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Effect of three different instructional methods on selected physical and performance related variables of football players

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Abstract

The purpose of the study was to find out the effect of multimedia computer assisted instruction, traditional instruction and combined instruction on physical and performance related variables of football players. To achieve the purpose, 120 men students were selected randomly as subjects from Junior Kollam Football Academy (JKFA) Kollam, Kerala, India. The selected subjects were divided into three experimental groups and a control group. Group I underwent multimedia computer assisted instruction, Group II underwent traditional instruction, Group III underwent combined instruction on three alternate days in a week for a period of eight weeks and Group IV acted as Control. The age of the subjects was restricted into 17 to 20 years. All the subjects in the experimental groups (I, II and III) were given their respective training programme for twelve weeks duration. The study was restricted to the following dependent variables namely agility, cardiovascular endurance, speed, dribbling and passing they were tested by standardized test items. The participants were trained for twelve weeks of three days a week (alternate days). A pre and post test randomized design was employed for this investigation. The collected data were statistically analysed by using dependent 't' test and ANACOVA. The Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly where the differences in adjusted post-test means resided in univariate ANCOVA among three groups. All the above statistical analysis tests were computed at 0.05 level of significance ($P < 0.05$). It was concluded that, the multimedia computer assisted instruction, traditional instruction and combined instruction had significantly improved the participants' agility, cardio vascular endurance, speed, dribbling and passing. The combined instruction had significantly outperformed than the traditional instruction and multimedia computer assisted instruction on the participants' agility, cardio vascular endurance, speed, dribbling and passing.

Keywords: Computer assisted instruction, traditional instruction and combined instruction

Introduction

Computer assisted instruction is briefly known as CAI and is an interesting innovation in the education technology. Its marvels have been demonstrated and seem to revolutionaries the whole spectrum of education. It has better flexibility and is more versatile than any of the existing teaching methods. Although instruction is a part of each of these examples, they are more accurately categorized as uses of tool software rather than CAI. Tools of this allow the work to be completed easily. However, one may not necessarily acquire the new information by using tool software (Morrison, C. S., & Reeve, E. J. 1992) [7].

The proceeding information pertains largely to the tutorial lessons. The traditional relationship between a teacher and a student is a tutorial one, as compared to two other forms of CAI and they are (a) simulation and (b) drill and practice. As such, tutorial CAI, at least as we know it today is patterned after the traditional teacher student interactions and roles. The authoring of the simulations requires a set of skills that are different from those used in tutorials (Siedentop, D. 1988) [9].

Multimedia are more than the high technology buzzwords- it is a powerful way to educate, entertain, and inform. It has taken the computer from communicating information as text to telling stories using pictures, sound and video. Multimedia has taken computer users from intimidating mainframe terminals to the high-technology desktop systems that to offer fun,

adventure and interactive learning. Multimedia technology is one of the main reasons; computers are becoming as common at home as they are in the workplace (Fратиanni, J., Decker, R., & Korver-Baum, B. 1990) [2].

Statement of the Problem

The purpose of the study was to find out the effect of multimedia computer assisted instruction, traditional instruction and combined instruction on physical and performance related variables of football players.

Methodology

To achieve the purpose of the study, 120 men students were selected randomly as subjects from Junior Kollam Football Academy (JKFA) Kollam, Kerala, India. The selected subjects were divided into three experimental groups and a control group. No step was taken to equate the group in any manner. Group I underwent multimedia computer assisted instruction, Group II underwent traditional instruction, Group III underwent combined instruction on three alternate days in a week for a period of eight weeks and Group IV acted as

Control. The age of the subjects was restricted into 17 to 20 years. All the subjects in the experimental groups (I, II and III) were given their respective training programme for twelve weeks duration. The study was restricted to the following dependent variables namely agility, cardiovascular endurance, speed, dribbling and passing they were tested by standardized test items. The independent variables such as Multimedia Computer Assisted Instruction (MCAI), Traditional Instruction (TI) and Combined Instruction (CI). The collected data were statistically analysed by using dependent 't' test and ANACOVA. The Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly where the differences in adjusted post-test means resided in univariate ANCOVA among three groups. All the above statistical analysis tests were computed at 0.05 level of significance ($P < 0.05$).

Analysis of Data

The collected data were statistically analysed and presented in the following tables.

Table 1: Means, standard deviation and dependent 't' test values on selected variables of experimental and control groups

Variables	Tests	Multimedia Computer Assisted Instruction (MCAI)		Traditional Instruction (TI)		Combined Instruction (CI)		Control Group	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Agility	Pre Test	17.29	0.96	17.35	0.53	18.04	0.19	16.63	0.53
	Post Test	16.11	0.95	16.97	0.63	15.64	0.55	16.68	1.04
	t - test	6.4*		8.84*		26.38*		0.25	
Cardio Vascular Endurance	Pre Test	2263.33	316.07	2405.0	281.77	2178.0	133.56	2099.0	258.35
	Post Test	2550.0	281.77	2738.33	341.13	2828.0	341.89	2042.33	305.01
	t - test	30.94*		38.08*		11.81*		1.98	
Speed	Pre Test	7.28	0.13	7.32	0.27	7.29	0.15	7.16	0.15
	Post Test	7.16	0.27	7.15	0.17	6.92	0.14	7.14	0.19
	t - test	2.63*		19.04*		12.33*		0.86	
Dribbling	Pre Test	51.26	4.27	51.32	4.20	51.59	3.97	47.28	4.87
	Post Test	47.1	3.17	49.64	3.99	46.25	3.27	46.22	3.43
	t - test	4.79*		3.43*		8.9*		1.91	
Passing	Pre Test	4.6	1.0	5.5	1.85	5.5	1.82	5.37	1.1
	Post Test	7.17	2.05	6.53	1.85	9.17	1.46	5.2	1.27
	t - test	5.89*		26.49*		1.04			

*Significant at .05 level. The Table Value required at .05 levels with df 29 is 2.05.

From the Table, the multimedia computer assisted instruction, traditional instruction; combined instruction groups had

effects on performance of selected variables.

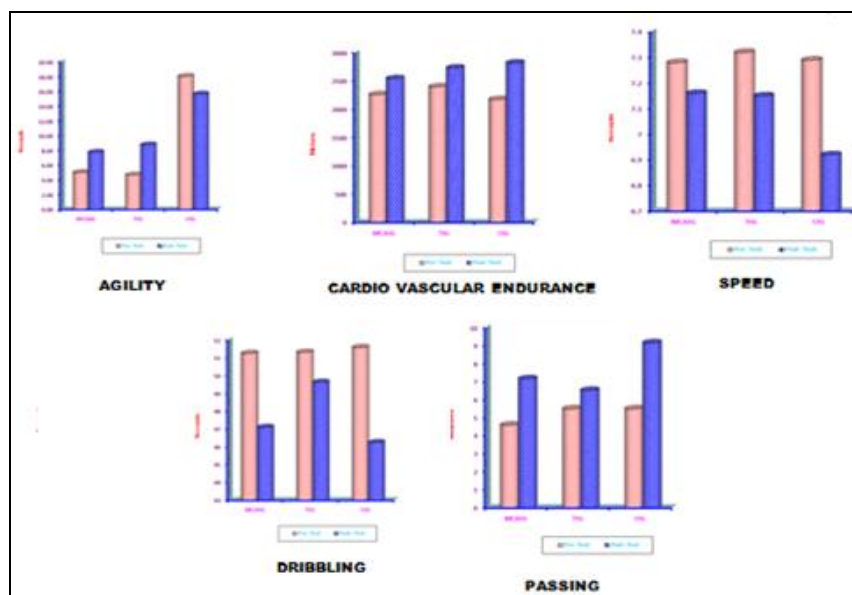


Fig 1: Mean values of pre and post test scores of multimedia computer assisted instruction, traditional instruction, combined instruction and control groups on selected variables

The results of the univariate ANCOVA tests on selected variables of and control groups in the following table.

Table 2: Analysis of covariance on selected variables among experimental and control groups

Variables	Adjusted Post Test Mean				Source of Variance	Sum of Square	df	Mean Square	F - ratio
	Multimedia Computer Assisted Instruction (MCAI)	Traditional Instruction (TI)	Combined Instruction (CI)	Control Group					
Agility	16.12	16.96	15.3	17.02	Between	41.97	3	13.99	23.66*
					Within	97.99	115	0.59	
Cardio Vascular Endurance	2550.0	2738.33	2828.00	2042.33	Between	7481697.81	3	2493899.07	82.34*
					Within	3483187.81	115	30288.59	
Speed	7.15	7.1	6.9	7.23	Between	1.68	3	0.56	22.56*
					Within	2.85	115	0.03	
Dribbling	46.61	49.12	45.59	47.89	Between	209.68	3	69.89	8.12*
					Within	990.05	115	8.61	
Passing	7.17	6.53	6.17	5.2	Between	249.09	3	83.03	48.2*
					Within	198.11	115	1.72	

*Significant at .05 level. The Table value required at .05 level with df 3 & 115 is 2.68.

The above table indicated that there was significant difference among the adjusted post-test means of multimedia computer assisted instruction, traditional instruction, combined instruction groups and control group on the performance of

selected variables.

To find out which of the three paired means had a significant difference, the Scheffe's post-hoc test was applied and the results are presented in Table 3.

Table 3: Scheffe's test for the differences between the adjusted post-test paired means of selected variables

Variables	Adjusted Post Test Mean			Mean Differences	Confidence Interval
	Multimedia Computer Assisted Instruction (MCAI) Group	Traditional Instruction (TI) Group	Combined Instruction Group (CI)		
Agility	16.12	16.96		0.84*	0.56
	16.12		15.3	0.82*	
		16.96	15.3	1.66*	
Cardio Vascular Endurance	2550.0	2738.33		188.33*	127.42
	2550.0		2828.0	278*	
		2738.33	2828.0	89.67	
Speed	7.15	7.1		0.05	0.13
	7.15		6.9	0.25*	
		7.1	6.9	0.2*	
Dribbling	46.61	49.12		2.51*	2.15
	46.61		45.59	1.02	
		49.12	45.59	3.53*	
Passing	7.17	6.53		0.64	0.96
	7.17		6.17	1.0*	
		6.53	6.17	0.36	

*Significant at .05 level.

Table above shows that, there was a significant difference on performance of selected variables between three instructional method groups.

It was concluded that combined instruction group is better than multimedia computer assisted instruction and traditional instruction in improving performance of selected variables of men football players.

Discussion on Findings

The results of all selected variables had shown significant improvement due to training effect of three instructional methods such as multimedia computer assisted, traditional and combined instructions.

The result also indicated that, the effect of the combined instruction was much greater than multimedia computer assisted and traditional instructions on improving the performance of all selected variables among men football players.

The result also indicated that, a significant difference exists between three experimental groups in developing all dependent variables. The results obtained in this study were

similar to that of the following,

Nowadays, the wide use of multimedia technology in college physical education alters traditional teaching methods, improves teaching effect, and makes teaching procedure vivid (Mayer, R. E. & Moreno, R. (2003) [5].

Research has demonstrated that subjects who participate in special training in skill analysis performed significantly better in the detection of errors compared to other participants who did not have training (Morrison & Reeve, 1988; Satern *et al.*, 1992) [6].

However, it should be noted that this was one of the first studies that utilized multimedia CD-ROMs in teaching skills and task analysis in the field of ballet sport. Previous research studies used different methods of qualitative skill analysis training, such as written texts (Kernodle & McKethan, 2002) [3], interactive videodisc (Walkley & Kelly, 1989) [10], and videotape (Morrison & Reeve, 1988) [7]. Siedentop (1988) [9] stated that completion performed significantly better than the CAI and CG groups. Finally, the experimental and control groups improved significantly within the group from pre- to post-test.

Students' perceptions of CAI and computers have become an important concept, as computers are a common part of today's schools in all grades. Although research in general education courses produced different results about students' attitudes toward CAI (Fратиanni *et al.*, 1990; Kraus *et al.*, 1994) [2, 4], research in physical education found that students had positive attitudes toward CAI and expressed their willingness to use CAI in future activities as a learning tool (Alvarez-Pons, 1992; Wilkinson *et al.*, 1999) [1, 11]. In conclusion, multimedia technology can produce and dispose of words, language, pictures, and video better with speedy expression and a rich network resource, which favors knowledge renovation.

It is inferred from the above literature and from the results of the present study that systematically designed computer assisted instruction, traditional instruction and combined instruction develops the performance standard, as the selected dependent variables are very important qualities for better performance in almost all sports activities and scientifically designed computer assisted instruction, the traditional instruction and the combined instruction may be given in training programmes of all the disciplines in order to achieve maximum performance.

Conclusions

The following conclusions were derived from the present Study

1. The multimedia computer assisted instruction, traditional instruction and combined instruction had significantly improved the participants' agility, cardio vascular endurance, speed, dribbling and passing.
2. The combined instruction had significantly outperformed than the traditional instruction and multimedia computer assisted instruction on the participants' agility, cardio vascular endurance, speed, dribbling and passing.

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