

THE ISOLATED AND COMBINED EFFECT OF FARTLEK AND PARCOURSE TRAINING ON AGILITY AND CARDIOVASCULAR ENDURANCE VARIABLES AMONG COLLEGE BASKETBALL PLAYERS

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Abstract

The objective of the study was to identify the isolated and combined effect of fartlek and parcours training on selected physical and physiological variables among college basketball players' players. Forty male basketball players aged between 18 to 22 years were selected randomly. They were divided into four groups of three experimental and one control groups. Isolated fartlek, isolated parcours and combined training (fartlek and parcours training) are the three experimental groups. All the three experimental groups were given training for 24 weeks and control group were not allowed to participate in any training programme. The subjects were tested dependent variables such as agility and cardio vascular endurance; at the beginning (pre-test) in middle 12 week (mid-test) and after the training 24 week (post-test). The training schedule was for a period of 24 weeks. The data were collected two days before and after the training schedule and mid test after the 12 weeks of the training schedule. The data were analysed by applying ANCOVA and Scheffe's Post hoc test. The result showed that there were significant changes in dependent variables such as agility and cardio vascular endurance as result of isolated fartlek, isolated parcours and combined training (fartlek and parcours).

Keywords: Fartlek, Parcourse, Basketball Players.

Introduction

"It's not how hard you train; it's how smart you train" (O' Donnell)

In the past, the concept of training was limited to competitive sports. However, in recent years, athletic training has become a normal part of an active way of life and today athletic training belongs to the life style of all generations (Hohman, Lames and Letzelter, 2002). The purpose of training is first to reveal the genetic potential without causing damage (Tulloh, 1998). Training is necessary for two basic reasons that, to provide the knowledge and skills to use the performance appraisal system well (Maclean, 2001). The response to specific types of training can vary considerable from athlete to athlete. For example, one youth may develop muscle mass after weight training while another may not. Generally speaking, however the effects of training are highly predictable if coaches use training methods properly (Green and Pate, 1977). Fartlek is a Swedish term means Speed Play. It is a form of road running or cross country running in which the runner or cross-country running in which the runner or jogging recovery intervals. There is no pre-determined schedule to follow, but instead the athlete will set his or her own interval length and pace in response to their own feeling of workload (Dietrich, 1982). Parcours is a French term and Par course in English mean mid-way obstacle of in a course of training. Parcours is a training technique that combines continuous training with exercise done at stations along the course (Williams, 1984). It involves jogging a short distance from station

to station and performing a designed exercise at a station, according to guidance and direction on a board located at that station. It consists of series of stations set up over a 1 to 2.5-mile path and 18 to 24 stations (Padmanabhan, 2000).

Research Methodology

In this study, isolated and combined effect of fartlek and parcours training on selected agility and cardio vascular endurance variables among college Basketball players. For this purpose, forty male Basketball players of St: Aloysius College; Edathua of age 18 to 22 years (Mean 19.4 years) 156 to 169 cm (Mean 161.8 cm) and 49.5 KG to 69 KG. (Mean 52.9 KG.). The criterion variables selected for the study are agility and cardio-vascular endurance. Forty males Basketball players were randomly divided into four groups of ten subjects each. Group I underwent parcours training, group II underwent fartlek training group underwent combined training (fartlek and parcours training) and group IV acted as control group. The training schedule was for a period of 24 weeks. The data collected were analysed by one-way repeated measures; one way analysis of variance (ANOVA) with repeated measures for the variables in order to determine the significant differences if any within the group, out of the means of three tests. Whenever the F -ratio was found to be significant, the analysis of covariance (ANCOVA) was used in order to find which group is superior among the groups. In all the cases 0.05 level was fixed as a significant level to test the hypotheses.

Analysis of the data and result of the study

The data of agility and cardio vascular endurance before, mid and after the training of experimental and control groups were analysed and is presented in the following tables.

Agility

The influences of the independent variables on agility were analysed and are presented below. The mean and standard deviation values on agility of fartlek practices, parcours training, combined training of fartlek training and parcours training and control groups were analysed.

Table I
SUMMARY OF MEAN AND STANDARD DEVIATION ON AGILITY FOR PRE-MID AND POST TEST OF EXPERIMENTAL AND CONTROL GROUPS

Tests	Pre-Test		Mid Test		Post Test	
	Mean	SD	Mean	SD	Mean	SD
Fartlek group	9.683	0.573	9.568	0.536	9.457	0.516
Parcours group	9.680	0.590	9.620	0.562	9.543	0.534
Combined group	9.683	0.529	9.521	0.491	9.370	0.459
Control group	9.680	0.591	9.681	0.589	9.684	0.589

(Agility scores are represented in seconds)

The one-way repeated measures the analysis of variance on agility of the experimental and control groups in three tests at a different time period, which were analysed.

Table II
ONE WAY REPEATED MEASURE ANVA ON AGILITY OF EXPERIMENTAL AND CONTROL GROUPS

GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	d/f	Mean Squares	F-ratio
Fartlek group	Test (between)	0.38	2	0.19	4.59*
	Error	0.74	18	0.14	

Parcours group	Test (between)	1.02	2	0.51	11.82*
	Error	0.78	18	0.01	
Combined group	Test (between)	1.97	2	0.99	28.83*
	Error	0.62	18	0.03	
Control group	Test (between)	0.00	2	0.00	0.00
	Error	0.01	18	0.00	

*Significant at 0.05 level of confidence. The table value required for significance at 0.05 levels with ci/f 2 and 28 is 3.11.

From table II it can be observed that the obtained F-ratio values of fartlek training, parcours training, combined training of fartlek training, and parcours training groups are 4.59, 11.82 and 28.83, which are greater than the table value of 3.11 with d. f 2 and 78 required for the significance at 0.05 level of confidence. The results of the study indicate that there is a significant difference among the means of the three tests at a different time period for the experimental groups. However, the control group showed an insignificant difference among the three tests. To find out which of the three paired means had a significant difference, the Scheffe's post hoc test was applied.

TABLE III
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS FO FARTLEK TRAINING GROUP OF AGILITY

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
9.680	9.620		0.060*	0.054
9.680		9.543	0.137*	0.054
	9.620	9.543	0.077*	0.054

*Significant at 0.05 level of confidence

Table III shows that the mean differences on agility between the pre and mid test, the pre and post-test and the mid and post-test are 0.060, 0.137 and 0.077 respectively. The values are greater than the confidence interval value of 0.054, which show a significant difference at 0.05 level of confidence. It may be concluded from the results of the study, that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on agility and the pre and post-test was superior and the pre and mid test was the least.

TABLE IV
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS OF PARCOURS TRAINING GROUP ON ACTIVITY

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
9.683	9.568		0.115*	0.056
9.683		9.457	0.226*	0.056
	9.568	9.457	0.111*	0.056

*Significant at .05 level of confidence.

Table IV shows that the mean differences on activity between the pre and mid test, the pre and post-test and the mid and post-test are 0.115, 0.226 and 0.111 respectively. The values are greater than the confidence interval value 0.056, which show a significant difference at 0.05 level of confidence.

It may be concluded from the results of the study, that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on agility and the pre and post-test was superior and the pre and mid test was the least.

TABLE V
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS OF PARCOURS TRAINING GROUP ON ACTIVITY

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
9.683	9.521		0.163*	0.050
9.683		9.370	0.314*	0.050
	9.521	9.370	0.151*	0.050

*Significant at 0.05 level of confidence

Table V shows that the mean differences on agility between the pre and mid test, the pre and post-test and the mid and post-test are 0.163, 0.314 and 0.151 respectively. The values are greater than the confidence interval value of 0.050, which, show a significant difference at 0.05 level of confidence. It may be concluded from the results of the study, that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on agility and the pre and post-test was superior and the mid and post-test was the least on agility. The ANCOVA for the pre and post-test on agility of fartlek training, parcours training, combined training of fartlek and parcours training and control groups were analysed.

Table VI
ANALYSIS OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS ON AGILITY

Adjusted Post test mean				Source of variance	Sum of squares	d/f	Mean squares	F-ratio
Fartlek group	Parcours group	Combined group	Control group					
9.456	9.544	9.368	9.685	Between	2.19	3	0.73	8.43*
				Error	3.03	35	0.09	

*Significant at 0.05 level of confidence. (The table value required for significance at 0.05 levels with d/f 3 & 35 is 2.67).

Table VI shows that the obtained F-ratio value is 8.43, which is higher than the table value 2.67 with d. f 3 and 155 required for significance at 0.05 levels. Since the value of the F-ratio is higher than the table value, it indicates that there is a significant difference among the adjusted post-test means.

Cardiovascular endurance

The influences of the independent variables on cardio vascular endurance was analysed and are presented below. The mean and standard deviation values on cardio vascular endurance of fartlek training, parcours training, combined training of fartlek training and parcours training and control groups were analysed.

TABLE VII
SUMMARY OF MEAN AND STANDARD DEVIATION ON CARDIO VASCULAR
ENDURANCE FOR PRE-MID AND POST TEST OF EXPERIMENTAL AND
CONTROL GROUPS

Test	Pre test		Mid Test		Post Test	
Groups	Mean	SD	Mean	SD	Mean	SD
Fartlek group	2559.375	145.299	2587.500	135.991	2613.125	136.695
Parcours group	2435.000	139.574	2499.375	133.192	2546.875	132.552
Combined group	2451.875	130.873	2561.250	129.465	2636.875	121.817
Control group	2417.500	142.573	2414.375	128.088	2412.500	134.450

(Cardio vascular endurance scores are represented in meter's)

The one-way repeated measures the analysis of variance on cardio vascular endurance of the experimental and control groups in three tests at a different time period, which have been analysed.

TABLE VIII
ONE WAY REPEATED MEASURE ANOVA ON CARDIOVASCULAR
ENDURANCE OF EXPERIMENTAL AND CONTROL GROUPS

GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	d/f	Mean Squares	F-ratio
Fartlek group	Test (between)	57822.92	2	28911.46	10.75*
	Error	48427.08	18	2690.39	
Parcours group	Test (between)	252218.75	2	126109.38	31.19*
	Error	72781.25	18	4043.40	
Combined group	Test (between)	692093.75	2	346046.88	33.37*
	Error	186656.25	18	10369.79	
Control group	Test (between)	510.42	2	255.21	0.04
	Error	129906.25	18	7217.01	

*Significance at 0.05 level of confidence. The table value required for significance at 0.05 levels with d/f2 and 28 is 3.11

From Table VIII, it is seen that the obtained F-ratio values of fartlek training, parcours training, combined training of fartlek training and parcours training groups are 10.75, 31.19 and 33.37, which are greater than the table value of 3.11 with d. f 3 and 78 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant difference among the means of the three tests at a different time period for the experimental groups. However, the control group showed an insignificant difference among the three tests. To find out which of the three paired means had a significant difference, the Scheffe's post hoc test was applied.

TABLE IX
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS OF FA141LE1C TRAINING GROUP ON CARDIO VASCULAR ENDURANCE

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
2559.375	2587.500		28.125	13.896
2559.375		2613.125	28.125	13.896
	2587.500	1613.125	28.125	13.896

*Significant at 0.05 level of confidence

Table IX shows that the mean differences on cardio vascular endurance between the pre and mid test and the pre and post-test are 28.125, 53.750 and 25.625 respectively. These values are greater than the confidence interval value 13.896 that show a significant difference at 0.05 level of confidence.

It may be concluded from the results of the study, that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on cardio vascular endurance and the pre and post-test was the superior and the mid and post-test was the least.

TABLE X
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS OF PARCOURS TRAINING GROUP ON CARDIO VASCULAR ENDURANCE

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
2435.000	2499.375		64.375*	17.035
2435.000		2546.875	111.875*	17.035*
	2499.375	2546.875	47.500*	17.035*

*Significant at 0.05 level of confidence

Table X shows that the mean differences on cardio vascular endurance between the pre and mid test, the pre and post-test and the mid and post-test are 64.375, 111.875 and 47.500 respectively. These values are greater than the confidence interval value 17.035 that shows a significant Difference at 0.05 level of confidence.

It may be concluded from the results of the study, that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on cardio vascular endurance and the pre and post-test was the superior and the mid and post-test was the least.

TABLE XI
SCHEFFE'S TEST BETWEEN THE PAIRED MEANS OF COMBINED GROUP ON CARDIO VASCULAR ENDURANCE

MEAN			MEAN DIFFERENCE	CONFIDENCE INTERVAL
Pre-test	Mid test	Post test		
2451.875	2561.250		109.375*	27.281
2451.875		2636.875	185.000*	27.281
	2561.250	2636.875	75.625*	27.281

*Significant at 0.05 level of confidence

Table XI shows that the mean differences on balance between the pre and mid test, the pre and post-test and the mid and post-test are 109.375, 185.000 and 75.625 respectively. These

values are greater than the confidence interval value 27.281, that show a significant difference at 0.05 level of confidence.

It may be concluded from the results of the study that there is a significant difference between the means of the pre and mid test, the pre and post-test and the mid and post-test on cardio vascular endurance and the pre and post-test was the superior and the mid and post-test was the least. The analysis of covariance for the pre and post-test on cardio vascular endurance of fartlek training, parcours training, combined training of fat training, and parcours training and control groups have been analysed.

TABLE XII

Adjusted Post test mean				Source of variance	Sum of squares	d/f	Mean squares	F-ratio
Fartlek group	Parcours group	Combined group	Control group					
2534.37	2572.95	2572.95	2572.95	Between	793113.78	3	264371.26	17.28*
				Error	535479.93	35	15299.43	

Significant at 0.05 level of confidence. (The table significance at 0.05 levels with ell 3 & 35 is 2.67)

Discussion of Findings

There is a significant change in all the subjects of experimental groups in the experimental training programme during the training period. From the table. it is evident that in case of selected dependent variables such as agility and cardio vascular endurance significant changes were noticed in between 12 weeks and after 24 weeks of training programme with regard to control group.

Among the three experimental group, isolated and combined training group (fartlek and parcours) showed better improvement in all dependent variables. Isolated fartlek training group showed better improvement in agility than isolated parcours training group. Isolated parcours training showed better improvement in cardiovascular endurance than isolated fartlek training group.

Conclusions

On the basis of the findings, it was concluded that combined training group (fartlek and parcours training) is better than isolated training even though there was Significant improvement.

References

1. William; Prentice. (1994). *Fitness for college and life*, Saint Louis: Mosby Publishing.
2. Padmanabhan, K. (2000) "Effect of circuit training and parcours training on physical and physiological variables" *Unpublished Doctoral Thesis*, Alagappa University Karaikudi.
3. Dietrich, Harre. (1982) *Principles of Sports Training*, Berlin: Sportverlag.
4. Green L.S. and Pate, R.R. (1997) *Training for Young Distance Runners*, IL: Human Kinetics.
5. Hohmaan, A., Lames, M. And Letzler, M. And Letzler, M. (2002) *Introduction to the Science of Training* New Studies in Athletics, 16 (3), 105-106.
6. Tulloh, B. (1998) *The role of Cross- Country in the development of a Runner*, New Studies in Athletics, 13 (1), 9-11.

7. Maclean, J. (2001) *Performance Appraisal for Sports and Recreation Managers*; Champaign, IL: Human Kinetics.