P Sriganapathy
Ph.D., Research Scholar,
Department of Physical
Education, Tamil Nadu Physical
Education and Sports
University, Chennai, Tamil
Nadu, India

Dr. S Thirumalai Kumar
Professor, Department of
Physical Education, Tamil Nadu
Physical Education and Sports
University, Chennai, Tamil
Nadu, India

Combined effects of computer-assisted instruction and traditional teaching on selected flexibility yoga training among volleyball players

P Sriganapathy and Dr. S Thirumalai Kumar

Abstract
The purpose of the study was to find out the Combined Effects of Computer Assisted Instruction and Traditional Teaching on selected Flexibility Yoga Training among Volleyball Players. The passing skills such as underarm and overhead passing. To facilitate this study (60) sixty school student boys at Sri Sathya Sai Institution Educare, Tamil Nadu State were randomly selected as subjects whose ages ranged from 17 to 21 years. They were divided into three groups, group I (N=20) traditional teaching, group II (N=20) only CAI and group III (N=20) traditional and CAI Flexibility Yoga Training combined. The pre-test was conducted for all 60 subjects on selected underarm and overhead passing skills. The experimental groups participated in the respective training program six days per week for four weeks. After the experimental training, all sixty subjects were measured on the selected passing skills. The final test scores formed the post-test scores of the subjects. The pre-test and post-test scores were subjected to statistical analysis of Covariance (ANCOVA) to find out the significance of the mean differences. Whenever the `F' ratio for the adjusted test was found to be significant Scheffe's post hoc was used. In all cases, 0.05 level of significance was fixed to test hypotheses.

Keywords: CAI, traditional, underarm pass, overhead pass, yoga, flexibility, volleyball

Introduction
Computer-assisted instruction teaching processing which a computer is used to enhance the education of students. Documents can be scanned or typed into electronic formats which can be handled in sophisticated ways, altering the layout, font styles sizes etc., with ease, these documents can include pictorial and graphic information. Pictures and graphics can be digitized and handled either as vector drawing, visual information is very flexible and if the time factor is considered moving images can be handled as well as still pictures (Peter, 2006) [1]. Volleyball is a sport played by two teams on a playing court divided by a net. There are different versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a serving, hit by the serving over the net to the opponents. The rally continues until the ball is grounded on the playing court, and goes "Out" on a team that fails (Rally Point system). When the receiving team wins a rally, it gains a point and the right to serve and its players rotate one position clockwise Dr. Hubert Dhanaraj (1991) [3]. The skills in the game of Volleyball are Serving, Underarm pass, Overhead pass, Attacking, Setting, and Blocking.
The following are the importance of passing skills in volleyball
1. Passing skill is a fundamental skill in Volleyball.
2. The two main pass skills are the underarm and overhead pass.
3. Passing is the base for setting up the team offense.
4. It is used to receive service.
5. A player with good passing skills can handle the attacking situation and collect the ball with passing skills (Underarm pass & overhead pass).

Corresponding Author:
P Sriganapathy
Ph.D., Research Scholar,
Department of Physical
Education, Tamil Nadu Physical
Education and Sports
University, Chennai, Tamil
Nadu, India

Purpose of the study

The purpose of the present study was to find out the combined effects of computer-assisted instruction and traditional teaching on selected flexibility yoga training among Volleyball players.

Hypotheses

1. It was hypothesized that there would be a better significant improvement in selected underarm passing skills due to the combined CAI Flexibility Yoga Training and Traditional drills than the isolated CAI and Traditional drills among Volleyball players.
2. It was hypothesized that there would be a better significant improvement in selected overhead passing skills due to the combined CAI Flexibility Yoga Training and Traditional drills than the isolated CAI and Traditional drills among Volleyball players.

Review of related literature

P. Alaguraj (2018) [4] conducted a study on the isolated and combined effects of traditional and multimedia computer-assisted instructions on selected skill-related fitness and performance of long jump among college students. the selected skill-related fitness such as speed, strength, agility, horizontal explosive power, vertical explosive power, flexibility, balance, and performance of long jump among college students. The investigator randomly selected 100 students from, Kancheepuram District, Tamil Nadu state, India, and their ages ranged from 17 to 21 years. The selected subjects were assigned into four equal groups. Each group consisted of twenty-five (25) subjects such as Experimental Group I – Multimedia Computer Assisted Instruction Group (MCAIG), Experimental Group II - Traditional Instruction Group (TIG), and Experimental Group III - Combined Instruction Group (CIG), and Group IV - Control Group. The pre and post-test scores were subjected to statistical analysis of Covariance (ANCOVA) and Scheffe's post hoc was used.

The selected skill-related fitness variable such as speed was not improved significantly by the three experimental groups namely the multimedia computer-assisted instruction, traditional instruction, and combined instruction among college students. The selected skill-related fitness variables such as strength, agility, horizontal explosive power, vertical explosive power, flexibility, balance, and performance of long jump were significantly improved by three experimental groups namely multimedia computer-assisted instruction, traditional instruction, and combined instruction among college students. The combined instruction (multimedia computer-assisted instruction with traditional instruction) was found to be better in improving strength, agility, horizontal explosive power, vertical explosive power, flexibility, balance, and performance of long jump than the multimedia computer-assisted instruction and traditional instruction.

Methodology

Selection of subjects

For the purpose of the study, the investigator has selected (60) sixty boys school-level novice volleyball players from Sri Sathya Sai Education Trust, Tamil Nadu State by random method. The subjects' ages ranged from 17 to 21 years. They were divided into three groups, group I (N=20) traditional teaching, group II (N=20) only CAI, and group III (N=20) traditional and CAI Flexibility Yoga Training combined.

Selection of variables

1. Underarm Pass
2. Overhead Pass

Experimental Training

The experimental groups participated in the drill practices through traditional teaching, CAI and traditional and CAI Flexibility Yoga Training combined. For six days per week for six weeks, 60 minutes (4.30 pm to 6.30 pm).

Traditional Training	CAI Training	CAI (FYT) & Traditional Training	Duration (60) Min
Warmup	Warmup	Warmup	10 min
Traditional Training	CAI Training	CAI Training (FYT)	40 min
		Drills	
	Drills	Traditional Training	
Cooldown	Cooldown	Cooldown	10 min

Statistical technique

The pre-test and post-test scores were subjected to statistical Analysis of Covariance (ANCOVA) to find out the significance of the mean differences. Whenever the `F' ratio for the adjusted test was found to be significant Scheffe's post hoc was used. In all cases, a 0.05 level of significance was fixed to test hypotheses.

Result and Discussion

Computation of analysis of covariance for pre and post-tests data on underarm pass and overhead pass experimental and control groups

Table 1: Traditional sum of squares (DF) mean squares

		Traditional	CAI	CAI (FYT) & Traditional	SV	Sum of Squares	DF	Mean Squares	Obtained f
Underarm Pass	Pre-Test-Mean	7.94	7.6	8.24	B	3.1	2	1.51	0.66
					W	127.8	57	2.25	
	Post-Test Mean	14.8	12.74	18.2	B	302.1	2	151.55	31.64*
					W	263.54	57	4.63	
	Adjusted Post-Test Mean	14.80	12.85	18.17	B	271.63	2	136.32	30.38*
					W	242.15	56	4.33	
	Mean Gain	5.84	4.04	9.03					
Overhead Pass	Pre-Test Mean	8.34	8.1	7	B	2.21	2	1.14	0.43
					W	143.66	57	2.51	
	Post-Test Mean	15.8	13.04	18.64	B	323.8	2	161.12	25.56*
					W	347.4	57	5.12	
	Adjusted Post-	15.58	13.11	18.80	B	333.81	2	166.4	35.40*

				W	256.36	56	3.58	
Test Mean								
Mean Gain	6.34	3.85	3.58					

* Significant the table F required for 2 and 57(df) and 2 and 56(df) = 3.15

The pre-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Underarm pass were 7.94, 7.6 and 8.24 respectively. The post-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Underarm pass were 14.8, 12.74 and 18.2 respectively. The ordered adjusted mean scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Underarm pass were 14.80, 12.85 and 18.17 respectively. The mean gain in experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group were 5.84, 4.04 and 9.03 respectively. The obtained F value on pre-test scores 0.66 was less than the required F value of 3.15 to be significant at 0.05 level. This proved that there was no significant difference between the three experimental and combined groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test scores analysis proved that there were significant differences between the three experimental and combined groups, as the obtained F value of 31.64 was less than the required F value of 3.15. This proved that the differences between the post-test means of the subjects were not significant. Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 30.38 was less than the required F value of 3.15. This proved that there was no significant difference among the means due to the experimental training on the Underarm pass.

The pre-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on the Overhead pass were 8.1, 7 and 8.34 respectively. The post-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Underarm pass were 13.04, 18.64 and 15.8 respectively. The ordered adjusted mean scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Overhead pass 13.11, 18.80 and 15.58 respectively. The mean gain in experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group were 3.85, 9.64 and 6.34 respectively. The obtained F value on pre-test scores 0.43 was less than the required F value of 3.15 to be significant at 0.05 level. This proved that there was no significant difference between the three experimental and combined groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test scores analysis proved that there were significant differences between the three experimental and combined groups, as the obtained F value of 25.56 was less than the required F value of 3.15. This proved that the differences between the post-test means of the subjects were not significant. Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 35.40 was less than the required F value of 3.15. This proved that there was no significant difference among the means due to the experimental training on an Overhead pass.
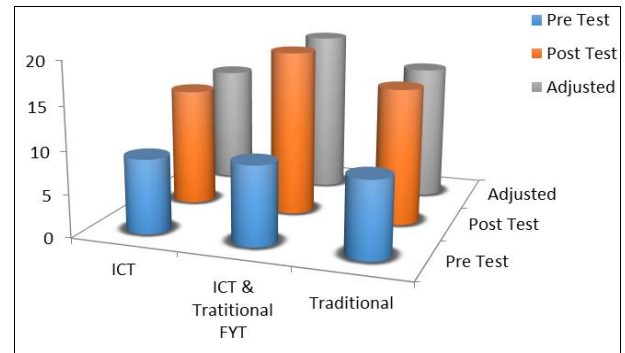

Fig 1: Bar diagram on pre, post and ordered adjusted means of underarm pass (scores in numbers)
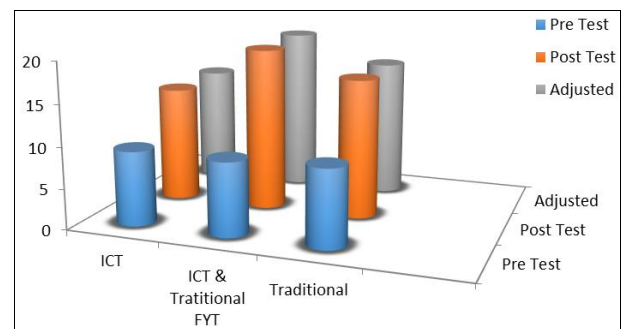

Fig 2: Bar diagram on pre, post and ordered adjusted means of overhead pass (scores in numbers)

Table 2: Scheeff`s test for the difference between the adjusted post–test paired means of underarm pass and overhead pass

	Traditional	CAI	CAI (FYT)& Traditional	Mean Difference	Required C.I
Underarm pass	-	12.95	18.17	4.24*	1.66
	14.92	12.95	-	1.84*	1.66
	14.92	-	18.17	2.27*	1.66
Overhead pass	-	13.11	18.89	4.67*	1.71
	15.68	13.11	-	2.45*	1.71
	15.68	-	18.89	2.21*	1.71

*Significant

The multiple mean comparisons shown in Table II proved that there were significant differences exist between the adjusted means of (CAI) and CAI and traditional group, traditional and (CAI) group, traditional and (CAI) traditional as the mean difference were greater than the obtained confidence interval 1.66. Comparing the means of the three groups, the experimental group – III (combined group) was found better at improving Underarm pass than the experimental groups – I (traditional) and experimental group – II (CAI).

The multiple mean comparisons shown in Table II proved that there were significant differences exist between the adjusted means of (CAI) and ICT and traditional group, traditional and (CAI) group, traditional and (ICT) traditional as the mean difference was greater than the obtained confidence interval 1.71. Comparing the means of the three groups, the experimental Group – III (combined group) was found better at improving Overhead pass than the experimental groups – I (traditional) and experimental Group – II (CAI).

Conclusions
Within the limitations and delimitations set for the present

study and considering the results obtained, the following conclusions were drawn.

1. The selected skills such as underarm and overhead pass were significantly improved by three experimental pieces of training namely the traditional, Computer Assisted Instructions and combined (CAI Flexibility Yoga Training and traditional) among Volleyball players.
2. The combined training (CAI Flexibility Yoga Training with traditional) was found to be better in improving the underarm pass and overhead pass than the isolated Computer Assisted Instructions and traditional teaching.

Reference

1. Peter. Computer Assisted Instruction in Chemistry; c2006.
2. Deviner K Kansal. Textbook of applied measurement evaluation and sports selected SSS publication New Delhi, India; c2008.
3. Hubert Dhanaraj. Volleyball a modern approach Sports Authority of India Netaji Subhas National Institute of Spots, Patiala, India; c1991.
4. Alaguraj P. Isolated and combined effect of traditional and multimedia computer-assisted instruction on selected skill-related fitness variables and performance of long jump among college students. Unpublished Doctoral Dissertation, Tamil Nadu Physical Education and Sports University, Chennai; c2018.
5. https://www.researchgate.net/publication/297403818
6. www.googlescholar.com
7. www.pubmed.com
8. www.jssm.org
9. www.fivb.com