Effect Of Combination Training on Power, Leg Muscle Strength and Agility of Physical Education Students National Sports University, Lampang Campus

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Abstract

The objective of this research is to study the comparative power., Leg muscle strength and agility of students in basketball skills and teaching courses. Faculty of Education, National Sport University, Lampang Campus, Pre-Training, During and Post-Training Basketball Step-To Hybrid. This research used quantitative research, a random group sample of students from the Department of Physical Education, Faculty of Education, National Sport University, Lampang Campus. Year 2 Semester End of Academic Year 2022, Enrolled in Basketball Skills and Teaching, 30 people. Statistics that use research comparing the difference in mean of power, strength, Leg muscles and agility with a combination training program, Pre-Training, During and Post-Training Week 8. Using percentage statistics, average, Standard deviation and non-parametric statistics. The Friedman test involved more than two population groups comparing dependent sample sizes. Findings, it was found that the results of the power comparison, Leg muscle strength and agility of students in basketball skills and instruction courses. Faculty of Education, National Sport University, Lampang Campus found that all 3 aspects: power, Strength, leg muscles and agility. Divided by time Pre-Training, During and Post-Training, the use of the combined training program differed statistically significantly at the level of .05. and the results compare the average score of power, Pre-Training, During and Post-Training The blended training program was higher over time compared sequentially in all 3 areas.

Keyword: Effects of Combination Training, Leg Muscle Strength Power, Agility, Physical Education Student

Introduction

Basketball is a sport that is popular in countries around the world, a sport that can be freely played by humans of all ages, it is a sport that connects to create harmony among the group, create human beings to help each other. This is an important part of the benefits in society such as team work, whether it is the local community, basketball is widely played and in schools at various levels, physical education is included in the curriculum of education. To play basketball must be agile because it is essential to play basketball, they should also have mobility skills. This will be different from other sports. Basketball requires strength, Speed and agility are factors that contribute to increased maneuverability and efficiency. Especially training or play that requires advanced skills, Agility will allow the use of these techniques, as well as applying it in combination with other techniques, it will help to gain a competitive advantage. Hence the speed, Basketball relies heavily on agility. Because it is a sport that requires movement and agility. As well as techniques that will give you an advantage both offensively and defensively. Therefore, agility is vital, playing basketball requires strength, Speed and agility in maneuverability.

According to research by McInnes et al. (1995), it was found that, throughout the game, Elite basketball players use high-intensity activities for about 15% of the total duration. The average heart rate during competition ranges from 165-188 beats per minute, and lactic acid concentrations range from 6.8-8.5 mmol per liter. According to Abdelkrim et al. (2007) study of elite basketball players under the age of 19, basketball players spend about 16.1% of the total time spent on strenuous activities, and there is a specific movement about 41% of the time. This has the highest average heart rate of 171 beats/minute. The concentration of lactic acid in the blood is 5.5 mmol/L. From the proportion of activity and physiological needs from the above research, it can be seen that basketball is a sport that requires a high level of intensity, Athlete movement in high-level activity is often used in critical situations during competition (Hoffman et al., 1996). If the athlete has such a good level of physical fitness component, it will encourage the use of various skills and abilities more effectively. Basketball athletes' ability to practice motor and movement skills, as well as change positions quickly, will result in an advantage at every opportunity and moment of showing their skills in the game. Therefore, basketball players need a very high level of speed and agility as they must be moving and will have to constantly change their position and direction. Both defensively and offensively. Sheppard and Young (2006) say that speed and agility are interrelated and interrelated elements. It is important in many sports. Speed is the ability to move from place to place with maximum capability. Agility is the ability to change the direction of movement quickly. They can be divided into two categories: reactive agility and change of direction-speed. In basketball, it is a sport that requires agility in both open and closed skills. Open skills show skills that cannot be patterned or predicted, such as dribbling to score. Players will not be able to set directions and movement patterns in advance. This depends on the opposing team's defense while the skill is off (Charoen Kabounrat, 2014).

From such a problematic condition. Therefore, the researcher is interested in finding ways to improve vitality, Leg muscle strength and agility of athletes using training programs created by the researchers. It examines the effect of blended training on power, strength, Leg muscles and agility to guide the teaching of basketball skills and teaching and enhance agility performance. This is an important factor that leads to the enhancement of students' performance as well as the development of teaching and learning achievement and leads to the most effective coaching.

Research Objectives

To study the comparative power, Leg muscle strength and agility of students in basketball skills and teaching courses. Faculty of Education, National Sport University, Lampang Campus, Pre-Training, During and Post-Training Basketball Step-To Hybrid.

Research Hypotheses

The effect of combination training affects vitality, strength, Leg muscles and agility of students in basketball skills and teaching courses. Faculty of Education, National Sport University, Lampang Campus There is a difference.

Research Methodology

This research is quantitative research, the researcher used cluster random sampling, i.e., students of Physical Education, Faculty of Education, National Sport University, Lampang Campus. Year 2 High School Academic year 2022 enrolled in basketball skills and teaching courses, 30 people. Statistics that use research comparing the difference in mean of power, strength, leg muscles and agility, Agility with a blended training program, Pre-Training, During and Post-Training Basketball, week 8 using percentage, mean, standard deviation, and non-parametric statistics. The Friedman test involved more than two population groups comparing dependent sample sizes.

Findings

Comparative results of mean difference of vitality, Leg muscle strength and agility Pre-Training, During and Post-Training in a blended training program.

1. Preliminary agreement checks of multiple variance analysis include: normal distribution check, Check relationships between variables

Preliminary agreement on sample normal distribution (Clinch & Keselman, 1982, p. 211; Cochran & Cox, 1976, pp. 104-106). The statistic used in the preliminary agreement test on the normal curved distribution of samples is the Shapiro-Wilk test, which can be used if the number of samples used in the test does not exceed 50 samples ($n \leq 50$ samples). If the Shapiro-Wilk test result has a statistical significance of the test greater than the statistical significance set at the level of 0.05 ($\alpha > 0.05$). It shows that the samples used in the test have a normal curved distribution that is in accordance with the agreement of one-way analysis of variance.

Table 1.1 Displays the Tests of Normality, the average score of power, Leg muscle strength and agility, pre - test

Pretest	Shapiro-Wilk		
	Statistic	df	Sig.
powerpre	.908	30	.013
musclepre	.915	30	.020
agilitypre	.917	30	.022

Table 1.1 shows that: The average scores of powers, leg muscle strength, and agility before training (Pretest) in each area were less than statistically significant levels. The researcher set it at .05. This indicates that the test score before using the program of mixed training. Each side has a non-normal distribution.

Table 1.2 Displays the Tests of Normality, the average score of power, Leg muscle strength and agility during training

Pretest	Shapiro-Wilk		
	Statistic	df	Sig.
powerpre	.979	30	.011
musclepre	.931	30	.015
agilitypre	.959	30	.030

Table 1.2 shows that: Average rating of power, Leg muscle strength and agility during training (Between) in each area were less than the statistically significant level, which we defined at .05. This indicates that the test score before using the program of mixed training. Each side has a non-normal distribution.

Table 1.3 Displays the Tests of Normality, the average score of power, Leg muscle strength and agility **after training**

Pretest	Shapiro-Wilk		
	Statistic	df	Sig.
powerpre	.928	30	.045

| musclepre | .917 | 30 | .023 |
| agilitypre | .922 | 30 | .030 |

Table 1.3 shows that: Average rating of power, The strength of the leg muscles and the agility after training of each area were less than the statistically significant levels. The researcher set it at .05. This indicates that the test score before using the program of mixed training. Each side has a non-normal distribution.

2. Average analysis results of power, Leg muscle strength and agility, Pre-Training, During and Post-Training the mixed training program by statistical methods of The Friedman Test.

Table 1.4 Displays Tests of Normality, Average Scores of Powers, Pre-Training, During and Post-Training Blended Training Program

Power	N	Mean	S.D.	P-value
Powerpre	30	2.47	1.358	0.000*
Powerbet	30	3.47	0.973	
Powerpost	30	3.90	0.548	

*Statistically significant at the level of .05.

According to Table 1.4, the average score of Pre-Training, During and Post-Training the combined training program showed a statistically significant difference of .05.

Table 1.5 Displays the Tests of Normality, the average score of leg muscle strength, Pre-Training, During and Post-Training the combined training program

Muscle	N	Mean	S.D.	P-value
Musclepre	30	2.27	0.58	0.000*
Musclebet	30	3.37	0.85	
Musclepost	30	4.23	0.43	

Table 1.5, the average score of leg muscle strength in Pre-Training, During and Post-Training the combined training program showed a statistically significant difference of .05.

Table 1.6 shows the Tests of Normality, Average score of Agility. Pre-Training, During and Post-Training the combined training program

Agility	N	Mean	S.D.	P-value
Agilitypre	30	2.57	1.04	0.000*
Agilitybet	30	3.33	1.023	
Agilitypost	30	4.03	0.89	

According to Table 1.6, the average score of agility in Pre-Training, During and Post-Training the combined training program showed a statistically significant difference of .05.

Table 1.7 Comparison of average scores of powers, leg muscle strength and agility over time compared Pre-Training, During and Post-Training the combined training program

Variables	Comparison Period		Variance of Average Rating (I-J)	P-value
	(I) Time	(J) Time		
Power	1	2	4.53*	0.00
	1	3	8.00*	0.00
	2	3	3.47*	0.00
Muscle	1	2	.510*	0.00
	1	3	.901*	0.00
	2	3	.391*	0.00
Agility	1	2	0.61*	0.00
	1	3	1.23*	0.00
	2	3	0.62*	0.00

*Statistically significant at .05

From Table 1.7 comparison of the average scores of powers, according to the comparative period Pre-Training, During and Post-Training the combined training program, it was found that both power, strength of leg muscles and agility. The results were scored in the same way as follows:

1) The score of using the combined training program during training (Time : 2) was statistically significantly higher than the score Pre-Training the use of the combined training program (Time : 1) at a significant level of .05. 2) The score after the use of the combined training program (Time : 3) was statistically significantly higher than the score before the use of the combined training program (Time : 1) at a significant level of .05. and 3) the score after the use of the combined training program (Time : 3) was statistically significantly higher than the score of the combined training program during training (Time : 2) at a significant level of .05.

2. Power comparison results, Leg muscle strength and agility of students in basketball skills and teaching courses. Faculty of Education, National Sport University, Lampang Campus found that all 3 aspects: power, Leg muscle strength and agility. Pre-Training, During and Post-Training the combined training program differed statistically significantly at .05 and compared the average score of power, Leg muscle strength and maneuverability. By comparison time interval Pre-Training, During and Post-Training the combined training program, higher over time compared sequentially on all 3 sides.

Discussion

Power Comparison Results, Leg muscle strength and agility of students in basketball skills and teaching courses. Faculty of Education, National Sport University, Lampang Campus found that all 3 aspects: power, Leg muscle strength and agility, divided by time period, both Pre-Training, During and Post-Training the combined training program, there was a statistically significant difference at the .05 level. And the results compare the average score of power, Leg muscle strength and maneuverability over time compared to Pre-Training, During and Post-Training the combined training program, higher over time compared sequentially on all 3 sides.

Statistically significantly higher at the level of .05. This may be because students have improved their energy performance through a combination of muscular training schedules, including Exercise 1, Tuck Jump, Exercise 2, Box Jump, Exercise 3, Hurdle Jump, and Exercise 4 Depth Jump. The blended training program allows students to exercise maximum exertion. Throwing, dashing, throwing in the shortest possible period of time. To strengthen muscles and speed such as running, throwing, jumping. According to Kim. 1999: 125-126, muscle power consists of three movements: inertia, momentum, and acceleration. It causes movement in an explosive manner and the power of movement by working together muscles. In addition, the combined training program strengthens the strength and power of the muscles by exerting maximum force, Throw, dash, throw in the shortest possible period of time. The research also found that students had increased agility. It is moving at full speed, also known as accelerated movement, and is another variable related to directional running performance. It is considered that agility is of great importance to play basketball. As Worawat Busadee (2019) has stated, good agility, Efficient movement with acceleration, slowing down and changing direction quickly will be able to maintain the position of the body without losing balance. Thus, agility is an important mechanism of movement in sports. The skills of the athlete are carried out effectively.

The findings are consistent with Dhamachart Nakapan (2013), a study on the effect of station training programs on the dribbling ability of high school students found that after 8 weeks of experiments, the experimental group had the ability to dribble in a straight line over a distance of 50 meters. Statistically significant at the .05 level. And after 8 weeks of experimentation, the experimental group had better dribbling ability than before the trial. Statistically significant at the .05 level. And in line with Ajchara Chuachan (2006) studied the effects of body style running training. It was found that the tennis training group coupled with the M-style running training program had a statistically significantly higher average of agility after the test than before the test at .05. And in line with Wisarut Srikaew (2014) a study was conducted on the effects of a 4-week plyometric training model with muscle power and agility in Futsal athletes. A 4-week pre- and post-plyometric test on the muscle power of counter move jumping and Illinois agility. The results showed that the trained group had an increase in muscle power and a statistically significant improvement in agility at .05.

Suggestion

1. Recommendations for the implementation of research findings

Combined training programs for empowerment, strength, the leg muscles and agility created can be combined with other sports with similar patterns of movement and performance.

2. Suggestions for next research

A blended training program should be introduced to strengthen power, strength, Leg muscles and agility are used to train with samples at different levels.

A blended training program should be introduced to strengthen power, strength, Leg muscles and agility to design activity programs suitable for other sports.

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