EFFECTS OF PLYOMETRIC TRAINING ON BASKETBALL DRIBBLING AGILITY OF MALE SUAN SUNANDHA RAJABHAT UNIVERSITY

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Abstract

To study the result of the plyomatric training effecting to the basketball dribbling agility. For the purpose of this study, two groups are chosen form 30 bachelor male students, 18-22 years of age which were not the athlet of university, form Suan Sunandha Rajabhat University by the purposive method basal on a fundamental strength level 1.5 per body weight. Those chosen students were equally derided into 2 groups. The 1st group focuses on the program of dribbling and the 2nd group focuses on the program of dribbling and the plyomatric practice. The period of practice was 40 minutes a day, 3 days a week and the total duration is 4 weeks. The practice was about to measure after, before and after the 2st, 4th week, the agility of dribbling. After that, all results should be analysis for the average and the standard deviation, the interval difference of individual group. The results found that After 4 weeks, basketball dribbling agility in the experimental group was significantly better than the control group at the .05 level.

Keywords: plyomatric training, basketball dribbling, agility

Introduction

Basketball is a form of physical exercise that contributes to human development in various aspects. Moreover, it is one of the most popular sports. Its popularity can be seen from its first inclusion in the 11th Olympic Games held in Berlin, Germany. Basketball competitions are also organized at different levels, both nationally and internationally, such as the Asian Games, SEA Games, National Games, National Youth Games, Thailand Student Games, and competitions under the Department of Physical Education, including royal trophies. In addition, basketball activities are frequently organized within schools and between schools, ensuring regular competitive opportunities.

In any sport, players must first acquire basic fundamental skills of that sport in order to succeed. In basketball, the three primary fundamental skills are: 1) passing and receiving the ball, 2) dribbling the ball, and 3) shooting the ball (Thepprasit Kulthawatchvichai, 1998). Among these, dribbling is considered one of the most important skills, as a significant portion of basketball gameplay involves controlling the ball while moving.

To perform any physical activity efficiently, especially those requiring body movement, muscle strength is critically important and is a key component of human physical fitness. According to Bucher (1971), the foundation of physical training is to develop the athlete's physical fitness so that they can perform sports skills effectively during competition. The importance of physical conditioning lies in the fact that, even when technical skills and tactics of opponents are similar, physical fitness can be a decisive factor in winning or losing. Therefore, coaches must develop and improve players' muscular strength, endurance, and

cardiovascular system before training them in any sport-specific activities (Jetsada Chieranai, 1987).

Furthermore, Suhat Phuthong and Chaninthorn Intiraphon (2017) stated that power is a component of physical fitness that is closely related to key athletic skills. Each athlete's capability varies depending on the type of muscle fibers they possess and the training they undergo to develop these fibers. To enhance muscle power, various training methods are applied, such as resistance training, which aims to increase both muscle strength and power, particularly in the lower body. Improved strength and power contribute significantly to enhanced vertical jump height, which is essential in basketball performance.

Based on these considerations, the researcher is interested in studying the effects of plyometric training on dribbling agility in basketball. The findings can help improve basketball players' skills and may also be applied to other sports in the future.

Objectives

1. To study the effects of plyometric training on dribbling agility in basketball.

Research Methodology

The participants were male students from Suan Sunandha Rajabhat University, aged 18–22 years, who were not university athletes. Inclusion criteria required that participants regularly play basketball at least three times per week and had no medical conditions that could hinder participation in the experiment. A total of 30 participants were selected using purposive sampling, based on a baseline strength level of at least 1.5 times their body weight.

The participants were divided into two groups of 15 participants each, matched according to their dribbling agility test scores to ensure equal skill levels.

- Group 1 (Control Group): Participated in a basketball dribbling skills training program only.
- Group 2 (Experimental Group): Participated in the basketball dribbling skills training program combined with plyometric training.

The training program lasted 4 weeks, with 3 sessions per week, each session lasting 40 minutes.

Data Analysis

Dribbling agility was measured before the experiment, after 2 weeks of training, and after 4 weeks of training. The collected data were analyzed using statistical methods, including mean and standard deviation, as well as examining differences between groups and within groups.

Research Results

This study investigated the effects of plyometric training on dribbling agility in male students at Suan Sunandha Rajabhat University. Measurements were taken before the experiment, after 2 weeks of training, and after 4 weeks of training. The results are presented in tables accompanied by descriptive text.

Table 1: Mean and Standard Deviation of Dribbling Agility in the Control Group and the Experimental Group

Measurement Period	Control Group (N = 15)		Experimental Group (N = 15)	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Before the experiment (Pre-test)	13.55	.369	13.45	.354
After 2 weeks (Mid-test)	13.20	.382	12.10	.585
After 4 weeks (Post-test)	12.98	.211	11.43	.702

From Table 1, it was found that the mean scores of dribbling agility in the control group before the experiment, after the second week, and after the fourth week were 13.55, 13.20, and 12.98 seconds, respectively, with standard deviations of 0.369, 0.382, and 0.211 seconds. In the experimental group, the mean scores before the experiment, after the second week, and after the fourth week were 13.45, 12.00, and 11.43 seconds, respectively, with standard deviations of 0.354, 0.585, and 0.702 seconds.

Table 2: t-values from the Analysis of Differences in Dribbling Agility between the Control and Experimental Groups before the Experiment, at Week 2, and at Week 4 after the Experiment

Training Period	Control Group (N = 15)		Experimental Group (N = 15)		t	p
	$\bar{x}$	S.D.	$\bar{x}$	S.D.		
Dribbling agility before the experiment (seconds)	13.55	.369	13.45	.354	.787	.438
Dribbling agility after week 2 (seconds)	13.20	.382	12.10	.585	6.7	.000
Dribbling agility after week 4 (seconds)	12.98	.211	11.43	.702	8.583	.000

*P>.05

From Table 2, the results of the t-test comparing the mean dribbling agility between the control group and the experimental group showed that there was no statistically significant difference in dribbling agility before the experiment. However, after the second and fourth weeks of the experiment, the experimental group demonstrated significantly better dribbling agility than the control group, at the .05 level of statistical significance.

Table 3: t-values from the Analysis of Differences in Dribbling Agility within the Control Group before the Experiment, at Week 2, and at Week 4 after the Experiment

Training Period	$\bar{x}$	Before the experiment 13.55	After week 2 of the experiment 13.20	After week 4 of the experiment 12.98
Before the experiment	13.55	-	.351*	-.351*
After week 2 of the experiment	13.20		-	.002
After week 4 of the experiment	12.98			-

* The mean difference is significant at the .05 level.

From Table 3, when comparing the differences in dribbling agility over the training period within the control group, it was found that after the fourth week of the experiment, the time required to complete the dribbling agility test was significantly lower than before the experiment at the .05 level of statistical significance. However, the dribbling agility time after the fourth week did not differ significantly from that at the second week of the experiment.

Table 4: t-values from the Analysis of Differences in Dribbling Agility within the Experimental Group before the Experiment, at Week 2, and at Week 4 after the Experiment

Training Period	$\bar{x}$	Before the experiment 13.45	After week 2 of the experiment 12.10	After week 4 of the experiment 11.43
Before the experiment	13.45	-	1.350*	2.020*
After week 2 of the experiment	12.10		-	.670*
After week 4 of the experiment	11.43			-

* The mean difference is significant at the .05 level.

From Table 4, when comparing the differences in dribbling agility over the training period within the experimental group, it was found that after the fourth week of the experiment, the time required to complete the dribbling agility test was significantly lower than before the experiment at the .05 level of statistical significance. Furthermore, the dribbling agility time after the fourth week was also significantly lower than at the second week of the experiment, at the .05 level of statistical significance.

Conclusion

After four weeks of training, the experimental group, which practiced both the basketball dribbling skill program and the supplementary plyometric training program, demonstrated significantly greater dribbling agility than the control group, which only practiced the basketball dribbling skill program, at the 0.05 level of statistical significance. This improvement can be attributed to plyometric training, which is a form of exercise that enhances physical fitness. Agility is a component of skill-related physical fitness and represents the ability to start movements quickly, stop, and change direction efficiently—an essential capability in sports that require rapid movement.

These results are consistent with Jatupol Kluaydaeng (2005), who found that participants who underwent a six-week program combining basketball dribbling skills and plyometric training significantly improved their dribbling agility. Moreover, Chu (1996) stated that plyometric training stimulates the muscle fibers responsible for rapid contraction, allowing muscles to generate more force and contract more quickly simultaneously. In basketball movements, muscles perform both eccentric and concentric contractions rapidly, similar to the actions in plyometric exercises. Chu (1996) also emphasized that agility training should mimic sport-specific movements to directly enhance the muscles involved in the practiced activity.

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