International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense

Jianchun Cao[1], Jakrin Duangkam[2]* and Kreeta Promthep[3]
[1]Ph.D., Physical Education and Health Education Program, Udon Thani Rajabhat University, Thailand
[2,3] Lecturer, Physical Education and Health Education Program, Udon Thani Rajabhat University, Thailand
[1]E-mail: 510102634@qq.com, ORCID ID: https://orcid.org/0009-0002-8902-6751
[2]E-mail: jakrin.d@udru.ac.th, ORCID ID: https://orcid.org/0009-0006-3621-9794
[3]E-mail: kreeta.pr@udru.ac.th, ORCID ID: https://orcid.org/0009-0001-6322-0655

Received 07/04/2025 Revised 18/04/2025 Accepted 23/05/2025

Abstract

Background and Aim: Agility and speed are fundamental physical attributes in sports performance, especially in fast-paced games like basketball. Agility enables athletes to change direction quickly and efficiently, while speed determines how fast they can cover distance or react to game situations. This study aimed to study and compare the multi-direction movement programs method teaching on students' agility, speed, and basketball skills of students in basketball courses.

Materials and Methods: The sample consisted of 80 students of the basketball course of Anhui Vocational College of Defense. The researcher randomly selected the sample classrooms using a cluster random sampling method by drawing lots to determine the research sample classrooms. Two classrooms were selected and divided into an experimental group of 40 students using a random sampling method. The research was conducted for 60 minutes three times a week for a total of 8 weeks. The tools used in the study were 1) multi-direction movement programs consisting of 24 plans with an IOC average congruence index of 0.96, 2) the physical fitness test with an Illinois test and sprint run (50m), and skill of basketball test (RMDL) and (RMD), and (ACCDL). The data was analyzed using means and standard deviations, and the difference in average scores was tested using a t-test.

Results: 1) For the experimental group, significant differences were observed in the test indicators of speed, agility, and basketball skills after the experiment compared to those before the experiment. In the control group, there was no significant difference in the speed test indicator after the experiment compared to that before the experiment, yet significant differences existed in the test indicators of agility and basketball skills after the experiment compared to those before the experiment. 2) After the experiment, the group and the control group were compared. It was found that there were significant differences in the test results of agility, speed, and basketball skills between the two groups of experimental subjects.

Conclusion: The multi-direction movement program effectively improved speed, agility, and basketball skills in the experimental group. Compared to the control group, which showed limited improvement, the experimental group achieved significantly better results in all areas after training. This confirms the program's superiority over traditional methods.

Keywords: Multi-Direction Movement Programs; Agility; Speed; Basketball Skills

Introduction

In the dynamic sport of basketball, players are required to perform rapid directional changes, swift accelerations, and complex movements. These demands make agility, speed, and technical skills critical components for optimal performance. Traditional training methods often emphasize linear drills, which may not adequately prepare athletes for the multidirectional nature of the game. Consequently, there is a growing interest in training programs that incorporate multidirectional movements to better simulate in-game scenarios and enhance overall athletic performance.

Recent studies have highlighted the effectiveness of such training approaches. For instance, a study by Feng et al. (2024) demonstrated that a 12-week core strength training program significantly improved dynamic balance, agility, and dribbling skills in adolescent basketball players. Similarly, research by Elgammal and Radwan (2022) compared unified direction training with multidirectional training, revealing that the latter had a more substantial impact on various physical abilities, including agility and dynamic balance, in basketball players. Additionally, a systematic review by Paul et al. (2016) emphasized the

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

importance of agility training tailored specifically for basketball, underscoring the need for sport-specific training regimens.

Building upon these findings, this study aims to evaluate the effects of a multidirectional movement program on agility, speed, and basketball skills among students enrolled in basketball courses at Anhui Vocational College of Defense. By comparing this approach with traditional training methods, the research seeks to determine the efficacy of multidirectional movement training in enhancing key performance metrics in collegiate basketball players.

Objectives

1. To study the effects of multi-direction movement programs on agility, speed, and basketball skills in basketball course students.
2. To compare the effects of multi-direction movement programs on agility, speed, and basketball skills in basketball course students before and after the experiment between experimental and control group students.

Literature review

In this study, the researcher examined pertinent documents and research, and the findings have been organized into the topics.

1. Basketball Teaching Courses

Traditional teaching models in college basketball courses often face challenges such as repetitive content and insufficient training intensity, leading to decreased student engagement and limited skill development. A study by Liu (2019) emphasizes the need to reform teaching strategies to enhance the effectiveness of basketball education in higher institutions.

2. Physical Fitness in Basketball

Agility and speed are critical physical attributes for basketball players. The Illinois Agility Test is commonly used to measure an athlete's agility, reflecting their ability to change direction quickly and efficiently. In addition, speed and agility training programs are essential for improving footwork skills and cardiovascular stamina in basketball players. Implementing specific drills designed to enhance these abilities can yield significant improvements in athletic performance (Clark et al., 2018).

3. Skills of Basketball

Evaluating technical skills such as dribbling, passing, and shooting is vital in basketball training. Research by Wiyaka et al. (2020) suggests that incorporating skill-specific assessments-such as dribbling layups around poles or full-court drills-can effectively measure and improve these fundamental abilities in players.

4. Principles of Multi-Directional Movement Training

Modern basketball necessitates training that enhances agility and speed through multi-directional movement exercises. McGuigan and Cormack (2014) argue that drills focusing on acceleration, deceleration, and directional changes significantly improve performance on the court. These principles are essential for aligning training with real-game movement patterns.

Conceptual Framework

The research was to study the effects of multi-direction movement programs on agility, speed, and basketball skills in basketball course students.

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

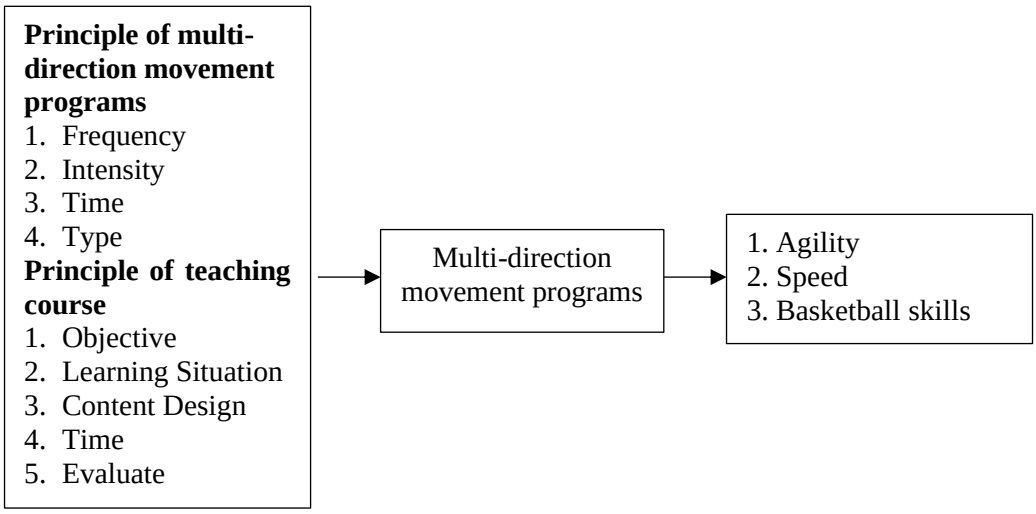

Figure 1 Conceptual framework

Methodology

Population and sample

Population: There are 10 basketball classes in the Anhui Vocational College of Defense, with 40 students in each class; the population in this study was 400 people.

Sample: The researcher randomly selected the sample classrooms using a cluster random sampling method by drawing lots to determine the research sample classrooms. Two classrooms were selected and divided into an experimental group of 40 students using a random sampling method. The experimental class was taught by the developed multi-direction movement programs method, while the control group was taught by the traditional method of the syllabus. This research was subjected to ethical review by the Ethics Board of the Udon Thani Rajabhat University (HECUD.262/2024).

Research design

This study uses a quasi-experimental design with a pre-test-post-test comparison group design. The participants were divided into two groups:

1. Experimental group (n = 40): Multi-directional movement programs teaching.
2. Control group (n = 40): Traditional teaching.

Research Instruments

The research tools of this experiment include multi-directional movement programs teaching, traditional teaching, and the evaluation index of multi-directional movement programs, developed and validated, consisting of 24 plans with an IOC average congruence index of 0.96.

1) Multi-directional movement programs teaching plan

The course plan of the basketball course teaching with multi-direction movement programs includes 8 weeks, 3 classes a week, each class lasting 60 minutes, a total of 24 teaching plans. The teaching plan content setting includes agility, speed, and basketball skills training.

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Table 1 Multi-directional movement programs for the experimental groups

Week| Session	Agility	Speed	Basketball skills
Week1 Session1	1. "Y" shaped run (1×3) 2. "8" shaped run (1×3)	1. 10m sprint run (1×2) 2. 20m sprint run (1×2)	1. High dribble posture (20×4) 2. Low dribble posture (20×4)
Week1 Session2	1. "T" shaped run (1×3) 2. "+" shaped run (1×3)	1. 30m sprint run (1×3) 2. 40m sprint run (1×2)	1. In-situ unarmed imitation shooting action (30×2) 2. In the free-throw line shooting exercises (20×2)
Week1 Session3	1. Radioactive run (1×3) 2. Triangle slide move (1×3)	1.50m sprint run (1×2) 2. Acceleration deceleration training (1×3)	1. Movement preparation exercises (40×4) 2. "Three Threats" holding ball ready movement exercises (40×4)
Week2 Session1	1. "Y" shaped run (1×3) 2. "8" shaped run (1×3)	1. 10m sprint run (1×2) 2. 20m sprint run (1×2)	1. High dribble posture (20×4) 2. Low dribble posture (20×4)
Week2 Session2	1. "T" shaped run (1×3) 2. "+" shaped run (1×3)	1. 30m sprint run (1×3) 2. 40m sprint run (1×2)	1. In-situ unarmed imitation shooting action (30×2) 2. In the free-throw line shooting exercises (20×2)
Week2 Session3	1. Radioactive run (1×3) 2. Triangle slide move (1×3)	1.50m sprint run (1×2) 2. Acceleration deceleration training (1×3)	1. Movement preparation exercises (40×4) 2. "Three Threats" holding ball ready movement exercises (40×4)
Week3 Session1	1. "V" shaped run (1×4) 2. "L" shaped run (1×4)	1.10m sprint run (1×2) 2.20m sprint run (1×2)	1. Attack in place movement exercises (40×2) 2. Cross-step probing exercises (40×2)
Week3 Session2	1. "J" shaped run (1×4) 2. "M" shaped run (1×4)	1. 30m sprint run (1×3) 2. 40m sprint run (1×2)	1. Backward pivot run (40×2) 2. Turnaround dribble run (40×2)
Week3 Session3	1. Hexagonal quadrants jump (1×3) 2. 20m horizontal rope ladder exercises (1×3)	1. 50m sprint run (1×2) 2. Acceleration-deceleration training (1×2)	1. The dribble stops sharply and runs at a variable speed (1×2) 2. 20m dribble sprints (1×2)
Week4 Session1	1. "V" shaped run (1×4) 2. "L" shaped run (1×4)	1.10m sprint run (1×2) 2.20m sprint run (1×2)	1. Attack in place movement exercises (40×2) 2. Cross-step probing exercises (40×2)
Week4 Session2	1. "J" shaped run (1×4) 2. "M" shaped run (1×4)	1. 30m sprint run (1×3) 2. 40m sprint run (1×2)	1. Backward pivot run (40×2) 2. Turnaround dribble run (40×2)
Week4 Session3	1. Hexagonal quadrants jump (1×3) 2. 20m horizontal rope ladder exercises (1×3)	1. 50m sprint run (1×2) 2. Acceleration-deceleration training (1×2)	1. The dribble stops sharply and runs at a variable speed (1×2) 2. 20m dribble sprints (1×2)
Week5 Session1	1. Gesture signal moving reaction exercises (20×4) 2. Pass and catch ball reflexes exercises (20×4)	1. Backward pivot run (10×4) 2. Slide walking and accelerated training (15×4)	1. 20m around the rod dribble (1×4) 2. In-situ step back exercises (20×4)

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Week| Session	Agility	Speed	Basketball skills
Week5 Session2	1. Pass and catch ball multi-direction movement exercises (20×4) 2. Multi-directional movement air drop exercises (20×4)	1.10m resistance running training (1×4) 2. One-step acceleration and acceleration after the breakthrough exercises (10×4)	1. Lateral stride movement exercises (30×4) 2. In-situ side step exercises (20×4)
Week5 Session3	1. Blocking exercises training (1×4) 2. Around the rod dribble (1×4)	1. Half-corner arc running pass and catch exercises (1×4) 2. Standing long jump (20×4)	1. No ball imitative exercises (20×4) 2. Footwork exercises with the ball (20×4)
Week6 Session1	1. Gesture signal moving reaction exercises (20×4) 2. Pass and catch ball reflexes exercises (20×4)	1. Backward pivot run (10×4) 2. Slide walking and accelerated training (15×4)	1. 20m around the rod dribble (1×4) 2. In-situ step back exercises (20×4)
Week6 Session2	1. Pass and catch ball multi-direction movement exercises (20×4) 2. Multi-directional movement air drop exercises (20×4)	1.10m resistance running training (1×4) 2. One-step acceleration and acceleration after the breakthrough exercises (10×4)	1. Lateral stride movement exercises (30×4) 2. In-situ sidestep exercises (20×4)
Week6 Session3	1. Blocking exercises training (1×4) 2. Around the rod dribble (1×4)	1. Half-corner arc running pass and catch exercises (1×4) 2. Standing long jump (20×4)	1. No ball imitative exercises (20×4) 2. Footwork exercises with the ball (20×4)
Week7 Session1	1. Gesture signal moving reaction exercises (20×5) 2. Pass and catch ball reflexes exercises (20×5)	1. Run backwards (1×4) 2. Slide walking and accelerated training (15×4)	1. Exchange hand sports ball exercises (40×4) 2. Variant running through obstacles exercises (1×4)
Week7 Session2	1. Pass and catch ball multi-direction movement exercises (40×4) 2. Multi-directional movement air drop exercises (40×4)	1. Resistance running training (1×5) 2. One-step acceleration and acceleration after the breakthrough exercises (1×4)	1. No ball imitative exercises (30×4) 2. Have a ball shooting exercise (20×4)
Week7 Session3	1. Blocking exercises training (1×5) 2. Around the rod dribble (1×5)	1. Half-corner arc running pass and catch exercises (1×5) 2. Standing long jump (20×5)	1. There is a ball quick stop imitation exercise (20×4) 2. A quick stop ball shooting exercises (20×4)
Week8 Session1	1. Gesture signal moving reaction exercises (20×5) 2. Pass and catch ball reflexes exercises (20×5)	1. Run backwards (1×4) 2. Slide walking and accelerated training (15×4)	1. Exchange hand sports ball exercises (40×4) 2. Variant running through obstacles exercises (1×4)
Week8 Session2	1. Pass and catch ball multi-direction movement exercises (40×4) 2. Multi-directional movement air drop exercises (40×4)	1. Resistance running training (1×5) 2. One-step acceleration and acceleration after the breakthrough exercises (1×4)	1. No ball imitative exercises (30×4) 2. Have a ball shooting exercise (20×4)
Week8 Session3	1. Blocking exercises training (1×5) 2. Around the rod dribble (1×5)	1. Half-corner arc running pass and catch exercises (1×5) 2. Standing long jump (20×5)	1. There is a ball quick stop imitation exercise (20×4) 2. A quick stop ball shooting exercises (20×4)

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

2) Agility test: The Illinois Run Test
3) Speed test: 50m sprint
4) Basketball skills test
4.1 Return moving dribble layup: (RMDL)
4.2 Return moving dribble :(RMD)
4.3 All-court comprehensive dribble layup: (ACCDL)

Data collection

Data were collected over 8 weeks, with measurements taken at two time points:
1. Pre-Test: Before training began.
2. Post-Test: After the 8th week of training.

Data Analysis

The analysis methods are as follows:
1. The mean and standard deviation for both the experimental and control groups.
2. Compared agility, speed, and basketball skills at two time points (before training and after 8 weeks) using:

2.1 Dependent t-test to compare within-group differences between the experimental and control groups, significance at $p<0.05$.

2.2 Independent t-test to compare differences between the experimental and control groups, significance at $p<0.05$.

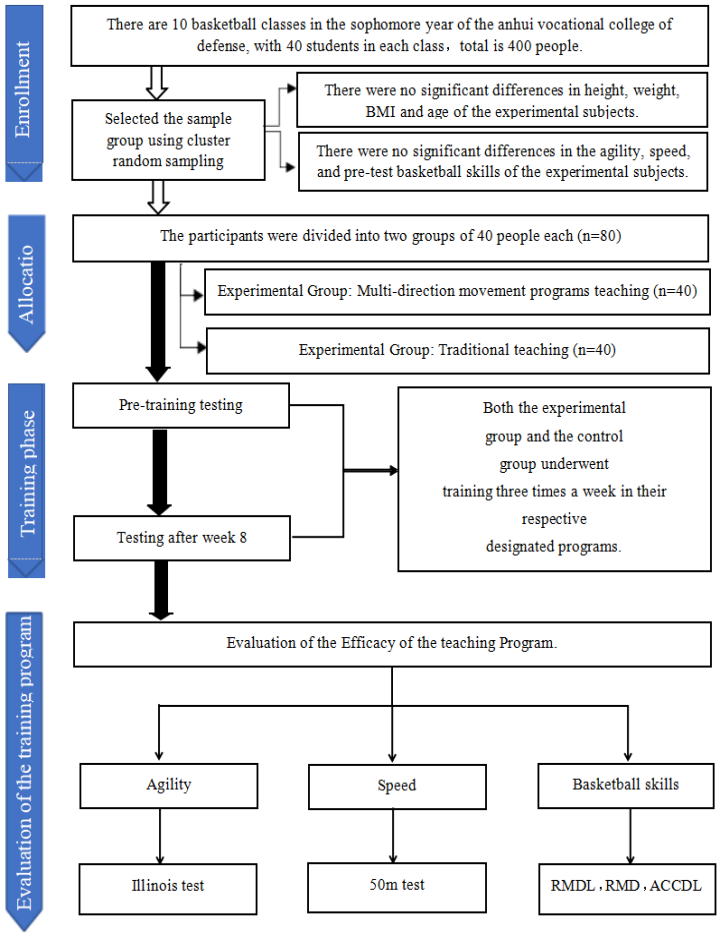

Figure 2 Diagram of the research process

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Results

The mean and standard deviation of agility, speed, and basketball skills between experimental and control groups were compared at pre-test and post-test. The results are presented in Table 2.

Table 2 Results comparison of agility, speed, and basketball skills before and after experimental and control groups at pre-test and post-test.

Experimental (N=40)		Pre-test		Post-test		*t*	*p*
		x̄	S.D.	x̄	S.D.		
Agility	1. The Illinois Run	19.45	0.84	17.67	0.49	-1.631	0.001*
Speed	1. 50m sprint run	7.91	0.78	7.63	0.46	7.420	0.001*
Basketball Skill	1. Return moving dribble layup (RMDL)	28.19	9.66	20.13	3.94	-0.268	0.001*
	2. Return moving dribble (RMD)	19.62	12.90	13.32	1.59	-0.635	0.001*
	3. All-court comprehensive dribble layup (ACCDL)	46.90	11. 30	33.15	4.50	9.052	0.001*
Control (N=40)		**Pre-test**		**Post-test**		***t***	***p***
		x̄	**S.D.**	**x̄**	**S.D.**		
Agility	1. The Illinois Run	19.78	0.98	18.33	0.97	7.420	0.001*
Speed	1. 50m sprint run	8.00	0. 65	7.89	0.61	1.660	0.105
Basketball Skill	1. Return moving dribble layup (RMDL)	28.75	9.03	22.98	4.26	4.486	0.001*
	2. Return moving dribble (RMD)	20.40	7.17	14.52	1.90	5.386	0.001*
	3. All-court comprehensive dribble layup (ACCDL)	44.70	9.82	37.60	6.82	4.825	0.001*

$p<0.05$*

The results of that there were significant differences between agility, speed, and basketball skill after the experiment and those before the experiment in the experimental group ($p<0.05$). The control group, before and after the experiment, found that there were significant differences between the values of agility and basketball skill after the experiment and those before the experiment in the control group ($p<0.05$), but there was no significant difference in speed.

Table 3 Comparison of agility, speed, and basketball skills after the experiment between the experimental and control groups

Agility (Post-test)	Experimental (N=40)		Control (N=40)		*t*	*p*
	x̄	S.D.	x̄	S.D.		
1. The Illinois Run	17.67	0.49	18.33	0.97	-3.852	0.001*

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 6: November-December 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Agility (Post-test)	Experimental (N=40)		Control (N=40)		*t*	*p*
	x̄	S.D.	x̄	S.D.		
Speed (Post-test)	**Experimental (N=40)**		**Control (N=40)**		***t***	***p***
	x̄	**S.D.**	**x̄**	**S.D.**		
1. 50m sprint run	7.63	0.46	7.89	0.61	-2.145	0.035*
Basketball skills (Post-test)	**Experimental (N=40)**		**Control (N=40)**		***t***	***p***
	x̄	**S.D.**	**x̄**	**S.D.**		
1. Return moving dribble layup (RMDL)	20.13	3.94	22.98	4.26	-3.104	0.003*
2. Return moving dribble (RMD)	13.32	1.59	14.52	1.90	-3.086	0.003*
3. All-court comprehensive dribble layup (ACCDL)	33.15	4.50	37.60	6.82	-3.444	0.001*

$p<0.05$*

The results were used to compare the performance outcomes between the experimental group and the control group. The analysis revealed statistically significant differences in all three measured variables, agility, speed, and basketball skills, between the two groups ($p<0.05$). Participants in the experimental group, who underwent multi-directional movement training, outperformed those in the control group across all performance indicators. These results suggest that the applied training program was more effective than traditional methods in enhancing key physical and technical abilities among basketball course students.

Conclusion

This study found that the multi-directional movement training program significantly improved speed, agility, and basketball skills in college students. The experimental group showed improvements in all areas, while the control group improved only in agility and basketball skills.

From the data tables:

1) The first table shows pre-test and post-test results within each group, with clear improvements in the experimental group.

2) The second table compares post-test scores between groups, showing that the experimental group performed significantly better ($p<0.05$).

The results are due to the training matching the dynamic nature of basketball. However, the control group did not improve in speed, meaning the research did not fully meet its objective across both groups.

Discussion

This study investigated the effectiveness of a multi-directional movement training program on agility, speed, and basketball-specific skills in college-level students. The findings revealed that participants in the experimental group demonstrated statistically significant improvements in all measured variables—agility, speed, and basketball skills compared to both their pre-intervention performance and the control group's post-test scores. These results align with the growing body of literature that supports multi-directional movement training as a superior method for enhancing sport-specific physical attributes. Agility, defined as the ability to change direction rapidly and efficiently, is a crucial physical component in basketball performance. The observed improvements in the experimental group's agility are consistent with Elgammal and Radwan (2022), who reported that multi-directional training significantly enhanced agility

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

and dynamic balance in basketball athletes. Forster et al. (2022) found that this systematic review examined the effects of various training methods, such as sprinting, plyometric, resistance, and combined training, on pro-agility shuttle performance. The review emphasizes the importance of specific and non-specific training methods in enhancing change of direction (COD) ability, which is crucial for success in various sports. This result echoes the findings of Franco-Márquez et al. (2015), who demonstrated that combined resistance and plyometric training improved sprint performance and neuromuscular response in young athletes. Such training promotes explosive power and stride efficiency, which are essential for high-speed movements on the court. Development of basketball-specific skills in addition to physical components, basketball requires the development of fundamental technical skills such as dribbling, passing, and shooting. The current findings showed that multi-directional movement training also contributed to measurable improvements in basketball-specific skills. This is in line with Usgu et al. (2020), who found that functional training incorporating basketball-specific movements led to performance gains among professional players. Specificity in training appears to facilitate the direct application of physical gains to game situations. Comparison with traditional training approaches, while the control group showed improvements in agility and basketball skills, the lack of improvement in speed underscores a limitation of traditional training methods. Vuong et al. (2023) reported that when change-of-direction and plyometric exercises were performed on sand, they enhanced physical performance more effectively than standard conditioning, particularly in speed and agility. This supports the notion that modern training paradigms incorporating instability, variability, and direction change are more effective in replicating the physical demands of basketball. Practical implications and application of the implementation of multi-directional movement programs in collegiate basketball courses offer a practical and efficient strategy for improving key performance indicators. The program's simplicity, minimal equipment requirements, and alignment with game-relevant movements make it highly adaptable to institutional settings. Given the clear performance benefits, such programs should be considered as standard components of basketball training curricula at the university level.

Recommendation

Suggestions in this research.

1. Promote the regular application of multi-directional movement training in college basketball classes to improve sport-specific physical performance.
2. Encourage physical education instructors to adopt evidence-based training approaches that align with current sports science findings.
3. Monitor and evaluate student performance systematically to assess the effectiveness of training and support individual development.

Suggestions for further research.

1. Investigate the long-term effects of multi-directional training on performance and injury prevention.
2. Explore the training's effectiveness across different sports, age groups, and genders.
3. Examine psychological outcomes such as motivation and confidence resulting from this training method.

References

Clark, M. A., Lucett, S. C., & Sutton, B. G. (2018). *NASM Essentials of sports performance training* (2nd ed.). Jones & Bartlett Learning.

Elgammal, M., & Radwan, N. (2022). The effect of unified and multi-directional training on physical abilities in basketball. *International Journal of Human Movement and Sports Sciences, 10*(6), 1158–1162.

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371

Feng, Y., Xu, L., Bai, L., Zhou, X., & Wang, M. (2024). Effects of 12-week core strength training on dynamic balance, agility, and dribbling skills in adolescent basketball players. *Heliyon, 10*(6), 1–16.

Forster, J. W. D., Uthoff, A. M., Rumpf, M. C., & Cronin, J. B. (2022). Training to improve pro-agility performance: A systematic review. *Journal of Human Kinetics, 85*(2), 195–210.

Franco-Márquez, F., Rodríguez-Rosell, D., González-Suárez, J. M., Pareja-Blanco, F., Mora-Custodio, R., Yáñez-García, J. M., & González-Badillo, J. J. (2015). Effects of combined resistance training and plyometrics on physical performance in young soccer players. *International Journal of Sports Medicine, 36*(11), 906–914.

Liu, C. (2019). Discussion on the reform of college basketball teaching. In *Proceedings of the 3rd International Conference on Culture, Education and Economic Development of Modern Society (ICCESE 2019)* (pp. 1205–1208).

McGuigan, M., & Cormack, S. (2014). Multidirectional speed in sport: The importance of change of direction and agility training. *UK Strength and Conditioning Association Journal, 34*(3), 6–11.

Paul, D. J., Gabbett, T. J., & Nassis, G. P. (2016). Agility in team sports: Testing, training, and factors affecting performance. *Sports Medicine, 46*(3), 421–442.

Usgu, S., Yakut, Y., & Kudaş, S. (2020). Effects of functional training on performance in professional basketball players. *Turkish Journal of Sports Medicine, 55*(4), 321–331.

Vuong, J.-L., Heil, J., Breuer, N., Theodoropoulos, M., Volk, N., Edel, A., & Ferrauti, A. (2023). Training on sand or parquet: Impact of pre-season training on jumping, sprinting, and change of direction performance in professional basketball players. *Applied Sciences, 13*(14), 8518–8528.

Wiyaka, I., Hasibuan, N., & Adhikahriani. (2020). Development of a basketball skills test based on shooting techniques for sports science students. *Advances in Health Sciences Research, 23*(2), 91–94.

Citation
Cao, J., Duangkam, J., & Promthep, K. (2025). The Effects of Multi-Direction Movement Programs on Agility, Speed, and Basketball Skills in Basketball Course Students of Anhui Vocational College of Defense. International Journal of Sociologies and Anthropologies Science Reviews, 5 (6), 261-270;
DOI: https://doi.org/10.60027/ijsasr.2025.7371