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Effect of yogic training and resistance training on reaction time among polytechnic college students

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Abstract
The purpose of the study was to find out the effect of Yogic Training and Resistance Training on Reaction time among Polytechnic College students. To achieve the purpose of the study, 60 male students from the Government Polytechnic College, RK Nagar, Chnnai-81, were selected at random as subjects, in the age group of 16 to 20 years. The chosen subjects were randomly assigned into three groups of 30 each. Group-I acted as control, group-II followed Yogic Practices and group-III resistance exercises group subjects underwent trainings for 7 weeks. A qualified physician examined the subjects medically and declared that they were fit to undergo the training programme. Nelson Hand and Foot Reaction test executed correctly to access the Reaction time. Analysis of covariance (ANCOVA) was computed (Clarke & Clarke, 1972) for the data collected from the control and experimental groups during pretest and posttest separately for each variable. Further, since three groups were involved, whenever the 'F' ratio was significant, Scheffé S post hoc test was used to determine which of the paired mean differed significantly. Conversely the capability of Reaction time, are maintained stable for 7 weeks days through the training cessation period. However the favor to Resistance training group.

Keywords: Yoga, training and resistance, polytechnic

Introduction
This may be attributed to greater arousal and faster rate of information processing along with improved concentration and Decrease in Reaction Time signifies an improvement in central neuronal processing ability.
Noorjehan begum and his group 2012. Yoga was found to cause a better improvement in the health of the individuals with and without ailments The improvement in the reaction time is important, as it is the indicator of the performance in sports and in professional persons. Hence, this study intended to show its utility as a short course for improving the reaction time. 25 male healthy volunteers who were aged between 18 and 25 years were selected. There was a reduction in the alert responses of ART, VRT and CRT for both the sides. The decrease was statistically significant (P<0.05). The random responses did not show a significant improvement. RT had no correlation with the age, height or the weight.

Resistance Training
All of these exercises and the order of exercises are suitable for beginners.
Chest: dumbbell press, dumbbell flyes, chest press, (crossovers)
Shoulders: side lateral raise, front raise, upright row
Back: bent-over-row, cable row, pull-down
Arms: biceps curls, triceps kickbacks, triceps press-downs on pull-down machine
Abs: crunches, knee-drop crunches for the oblique muscles on the side of the abdomen (drop the knees to one side and crunch up)

Legs: squats, leg extensions, and leg press on the wall.
5- 15 minute warm-up exercises
20-30 minutes weight train exercises
5-15 minute cool-down exercises.

Table 1: Yogic Training

Weeks	Prescription of Asana	Time
I-II	1. Padmasana	7-7.45 am
	2. Bhujangasana	
	3. Parvatasana	
	4. Natarajasana	
	5. Garudasana	
III-IV	6. Salabhasana	7-7.45 am
	7. Ekapadakonasana	
	8. Uthrasana	
	9. Dhanurasana	
	10. Janusirshasana	
V-VI	Nadi Shuddhi pranayama	7-7.45 am
VII	All above asanas and pranayamas	7-7.45 am

Nelson's foot reaction time test

Purpose: To measure the foot reaction time of the subjects.
Equipment: Reaction time scale, Table or Bench, Wall space etc.

Description: The subjects were asked to sit on a table which was about one inch away from the wall with his shoe off. The subjects positioned his foot so that the ball of the foot was held about one inch from the wall with the heel resting on the table top about two inches from the table edge. The tester held the reaction time stick near the wall so that it hangs between the wall and subjects foot with the base line of the times opposite to the end of the beg toe. The subject was asked to look at the concentration zone and to react as soon as the time stick was dropped by pressing the times stick against the wall with the ball of the subject foot. Each subject was given twenty trials.

Scoring: The reaction time of each trial was recorded from the line just above the end of the big toe when the foot pressed the stick to the wall. Out of 20 trials the average of the middle ten trials ignoring the five fastest and five slowest trials were taken as the score of this test. To get the reaction time following formula was computed independently.

Table 2: Analysis of covariance of data on reaction time between pre and post test of control, yogic practices and physical exercises groups

Test	Control Group	Yogic practices Group	Resistance Training group	Source of variances	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre test								1.02
Mean	1.84	1.85	1.81	Between	0.02	2	10.47	
SD	0.10	0.11	0.12	Within	0.71	57	10.31	
Post test								7.845*
Mean	1.87	1.77	1.70	Between	0.28	2	84.07	
SD	0.97	0.11	0.11	Within	0.63	57	10.71	
Adjusted Post test								21.41*
Mean	1.86	1.75	1.71	Between	0.24	2	36.18	
				Within	0.47	56	1.69	

*Significant at 0.05 level of confidence.

The table value required for significance at 0.05 level with df 2 and 4 & 2 and 41 are 3.222 & 3.226 respectively.
The results of the study showed that there was a significant difference among control, yogic practices and physical exercises groups on Reaction time. Since three groups were involved the Scheffe's post hoc test was applied to find out the paired mean difference if any, and it is presented in the table V a

Table 3: Scheffe's post hoc test for the difference between three paired adjusted post test means of reaction time

Adjusted Post Test Means			Mean Difference	Confidence Interval
Control Group	Yogic Practices Group	Physical Exercises Group		
1.86	1.76	-	0.10*	0.73
1.86	-	1.71	0.15*	0.73
-	1.76	1.71	1.05*	0.73

*Significant at 0.05 level of confidence.

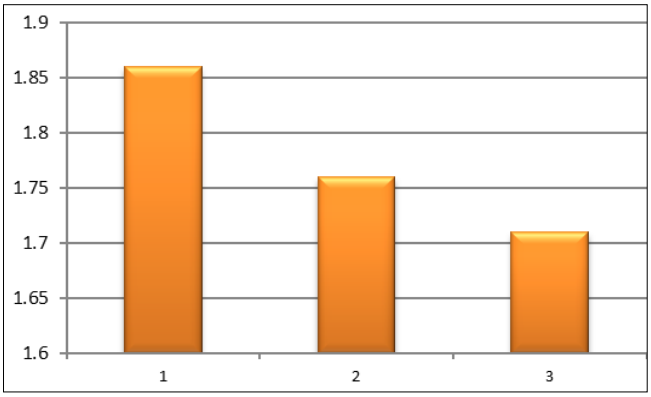

Fig 1: The adjusted post test mean values on Reaction time for control, yogic practices and physical exercises groups on Reaction time are graphically presented.

Results and Discussion

Streeter 2012 *et al.*, [4] The reaction time, the interval between the presentation of a stimulus to a subject and the subject's response, is often used as an indicator of the enhanced motor skills and the better overall fitness in sports-specific training and competitive situations. Therefore, there is need of techniques to improve the reaction times. A short course of yoga training improves the reaction time. The random responses showed an appreciable but a statistically insignificant shortening of the reaction time. The probable reason may be that, for the improvement in the random responses, a longer duration of the practice is warranted. Also, RT did not show a correlation with the height or weight because RT is an independent variable and because it does not depend on the anthropometric parameters. Spierer 2011 [5] Yoga is involved in restoring the under activities of the Parasympathetic Nervous System (PNS) and the Gamma Amino-Butyric Acid (GABA) systems. This restoration may be partly through the stimulation of the vagal nerves.
Cohen *et al.*, 2009 [1] A Single-Photon Emission Computed Tomography (SPECT) study demonstrated that the yoga

training program increased the Cerebral Blood Flow (CBF) and that the changes in particular, appeared to have a greater impact on the right hemispheric function, particularly in the frontal lobes.

Conclusion

The results of the study showed that there was a significant difference among control, yogic practices and physical exercises groups on Reaction time. However the improvement was in favor of Physical Exercises practices group.

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