college students. The component of college students' physical literacy includes physical cognition, physical experience, physical ability and sports behavior. The purpose of this study was to compare students' physical literacy scores before and after learning physical education course based on self-regulated learning.

**Materials and Methods:** In this experimental study, 40 students (one class) from Zhoukou Normal University were investigated. This study used test and self-evaluation forms given to students before and after learning through physical education based on self-regulated learning. Data were collected and analyzed by means, standard deviation and t-test for dependent sample.

**Results:** The results of the physical literacy before and after learning based on the self-regulated learning course, it was found that the mean scores of pretests of students' physical literacy were 188.88, SD was 25.45, and mean scores of posttests was 230.53, SD was 16.79. The post-test score of students' physical literacy was higher than that of the pre-test score, and the difference was statistically significance ( $t= 13.64, p<0.05$ ). The average score of post-tests was progressively higher than the pre-test score.

**Conclusion:** The developed physical education course based on self-regulated learning has a significant effect on improving the physical literacy of college students.

**Keywords:** Physical Education Course; Self-Regulated Learning; Physical Literacy

### Introduction

As early as 2010, the Chinese government released the full text of the national program for medium-and long-term education reform and development (2010-2020), which clearly put forward the following four points : (1) China's education reform and development should be student-centered; (2) China's education reform and development should reform teaching quality evaluation, teaching content, (3) China's education reform and development should encourage the innovative spirit of brave exploration and practical ability to solve problems; (4) China's education reform and development should focus on improving students' learning ability, practical ability, and innovation ability, and educate students to learn knowledge and skills and learn to use their hands and brains. This is China's first education plan after entering the 21st century and is a key document guiding the national education reform and development in the future period (The State Council of China, 2010). Because of this, education must respect the subject status of students, improve their learning initiative, and cultivate their learning initiative, independence, and creativity.

With the deepening of the new curriculum reform and the wide use of new textbooks, we realize that the curriculum reform provides conditions and an operating platform for the cultivation of students' self-regulated learning ability. At the same time, the cultivation of students' self-regulated learning ability has become the teaching requirement of curriculum reform. In the new textbook, many parts require students to explore, collect and analyze data, acquire new knowledge, analyze and solve problems independently, etc., all of which require students to have high self-regulated learning ability. Cultivating students' self-regulated learning ability is the need of students' individual development.

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In 2020, a survey of more than 1.15 million students' physical health showed that the "unqualified rate" of students' physical health was on the decline, but the data related to eyesight and obesity were on the rise. The health failure rate of primary school students is 6.5 percent, middle school student's 14.5 percent, high school student's 11.8 percent, and college student's 30 percent (Ministry of Education of China, 2021). Why the change? The actual situation is that, on the one hand, the current physical education courses in colleges and universities do not give full play to the main role of students and the leading role of teachers, we should strive to advocate open, inquisitive teaching, try to expand the time and space of physical education courses, give full play to the self-regulated of students, teach students to learn independently; On the other hand, students do not acquire lifelong sports awareness from physical education and do not take physical activity as a voluntary choice and lifestyle. The general secretary's speech reflects the lifelong trend of the development of world education and also points out the direction of China to build a lifelong learning system and build a learning society. Physical literacy is undoubtedly the breakthrough to solve this problem. Physical literacy, also known as physical fitness in China, is the focus of global physical education, physical activity, and sports promotion. This is also a popular and influential concept in international sports circles in recent years. (Chen, Liu, Tang & Chen, 2017) Physical literacy is a comprehensive ability of physical education, which includes physical ability, physical cognition, physical experience, and physical behavior, and its level reflects the quality of physical education and the possibility of lifelong sports education. (Chen & Liu, 2016)

Physical education is an important part of our university physical education, as an important base for personnel training, training high-quality comprehensive talents is its basic teaching purpose. Physical education teaching in colleges and universities as an education mode in our country, the comprehensive and end of the link, therefore, under the guidance of physical education teachers, the students according to their own actual situation, set learning goals, optional practice content, and method, through the process of practice self-monitoring and timely evaluation practice result, finally realizes the learning objectives of physical education learning. It has the characteristics of initiative, independence, effectiveness, and richness, and is the prerequisite for lifelong sports (Wu & Ji, 2004).

The self-regulated learning of physical education courses enables students to master solid physical knowledge, sports emotion, sports behavior, and sports skills, which plays a decisive role in the final formation of students' sports concepts and sports exercise habits. Only in this way can students master the skills and methods of lifelong sports, and then realize the concept of lifelong sports. At present, many Western countries have made "physical fitness" the cornerstone of their sports reform policies. In 2016, The General Office of the State Council issued the Opinions on Strengthening School Physical Education and Promoting the All-round Development of Students' Physical and Mental Health. At the national level, it is the first time to establish a comprehensive evaluation institution for students' physical quality and taken as the goal of school physical education (General Office of the State Council of China, 2016). This marks the prelude of physical literacy from academic concept to practice.

Lifelong sport is an important guarantee for people to obtain lifelong health and an inevitable requirement for people to achieve all-around development. Self-regulated learning and lifelong sport are consistent, this is because the sports self-regulated learning can not only improve the students' subject consciousness but also make the student from the past passive implementation of physical education teachers' teaching plan into the active complete the learning objectives, so as to enhance the sense of responsibility, set up the self-esteem and confidence, as well as the method of lifelong learning, improve the ability of lifelong sport, For the future adheres to the physical exercise has laid a solid foundation (Cui, 2013). Our times need new talents with the ability to learn throughout their lives and with good physical and mental health. The improvement of college students' self-regulated learning ability is of great significance to social development, educational reform, and personal growth. Self-





regulated learning is the foundation of lifelong learning, its importance is self-evident, which requires our physical education to cultivate students' self-regulated learning ability (Lin, 2011). This guiding ideology has laid the foundation of Chinese physical education courses and the thought of self-regulated learning.

To summarize, the improvement of physical literacy is inseparable from self-learning physical education courses and the concept of lifelong sports education. The strength and level of physical quality of physical education teachers play a crucial role in the cultivation and promotion of the physical quality of teenagers. Based on the analysis of relevant textbooks and the current situation, the problems in our physical education teaching are analyzed layer by layer. According to the students' development rules and physical quality requirements, it is the substantive exploration of the physical education course construction in China to construct and apply the self-regulated learning physical education course feasible. Therefore, the research of this thesis not only has high theoretical significance but also has high practical value.

### Question

The research question addressed by this research was how does the effectiveness of physical education courses based on self-regulated learning to improve students' physical literacy?

### Objective

The objective of this research was to determine the effectiveness of implementing the physical education course based on self-regulated learning by comparing the physical literacy score of students before and after learning through the physical education course based on self-regulated learning.

### Literature Review

#### Physical education course

In the late 1960s and 1970s, many course experts found that many course plans and course designs failed to achieve the expected results in the study of course problems. The reason was not that the course reform plan itself was not excellent enough, but that the concept of course reform was not implemented in the implementation process and the design was not implemented. It makes the course implementation and designs itself deviate. Chinese and foreign experts and scholars have defined "course implementation" from different angles. There are two types: one is that "course implementation" belongs to the research scope of "course reform", which is the process of putting the measures of course reform into practice; Firstly, course implementation is one of the links of course development and preparation, and it is the process of implementing course plan and course scheme.

To study course implementation in the first sense is the tradition of course research abroad. In foreign countries, course implementation is generally defined as the process of transforming reform ideas into practice. The International Course Encyclopedia published in 1991 explains that course implementation "is the process of putting a certain reform into practice" (Arieh Lewy, 1991), it is different from the adoption of a reform, which focuses on the degree to which the reform takes place in practice and the factors that influence the degree of reform." In his opinion, course implementation is an important stage in the course of course reform, which means shortening the gap between the existing practice and the time suggested by the reform.

In China, although people agree with the above definition, due to the differences in educational environment and language system, people also give a new understanding of course implementation, that is, course implementation in the second sense. That is, from the perspective of course development, course implementation is regarded as a link of course development. "Course implementation is the

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process of putting the curriculum plan into practice. It is the basic way to achieve the expected curriculum goals." (Shi, 1996) This definition holds that curriculum implementation is the process of pushing the established curriculum to students and transforming the curriculum content into an intrinsic part of the students' knowledge structure.

The implementation of school physical education courses is the process of putting physical education course standards into practice, which is the process of achieving the expected physical education curriculum objectives. It is also the process of transforming the course content stipulated by the physical education course standard and the course content selected and compiled under the guidance and requirements of the physical education course standard into the structure of students' internal knowledge and ability, which is the core approach to improving students' physical literacy.

### **Self-regulated learning**

Self-regulated learning (SRL) or self-management in learning is a learning or training strategy developed from the social cognition triadic theory from Bandura (Zimmerman & Martinez-Pons, 1990). According to social cognition triadic theory, human beings are the result of an interdependent causal structure of aspects that include behavior, personality, and environment (Bandura, 1997). The wave of SRL develops with an emphasis on learning or the learning process and not on teaching. Winne (1997) explains that the topics studied in SRL include cognitive strategies, learning the way of learning, and lifelong learning. The term SRL became popular since the 1980s with an emphasis on the importance of autonomy and personal responsibility for learning activities.

Since the 21st century, many domestic scholars have given some definitions. Cheng (1999) described self-regulated learning as learners who, under the guidance of teachers, can actively choose learning methods and contents according to their needs, formulate learning plans, control learning emotions, and finally achieve learning goals. Pang (2000) defined self-regulated learning as a way of learning that students can control their own learning, which is opposite to other learning. Chen (2012) believes that self-regulated learning is also a self-controlled learning style and a response to active learning. According to the definition of self-regulated learning by domestic and foreign scholars, self-regulated learning can be roughly divided into two types. The first type regards self-regulated learning as a learning mode, in which students fully mobilize their autonomy and choose learning content and learning strategies independently, which is a learning mode under the guidance of teachers. The second is to regard self-regulated learning as a learning process, where students take the initiative to set learning objectives, choose learning content, achieve learning objectives, and evaluate learning independently. In general, self-regulated learning means that under the guidance of teachers and without on-site supervision, students can take the initiative to make reasonable learning objectives based on their own needs, and at the same time, students can choose learning strategies independently to improve their learning ability.

The cultivation of self-regulated learning ability is an important prerequisite for students to form lifelong consciousness of physical education, and also an important content of physical education. How to train students to develop spontaneous, active, and creative self-regulated learning abilities in modern physical education is not only to achieve the teaching target of health first and all-round development for every student but also the basis and key to making students truly develop lifelong sports education consciousness and lifelong learning ability. Therefore, solving the problem of how to cultivate students' self-regulated learning ability in physical education is a breakthrough to get out of the trouble of traditional physical education, and an effective way for modern physical education to become subjective, personalized, and modernized (Li & Cheng, 2007).

Self-regulated learning is effective physical learning. Because self-regulated learning is a kind of conscious and pleasant learning, it can help students establish the dignity of autonomy and obtain the

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power of sustainable development. It can be seen that the current and future college physical education reform will certainly be as predicted by Ji Liu (2001) "The future physical education course and teaching should pay full attention to the needs of students and attach importance to the emotional experience of students, strengthen the dominant position of students.

In this study, Self-regulated learning physical education teaching will run through the whole learning process of students. Teachers will organize and guide, and students will set their own practice goals, and choose their own practice methods, self-monitoring, and self-feedback. Through a self-regulated learning process, they can achieve systematic learning of sports cognition, sports skills, and sports behaviors. Teaching steps based on self-regulated learning in this study consisted of Step 1: Teacher organization and guidance, Step 2: Students self-set the practice goals, Step 3: Students self-choose the practice methods, Step 4: Students self-monitor the exercise process, Step 5: Students self-feedback the practice results, Step 6: Students summarize the learning results. In every link of physical education teaching, always put the initiative and comprehensive development of students in the first place, always pay attention to the principal position of students, and pay attention to stimulating students' learning motivation and interest, so that students learn to know in the process of self-regulated learning. Only in this way can the habit of exercising be formed."

### **Physical literacy**

Back in the late 1980s, Margaret Whitehead, an academic at Bedfordshire University in the UK, saw into the plight of school sports and physical activity. In order to change the negative impact of the traditional mainstream view of "psycho-physical theory" on school physical education and physical activity, Whitehead used philosophy and cognitive psychology to retarget school physical education and physical activity at another seat. He also used modern philosophy to develop the theory of physical literacy at another seat. In 2001, she was the first to put forward the physical with the philosophical definition of literacy, in addition, she to the idea of "monism" of body and mind, such as philosophy, existentialism, phenomenology theory, and psychology as the theoretical basis, type tower regression core "integration of body and mind" the subjectivity of cognition, The definition of physical Literacy is optimized and perfected three times at another business.

According to established theories of physical literacy, According to the International Physical Literacy Association's definition of physical literacy, physical literacy is divided into emotional, physical, and cognitive 3 (Ren, 2018). Combined with The Canadian Assessment Physical Literacy (CAPL) widely recognized by The international community (Chen, et al., 2016), we deconstructed physical literacy into four interrelated elements. Namely, physical ability, physical experience, physical cognition, and physical behavior. These four elements are integrated, each of which is indispensable, without which it is difficult to form and develop the overall function of physical literacy.

Considering all this, it is indispensable for an individual to develop physical literacy, including physical ability, physical experience, physical cognition, and physical behavior. The process of developing physical literacy is an integrated and smooth body language from "I can" to "I will", and then from "I understand" to "I love"(Figure 1). Through progress on the physical literacy journey, people can not only develop and maintain the confidence and motivation to lead an active lifestyle, but also increase their confidence and self-esteem, enjoy and engage in a wide variety of explicit physical activities, and perceive the beneficial effects of active explicit physical activity on individual well-being (Almond,2013); The development of physical literacy can develop the individual's physical potential and gain the satisfaction of making progress and success in the process of physical activity; It can also improve people's health, reduce the risk of being overweight, and keep them fit and healthy into old age. In a wider range of specific physical activities, people can develop self-esteem and confidence, have the confidence to explore, participate, and gain a sense of power to make choices, so as to broaden

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the radius of life choices; Recognizing the rewards and pleasures of active and specific physical activity, recognizing the value of specific physical activity in promoting health and recognizing the importance of taking responsibility for one's participation; Learn to conduct fair and scientific self-evaluation of the specific physical activities they participate in regularly, and positively evaluate their living habits and ways from a fair standpoint (Whitehead, 2013)

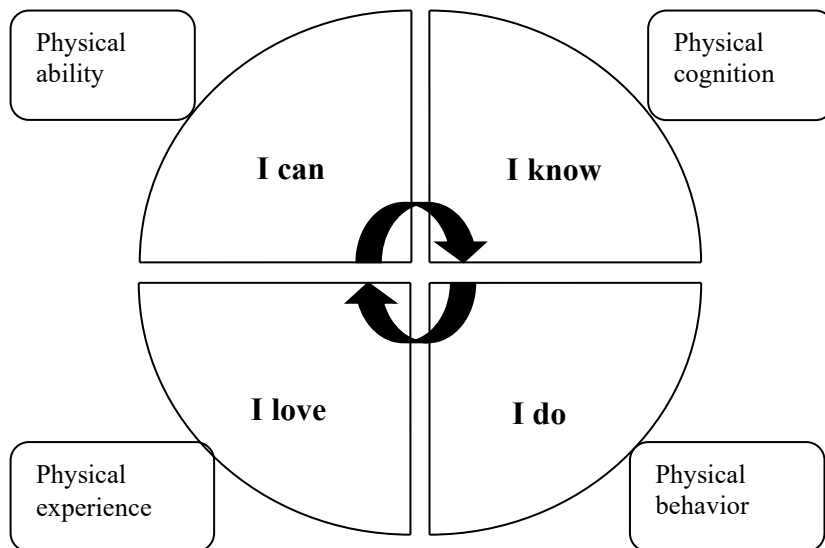


Figure 1 Four Components of Physical Literacy and the Development Cycle of Physical Literacy

### Research Conceptual Framework

The research title Physical Education Course Based on Self-Regulated Learning to Improve Students' Physical Literacy was designed as the conceptual framework as followed;

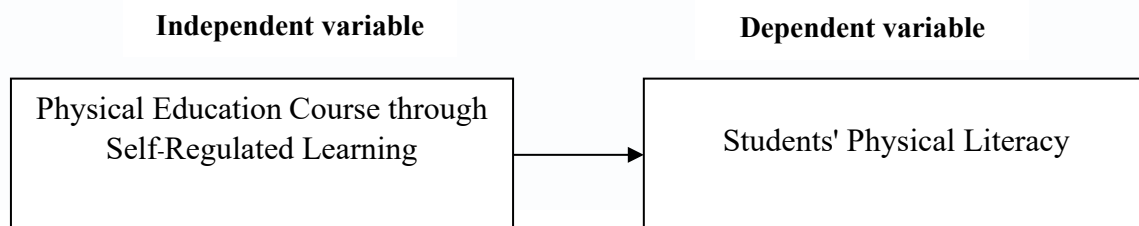


Figure 2 Research Conceptual Framework

### Research Methodology

**Population and sample:** The population of this study was 1,200 freshmen (30 Classes) of Hukou Normal University and the sample of this study was 40 freshmen (1 class) of Zhoukou Normal University, which was derived by cluster random sampling.

**Research Instruments:** Research instruments were the tools for researching to collect data. The research instruments which were used in this study were:

#### 1. Experimental instruments

1.1 Physical education course based on self-regulated learning: The course based on self-regulated learning includes six steps: 1) Teacher organization and guidance 2) Students self-set the practice goals 3) Students self-choose the practice methods 4) Students self-monitor the exercise process 5) Students self-feedback the practice results 6) Students summarize the learning results. Five



experts evaluated the draft course, in the 11 items of the self-regulated learning course evaluation form, the lowest mean score was 0.6(SD=0.548), and the highest mean score was 5(SD=0.00). It was revealed that physical education course based on self-regulated learning was at a high level.

1.2. Lesson plans: Five experts evaluated the eight lesson plans. According to the expert evaluation form, the lowest mean score was 4.6(SD=0.55), and the highest mean score was 5(SD=0.00). It was revealed that the lesson plan was at a high level.

2. Instruments for collecting data: Instruments for measuring physical literacy which was divided into 2 sections:

Section 1: Test for Students' physical cognition in physical literacy

Test for students' physical cognition was 30 items of multiple choice which had an item discrimination range from 0.36-0.73, an item difficulty range from 0.28-0.78, and reliability at 0.81, which means the test was qualified and can be used to collect data.

Section 2: Self-evaluation form for students' physical ability, physical behavior, and physical experience in physical literacy

Self-evaluation form for students' physical ability, physical behavior, and physical experience in physical literacy was a 5-point Likert scale. The reliability and discrimination of the self-evaluation were computed and it was found that item discrimination and reliability of each component were as follows in Table 1 which means the evaluation form was qualified and can be used to collect data.

Table 1 Summary of the reliability and discrimination index of physical ability, physical experience, and physical behavior

Component	Discrimination Index	Reliability
Physical ability	0.21 - 0.77	0.83
Physical experience	0.21 - 0.95	0.85
Physical behavior	0.34 - 0.89	0.79
Reliability for all items		0.81

**Data collection:** Firstly, the sample was given the test for students' physical cognition and self-evaluation form for students' physical ability, physical behavior, and physical experience. Secondly, the sample was taught using the physical education course based on self-regulated learning. Finally, the sample was given a test for students' physical cognition and a self-evaluation form for students' physical ability, physical behavior, and physical experience which was used in the pre-test after its implementation.

**Data analysis:** According to the research objectives, statistical methods were used to analyze the data. 1) test for students' physical cognition in physical literacy using a t-test for dependent samples. And 2) a self-evaluation form for students' physical ability, physical behavior, and physical experience in physical literacy using t-tests for dependent samples.

## Results

According to the research objectives, the results were as follows:

Result of comparing physical literacy of the students before and after receiving physical education courses based on self-regulated learning by using t-test for dependent samples.

Table 2 Result of comparing the different scores of physical literacies before and after learning physical education courses based on self-regulated learning. (n = 40)

Components	Pretest scores		Posttest scores		t	P-value
	M	SD	M	SD		
Physical cognition	83.88	23.36	110	14.81	10.92*	0.000
Physical ability	35.38	5.08	40.05	2.05	6.20*	0.000
Physical experience	38.90	6.38	47.25	8.78	4.66*	0.000
Physical behavior	30.73	4.37	33.23	1.94	3.34*	0.002

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Components	Pretest scores		Posttest scores		t	P-value
	M	SD	M	SD		
Overall (Physical literacy)	188.88	25.45	230.53	16.79	13.64*	0.000

\* The significance level was 0.05.

As presented in Table 2, the mean score on the pre-test was 83.88, SD was 23.36 and the mean score post-test was 110.00 points, SD was 14.81, it was 26.12 higher than the pre-test, Then,  $t=10.92$ ,  $p=0.000<0.05$ , indicating that students' physical cognition has been greatly improved after the self-regulated learning was adopted in physical education course.

As presented in Table 2, the results of the physical ability before and after learning physical education course based on self-regulated learning, it was found that the mean scores of pretests of students' physical ability were 35.38, SD was 5.08, and the mean scores of posttests was 40.05, SD was 2.05. Moreover, it aimed to examine the different scores before and after learning physical education courses based on self-regulated learning to enhance physical ability. The finding of this table revealed that after learning through a self-regulated learning course, posttest scores of students' physical ability were greater than pretest scores at a .05 level of statistical significance ( $t=6.20$ ,  $p<0.05$ ). The average scores of the study developed increasingly higher than the pretest.

As presented in Table 2, the results of the physical experience before and after learning physical education course based on self-regulated learning, it was found that the mean scores of pretests of students' physical experience were 38.90, SD was 6.38, and the mean scores of posttests was 47.25, SD was 8.78. Moreover, it aimed to examine the different scores of before-and-after learning through self-regulated learning courses to enhance physical experience. The finding of this table revealed that after learning through a self-regulated learning course, posttest scores of students' physical experience were greater than pretest scores at a .05 level of statistical significance ( $t= 4.66$ ,  $p<0.05$ ). The average scores of the study developed increasingly higher than the pretest.

As presented in Table 2, the results of the physical behavior before and after learning through the self-regulated learning course, it was found that the mean scores of pretests of students' physical behavior were 30.73, SD was 4.37, and the mean scores of posttests was 33.23, SD was 1.94. Moreover, it aimed to examine the different scores of before-and-after learning through self-regulated learning courses to enhance physical behavior. The finding of this table revealed that after learning through a self-regulated learning course, posttest scores of students' physical behavior were greater than pretest scores at a .05 level of statistical significance ( $t= 3.34$ ,  $p<0.05$ ). The average scores of the study developed increasingly higher than the pretest.

As presented in Table 2, the results of the physical literacy before and after learning through the self-regulated learning course, it was found that the mean scores of pretests of students' physical literacy were 188.88, SD was 25.45, and the mean scores of posttests was 230.53, SD was 16.79. Moreover, it aimed to examine the different scores of before-and-after learning through self-regulated learning courses to enhance physical literacy. The finding of this table revealed that after learning through a self-regulated learning course, posttest scores of students' physical literacy were greater than pretest scores at a .05 level of statistical significance ( $t= 13.64$ ,  $p<0.05$ ). The average scores of the study developed increasingly higher than the pretest.

## Conclusion

Through the construction of physical education courses based on self-regulated learning, under the guidance of students' new teaching methods and teaching plans, students' autonomy and enthusiasm are given full play. Through the training stages of self-set goals, self-selection of contact methods, self-supervision and training effects, and self-summary, students' systematic and self-regulated learning ability is mobilized.

Through comparative analysis of physical cognition, physical ability, physical experience, and physical behavior before and after learning physical education course based on self-regulated learning of freshman students at Zhoukou Normal University, revealed that students' physical literacy has been







significantly improved. Therefore, it is feasible to adopt a physical education course based on self-regulated learning, which is helpful to improve the physical literacy of the freshman students at Zhoukou Normal University.

Therefore, the development of physical education curriculum based on self-regulated learning is conducive to improving students' self-regulated learning ability and physical literacy, and the effect is obvious. In the physical education courses based on self-regulated learning, students fully show themselves and improve their physical literacy, so as to develop a healthy lifestyle and the awareness of lifelong sports, lifelong sports awareness makes students benefit for life.

## Discussion

The following are discussed concerning the previous study:

1. Comparison results of students' physical literacy before and after physical education courses based on self-regulated learning. The results show that the average score of physical literacy of the students who adopt the physical education course based on self-regulated learning is significantly higher than that of the pre-test, and the significance level is .000, indicating that the physical literacy of the students who adopt the physical education course based on self-regulated learning is higher than that of the pre-test. Physical education courses based on self-regulated learning will run through the whole learning process of students in physical education teaching. Under the guidance of teachers, the initiative of students is fully mobilized. Students can achieve the effect of learning physical knowledge, physical skills, physical experience, and physical ability through the self-regulated setting of practice goals, self-regulated selection of practice methods, self-monitoring, and self-feedback, and realize the improvement of self-learning ability and lifelong sports, so as to improve students' physical literacy. The results of this study are consistent with those of Wu (2010) who studied in the field of curriculum theory, cultivating students' self-regulated learning ability is regarded as an important curriculum objective; in the field of pedagogy, self-regulated learning is regarded as an important teaching method; in the field of learning theory, it is regarded as a high-level learning mode. Therefore, it shows that self-regulated learning is an important factor to promote students' learning in physical education teaching.

2. The research results show that the process of developing physical literacy is a complete and smooth body language, from "I can" to "I want", and then from "I understand" to "I love", which enables students to develop the possibility of lifelong learning. This result is consistent with the research result of Gao (2019) who studied school physical education must lay the foundation for students' lifelong physical education, which is an important guarantee for the healthy development of human beings and an inevitable requirement for realizing the all-round development of human beings. Self-regulated learning of physical education can not only improve students' independent innovation ability but also lay the foundation for students' lifelong physical education. Physical literacy is deconstructed into four interrelated elements, namely, physical ability, physical experience, physical cognition, and physical behavior. This view is consistent with Zhou (2020) who studied health literacy generated from health education, including four key elements: health knowledge, health skills, health awareness, and healthy lifestyle and behavior.

## Recommendation

In this study, the following recommendations are thought to be useful for instructions and for further study.

1. Physical education based on self-regulated learning is the core of learning reform. Therefore, we should study the development of self-regulated learning teaching mode, to cultivate students' self-regulated learning ability and lifelong sports characteristic behavior. In this study, the researcher established a teaching model of self-regulated learning. But there is still a lot of science to be developed, and more teachers are expected to join the curriculum reform.

2. Giving full play to students' subjective initiative is an important principle of self-regulated learning teaching. This study should provide students with more options for teaching techniques, thus





improving students' self-regulated ability. Therefore, it is necessary to study how to use other teaching methods to develop scientific learning outcomes and learning skills.

3. Teachers play an important role in the teaching process. Therefore, teachers should be encouraged to participate in the design of teaching models and support teachers to develop teaching models of self-regulated learning. Therefore, with the participation of teachers in the design of the teaching mode as the research focus, the development of a self-regulated learning teaching mode is studied.

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