

# Sports Skills Training and Performance of Roller Skating in College Clubs

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**Abstract:** Aiming at the sports skill training and performance of roller skating in college clubs, this study aims to evaluate the effect of different training methods on improving the skill level of club members, and provide scientific and effective training guidance for college roller skating clubs. Through randomized control group design, club members were randomly assigned to three groups, and received traditional technical training methods, strength training methods and comprehensive training methods respectively. The results showed that the comprehensive training method scored 8 in accuracy, 8 in speed and flexibility, and 9 in innovation ability. By comparison, traditional technique training methods scored slightly lower on accuracy and speed, while strength training methods scored lower on flexibility and creativity. Therefore, the comprehensive training method significantly outperforms the traditional technical training and strength training methods in skill performance. The research in this paper shows that the comprehensive training method has significant advantages in the skill development and performance of the members of the roller skating clubs in colleges and universities. It is suggested that roller skating associations in colleges and universities adopt a comprehensive training method, combining the cultivation of technology, strength and innovation ability, so as to improve the skill level and overall performance of members.

**Keywords:** Roller Skating, College Clubs, Sports Skills Training, Roller Skating Skills Training

## 1. Introduction

As a challenging and stimulating sport, roller skating has gradually emerged in college societies [1-2]. With modern people's attention to a healthy lifestyle and the increasing demand for diverse sports activities, roller skating, as a new form of sports, has been loved and sought after by more and more college students [3-4]. However, despite the increasing popularity of roller skating in college clubs, research on the cultivation and performance of roller skating in college clubs is still relatively lacking [5].

In recent years, many scholars and experts have conducted research on the training and performance of roller skating in colleges and universities. Among them, the elite inline speed skaters show unique performance characteristics and physiological characteristics in the competition. Zuj K A analyzed the performance characteristics and related physiological indicators of elite inline speed skaters. First, elite inline speed skaters demonstrate superior technique and skill. They have an excellent sense of balance, coordination and power control, and can accurately grasp the essentials of skating techniques to achieve high-speed and stable skating. Second, elite inline skaters possess superior endurance and aerobic capacity. Due to the long distance and high speed of the competition, speed skaters need to have an excellent level of endurance and be able to maintain high-intensity sports performance on the track [6]. Straight-line speed skating is an ice sport that requires a high degree of technique and coordination, and acceleration phase technology is one of the most crucial technologies in straight-line speed skating. Carolan B explored structural differences in acceleration phase technique between elite and non-elite inline speed skaters. By collecting and analyzing data on the movements of elite and non-elite inline skaters, he found stark differences between the two. When it comes to acceleration phase techniques, elite athletes demonstrate higher levels of technical ability and fluidity of movement. Specifically, elite athletes exhibited faster stride frequency and longer stride length during the acceleration phase technique. They are able to better control the body's center of gravity and stability, providing additional power and stability through more efficient arm swing movements. In contrast, non-elite athletes have problems with inaccurate technical execution and unfluid movements in

acceleration phase techniques [7]. Rumpf M C performed a comparative analysis of lower body strength measurements in elite roller skaters. Lower body strength is a crucial factor in roller skating, which has an important impact on athletes' technical performance and competitive ability. He selected three commonly used measurement methods: vertical jump test, squat weight test and leg muscle strength test, and evaluated and compared their feasibility and accuracy. Through the comparative analysis of many aspects, including the degree of standardization of test procedures, the stability of test results and the practicability of measurement data, etc., the advantages and disadvantages of various methods are obtained [8].

The purpose of this study is to explore the differences in the skill development and competition performance of roller skating athletes under different background conditions through the study of roller skating in sports skills training and performance in college associations, and to further analyze the reasons behind it. Through in-depth research on the technical training and performance of roller skating athletes in college associations, we can better understand the development status of roller skating in college associations, and provide scientific guidance and suggestions for improving the technical level and competitive performance of roller skating athletes.

## 2. Research Methods of Sports Skills Training and Performance of Roller Skating in College Associations

### 2.1. Development and Trend of Roller Skating

As a stimulating and fashionable sport, roller skating has received extensive attention and development worldwide in recent years [9-10]. With the advancement of technology and young people's pursuit of personalized and diversified sports, roller skating is attracting more and more people with its unique charm, especially in college clubs, roller skating shows the following development trend:

1) Diversification of sports forms: With the development of roller skating, different forms and styles of roller skating are gradually diversified. In addition to traditional skating and skill performances, modern roller skating sports have also emerged in various sports forms such as street skateboarding and ski jumping, which have brought more fun and challenges to roller skating [11-12].

2) Increased popularity: With the popularity and promotion of roller skating on social media, more and more people have begun to try and get in touch with this sport. As a free and open platform, college associations provide an ideal development environment for roller skating. Correspondingly, the number and scale of roller skating associations are also increasing [13-14].

3) Various promotional activities: In order to promote the development of roller skating, a series of roller skating promotional activities have been held in various places, such as competitions, public welfare activities, training courses, etc. These activities not only provide a platform for display and communication, but also attract more people who are interested in roller skating to participate, thus promoting the popularity of roller skating [15-16].

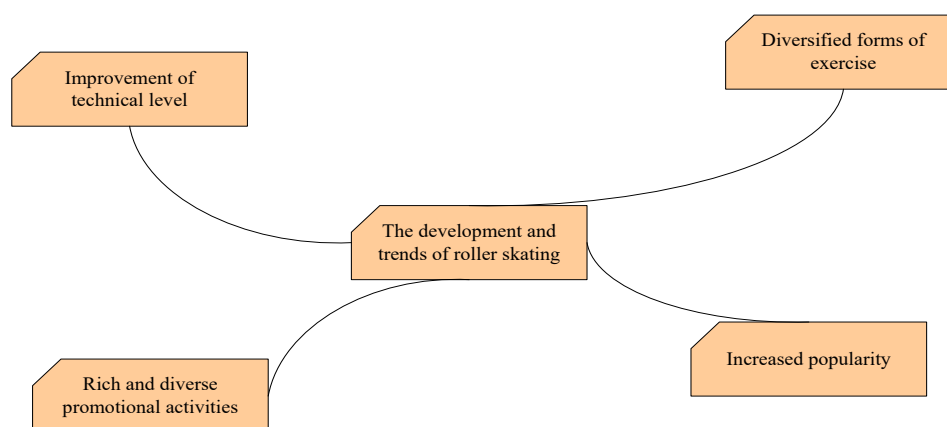


Figure 1: The development trend of roller skating

4) Improvement of technical level: With the development of roller skating, athletes have made breakthroughs and innovations in technology in an endless stream. Many roller skaters have mastered

more advanced skills and techniques through diligent training and practice, and have attracted the attention of the audience with various thrilling movements. This improvement in technical level not only promotes the development of roller skating, but also enhances the competitiveness and performance of roller skaters in college societies.

In short, roller skating is gradually growing in the college community with its unique charm and innovation. It not only enriches the diversity of campus sports activities, but also provides a platform for young people to show their personal style and pursue their dreams. In the future, with the continuous changes in technology and social environment, roller skating is expected to continue to develop and play a more important role in college societies. At the same time, it is also expected that roller skating will play a greater role in promoting young students' team spirit, self-challenge and positive attitude towards life, as shown in Figure 1:

## 2.2. Theoretical Basis of Motor Skill Development and Performance

The theoretical basis for the training and performance of sports skills refers to the relevant subject theory system and research results, which provide the basic principles and guiding methods for the training and performance of roller skating skills [17-18]. Here are some theoretical underpinnings that might be involved:

1) Motor learning theory: It includes cognitive theory, behaviorism theory and dynamical system theory. These theories address the process of motor learning, the factors that influence it, and the ways in which skills are developed and improved [19-20].

2) Stage theory of motor skills development: It involves the development process from beginners to professional athletes, such as Fitts and Posner's theory of cognitive motor stages and Gallagher's theory of motor skills development levels.

3) Cognitive control theory of motor skills: It emphasizes the cognitive process of motor skills, including perception, decision-making and execution, and how to improve the coordination and efficiency of skills through training and practice.

4) Motor skills assessment theory: It studies how to objectively and accurately evaluate the level and performance of motor skills, involving evaluation indicators, evaluation tools, and evaluation methods.

5) Cognitive psychology theory: It involves the influence of psychological factors such as learning, memory, attention, motivation and emotion on the development and performance of motor skills.

6) Theory of Sports Biomechanics: It focuses on the mechanical principles, muscle coordination and movement optimization during sports, and how to adjust and improve sports performance through sports technology.

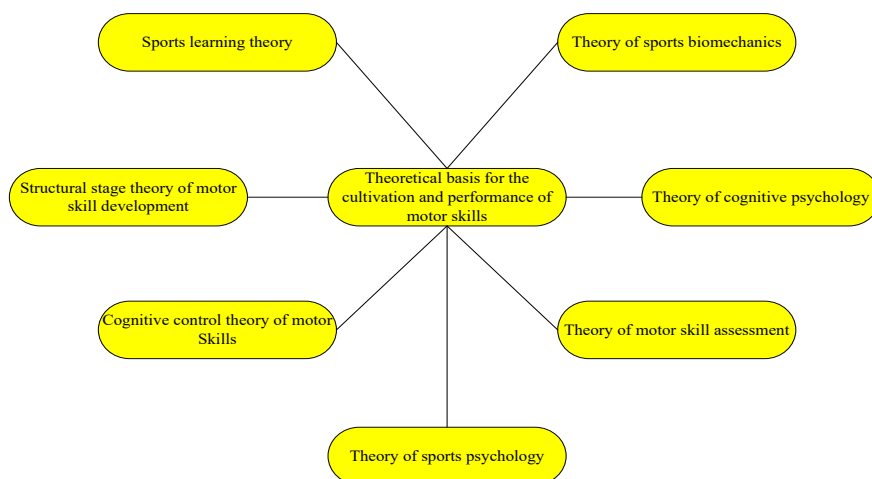


Figure 2: Theoretical basis for motor skill development and performance

7) Sports psychology theory: It studies the influence of factors such as athletes' mental state, self-confidence, anxiety and concentration on the development and performance of sports skills, as well as the application of psychological training methods, as shown in Figure 2.

### 3. Research Experiments on the Training and Performance of Roller Skating Skills in College Associations

#### 3.1. The Purpose of the Research on the Training and Performance of Roller Skating Skills in College Associations

The purpose of this experiment was to evaluate the effects of different training methods on the skill development and performance of members of college roller skating clubs. By comparing the differences between different training methods, the aim is to determine the most effective training methods to improve the skill level and performance of roller skaters.

#### 3.2. Research and Analysis of Roller Skating Skills Training and Performance in College Associations

To achieve the experimental purpose, three different training methods are introduced. The first is traditional technical training methods, including basic posture and balance exercises; the second is strength training methods, focusing on the development of muscle strength and explosive power; finally, there is a comprehensive training method that combines technical and strength elements to comprehensively improve athletes' roller skating skills. The experiment adopts a random control group design, and members of the community are randomly assigned to three groups, which receive different training methods. During the training period, the skill performance of each member is recorded and analyzed, and through regular evaluation, the impact of different training methods on skill improvement can be measured. The results in Table 1 are obtained by conducting experimental training on members of the community and analyzing the data. The values in Table 1 reflect the performance of different training methods on various skill indicators.

Table 1: Comparison of different training methods in skill performance

Skill indicators	Technical training methods	Strength training method	Comprehensive training methods
Skill indicators A	8	9	9
Skill indicators B	7	6	8
Skill indicators C	6	7	9
Skill indicators D	9	8	7

The scores of different training methods on each skill indicator are shown in Table 1. Among them, skill index A represents the accuracy score of a specific technical action, skill index B represents the speed and flexibility score, skill index C represents the evaluation of the athlete's innovation ability, and skill index D represents the evaluation of technical difficulty. In Skill A, the technical training method scored 8, the strength training method scored 9, and the comprehensive training method scored 9. This shows that the combined training method and the strength training method showed higher scores for the accuracy of skill A, compared with the slightly inferior technique training method. For skill B, the strength training method was scored 6, the technical training method was scored 7, and the general training method was scored 8. Consequently, the combined training approach showed higher scores for speed and flexibility, and the strength training approach scored the lowest. For Skill C, the technical training method scored 6, the strength training method scored 7, and the comprehensive training method scored 9. The results showed that the comprehensive training method achieved the highest score in the innovation ability assessment. For skill D, technical training methods and strength training methods scored 9 and 8, respectively, while comprehensive training methods scored 7. In terms of technical difficulty assessment, the technical training method leads the score. It shows that in the roller skating college community, the comprehensive training method has obtained the highest score in the aspects of skills A and C, while the technical training method has obtained the highest score in the aspect of skill D. The general training approach also performed better on Skill B, where the strength training approach was slightly worse. Therefore, in order to improve the skill level of roller skating club members, it is recommended to adopt a comprehensive training method, combining the cultivation of technique, strength and innovation ability.

#### 3.3. Research Results of Roller Skating Skills Training and Performance in College Associations

The skill level of members of college roller skating clubs can be most effectively improved through comprehensive training methods. Different training methods exhibit clear differences in different skill metrics, and each method has its specific advantages and limitations. Therefore, in roller skating clubs,

different training methods should be combined, and personalized training plans should be developed according to individual needs and skill differences, so as to comprehensively improve the skill level of members.

#### 4. Research Results and Discussions on the Training and Performance of Sports Skills in Roller Skating in College Associations

##### 4.1. Current Research Status of Roller Skating Skills Training and Performance in Colleges and Universities

In modern society, sports play an important role among teenagers and college students. As a platform for cultivating students' comprehensive quality and stimulating individual potential, college associations have played a positive role in promoting the popularization and development of sports. Roller skating, as a fashionable, exciting and challenging sport, is gradually attracting the attention and favor of college associations. However, there is currently a lack of systematic and in-depth research on the development and performance of roller skating in college clubs. The scientific evaluation and analysis of the sports skill level and performance of the members of the roller skating club in colleges and universities can provide strong support for improving students' sports skills training and club construction.

##### 4.2. Research and Verification of Roller Skating Skills Training and Performance in College Associations

In order to verify the sports skills training and performance of roller skating in college clubs, a roller skating club in a college was selected as the research object, and the members in the club were investigated and tested. The survey content includes members' personal information, roller skating participation, training methods, etc.; in terms of testing, a series of standardized skill test items are adopted for members of different skill levels, and the scores of each member are recorded, as shown in Figure 3:

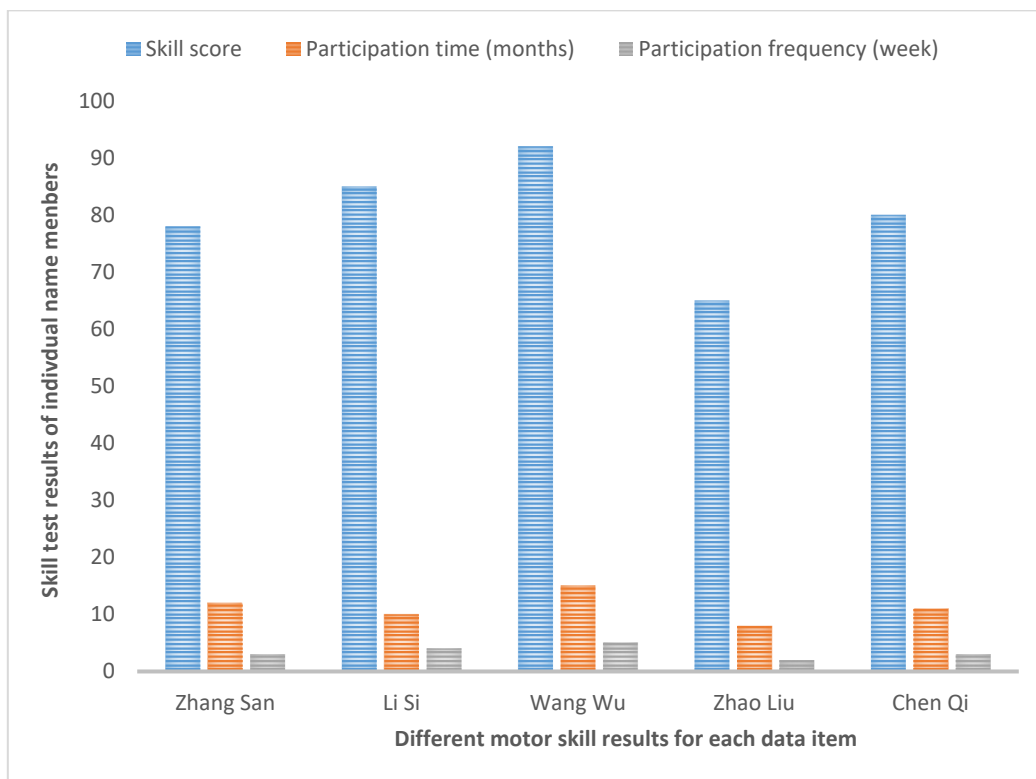


Figure 3: Results of motor skills test of roller skating club members

In Figure 3, it can see the skill score, participation time, and number of participations for each member. Among them, the skill score in the skill score is based on a series of standardized skill test items. The higher the number is, the better the member's mastery of roller skating skills are. For

example, Wang Wu's skill score was 92, indicating that he showed a high level of roller skating skills in the skills test. Participation time (months) indicates the length of time a member has joined the roller skating club, calculated in months. For example, Li Si's participation time is 10 months, which means that he has participated in activities in the roller skating club for 10 months. The number of participation in the number of participation (week) indicates the frequency with which members participate in roller skating activities every week. For example, Zhao Liu's number of participations is 2, which means that he participates in roller skating activities on average 2 times a week. It can get an initial look at differences among members in terms of skill scores, engagement time, and number of engagements. Combining these data, the skill level and participation among different members can be further analyzed, and training strategies can be developed based on the analysis results to improve the members' roller skating skills and performance levels.

### ***4.3. Research Strategies for Roller Skating Skills Training and Performance in Colleges and Universities***

Aiming at the sports skill training and performance of roller skating in college associations, the following strategies are proposed:

1) Improving the quality and level of training: through the organization of professional roller skating coaches for training, improving the technical level of club members and the mastery of action elements.

2) Regularly carrying out skills assessment and competition: regularly organizing skills assessment, group members in the group according to the assessment results, and provide corresponding training objectives and development space for members of different levels; at the same time, roller skating competitions are held to stimulate the enthusiasm and competition awareness of members to participate in sports, and improve their performance motivation and self-confidence.

3) Optimizing the training plan and venue: formulating a scientific and reasonable training plan, combine the time and ability of club members, reasonably allocate training content and intensity, and ensure the maximum training effect. At the same time, striving for better venue resources and providing a safer and more comfortable training environment will help members concentrate on skill training and performance improvement.

4) Establishing an exchange and cooperation mechanism: promoting exchanges and cooperation among community members, encourage the sharing of technical knowledge and experience, and learn from each other. At the same time, establishing contact with other college roller skating associations, hold exchange activities and friendly matches, and improve the overall level of the association.

To sum up, the research on sports skills training and performance of roller skating in college clubs is of great significance to improve students' sports quality and club development. By analyzing the status quo, verifying research and proposing strategies, we can better guide the sports skill training and performance improvement work of roller skating associations. The data in Table 1 shows that members have different skill scores, participation time and participation times, which provides a basis for in-depth analysis of differences among members and formulation of individualized training strategies. Through the implementation of reasonable strategies, the sports skills of members of the roller skating club can be further improved, and the development of club activities and the personal growth of students can be promoted.

## **5. Conclusion**

This study aimed to evaluate the effects of different training methods on the skill development and performance of members of college roller skating clubs. After data analysis and comparison of experimental results, it was found that the comprehensive training method performed best in terms of overall performance, and could comprehensively improve the skill level of members, including accuracy, speed and innovation ability. Traditional technical training methods excel in technical difficulty and are suitable for members pursuing technical challenges. Strength training methods, while relatively weak in terms of speed and flexibility, still have a positive impact on overall performance when combined with other training methods. It is suggested that roller skating associations in colleges and universities adopt comprehensive training methods to develop individualized training plans for members to improve the overall skill level. In addition, members who pay attention to technical training can choose traditional technical training methods, and strength training methods can be used as

auxiliary training methods. Personalized training plans can meet the needs of different members and help promote the skill development of roller skating club members. The explanation has important guiding significance for roller skating university associations, which is helpful to optimize training programs, improve the skill level of members and improve the overall performance.

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