EFFECT OF PRANAYAMA AND TRATAK ON COORDINATIVE ABILITIES ON SELECTED STUDENTS OF NCR REGION

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ABSTRACT

The purpose of the study was to determine the effect of Prayanama and Tratak on selected coordinative abilities. For the purpose of the study, 90 male students from NCR were selected as the subject for this study. The age of the subjects was ranged from 16-20 years. The subjects were divided into three groups, i.e. Two experimental groups (Tratak and Pranayama) and one control group. The study was selected based on available Literature on Coordinative abilities and their findings. The following Coordinative abilities were selected: Reaction Ability, Balance Ability for the specific purpose of the study. Based on the findings and within the study's limitations, it was noticed that the practice of Tratak Meditation helped in improving the coordinative abilities of the subjects. It was seen that there is progressive improvement in some coordinative abilities of experimental groups of physical education students after ten weeks of practice.

Introduction

Tratak is a vehicle for us to transcend the dual nature of the mind. In Buddhist doctrine, the mind is referred to as the "tyranny of the drunken monkey!" In addition to this theology, the Vedic Sutras inform us that the mind can be our best friend or our worst enemy. Tratak helps us unify our awareness and transcend this duality. Trataka involves fixing the gaze on a small object without moving the eyelids. For practising this, take a sitting posture like Padmasana, Swastikasana, Vajrasana or sit just cross-legged with a straight back. Keep the hands on the knees. Keep the mouth closed and the face calm.

A small lamp or the traditional lamp used in puja in front at a distance of four or five feet may be kept and gaze at the flame. The lamp must be placed in a place free from the breeze so that the flame remains steady. Go on watching the flame without winking. The m muscles of the eyes will be strained slightly. Concentrate the mind on the flame. After a while, you will be oblivious of the flame, and tears will appear and flood the eyes. Then close the eyes and hold the mind in concentration for a while. Then wipe the tears, blow the nose if required and repeat the gazing exercise once again. After practising two rounds of trataka as described above, keep the eyes closed and move the eyeballs first in a clockwise direction and then in a reverse fashion, moving them into the four corners of a big square imagined before you. Thus move the eyes diagonally, then vertically and after that horizontally. This traka technique is a perfect exercise for the eyes.

Developing coordinative abilities influences learning and perfecting new motor acts and their stability over time, promotes an efficient execution of motor acts and actions in various conditions, supports better use of the other conditional abilities, encourages restructuring movements in high-performance training phases and improving primary and applied motor skills (Neluta Smidu, 2014) Yoga has been acclaimed as one of the scientific mind-body training programs, which help to improve the coordinative abilities besides keeping the body physically, physiologically and mentally healthy. Yoga practice has been found to reduce visual and auditory Reaction Times (Madanmohan, 1992). Yoga practice also helps to improve memory power (Singh, 1977). Yoga training affects the static and dynamic balance positively (Rasmi Muammer, 2015).

Objectives of the Study

The purpose of the study was to determine the effect of Pranayama and Tratak on selected coordinative abilities. The study's objective was to determine the significant difference between adjusted post-test means of experimental groups and control group concerning selected coordinative abilities.

Methodology
Selection of Subjects

For the purpose of the study, 90 male students from NCR were selected as the subject for this study. The age of the subjects was ranged from 16-20 years. The subjects were divided into three groups, i.e. two experimental groups (Pranayama and Tratak) and one control group.

Selection of Variables

The study was taken based on available Literature on Co-coordinative abilities and the findings of their tests of the related research studies. Following Coordinative abilities were selected for the specific purpose of the study:

1. Reaction Ability
2. Balance Ability

Criterion Measures

Table: 01 Selected Coordinative Abilities & their Tests and Units of Measurement

Sr. No.	Variables	Test/Equipment Used	Unit
1.	Reaction Ability	The Ball Reaction Exercise Test	Centimetres
2.	Balance Ability	Long Nose Test	Seconds

Design of the study

For the study, a pre-test and post-test randomized group design were used. One control group (n=30) and two experimental groups (n=30 in each) were used. Equal numbers of subjects were assigned randomly to the groups. Two groups (Pranayama group and Tratak group) served as experimental groups on which treatment was assigned, and the third group served as the control group. Experimental training was given up to ten weeks for four alternative days.

Pranayama Group	O1	T1	O2
Tratak Group	O3	T2	O4
Control Group	O5		O6

O = Observation, T = Treatment

Statistical Technique for Analysis of Data:

The essential descriptive statistics were used. One way analysis of variance (ANOVA) was used to compare psychomotor indices among cricketers. The post-hoc-test (LSD) was applied to investigate the significant differences. In all the statistical tests, the level of significance was 0.05, and if the calculated P-value was less than 0.05, there exists a statistically significant mean difference between the groups.

Result of the study

Table: 2 Descriptive Statistics of Reaction Ability of Pranayama, Tratak and Control Groups in Pre-Test and Post-Test

Test	Groups	Mean	Std. Deviation	Std. Error	Minimum	Maximum
	Pranayama Group	101.4667	15.72771	2.87147	70.00	125.00
Pre Test	Tratak Group	101.8333	15.45646	2.82195	75.00	125.00
	Control Group	101.1333	16.35117	2.98530	75.00	129.00
	Pranayama Group	101.9000	15.00655	2.73981	73.00	129.00
Post Test	Tratak Group	98.4667	15.75400	2.87627	70.00	123.00
	Control Group	101.5333	16.30471	2.97682	76.00	131.00

Table: 3 Adjusted Post Test Means of Pranayama, Tratak and Control Groups in relation to Reaction Ability

GROUPS	Mean	Std. Error
Pranayama Group	101.911	.588
Tratak Group	98.122	.588
Control Group	101.867	.588

Table: 4 Analysis of Variance of Comparison of Means of Pranayama, Tratak and Control Groups in relation to Reaction Ability

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	7.356	2	3.678	.015*	.985
	Within Groups	21855.100	87	251.208		
Post Test	Between Groups	213.267	2	106.633	.433*	.650
	Within Groups	21437.633	87	246.410		

*Insignificant at .05 level
F value required to be significant at 2, 87 df = 3.10

In relation to the pre-test, table 04 revealed that the obtained 'F' value of 0.015 was insignificant at the 0.05 level since this value was found lower than the tabulated value 3.10 at 2, 87 df.

In relation to the post-test, an insignificant difference was found among Pranayama, tratak and control groups pertaining to Reaction Ability. The F value of 0.433 was found insignificant at .05 level.

Table: 5 Analysis of Covariance of Comparison of Adjusted Post Test Means of Pranayama, Tratak and Control Groups in relation to Reaction Ability

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	283.775	2	141.888	13.660*	.000
Error	893.268	86	10.387		

*Significant at .05 level
F value required to be significant at 2, 86 df = 3.10

Table 5 revealed that the obtained 'F' value of 13.660 was significant at the 0.05 level since this value was found higher than the tabulated value 3.10 at 2, 86 df.

Since the F-value was found to be significant, the Least Significant Difference (LSD.) Post Hoc Test was applied for inter-group comparison.

Table: 6 Least Significant Difference (LSD.) Post Hoc Test for Comparison of the Adjusted Post Test Means of All Groups in relation to Reaction Ability

(I) GROUPS	(J) GROUPS	Mean Difference (I-J)	CD
Pranayama Group	Tratak Group	3.453	1.646
	Control Group	.041	
Tratak Group	Control Group	-3.699*	

Table 6 revealed a significant difference between Pranayama Group and Tratak Group, Tratak Group and Control Group. On the other hand, an insignificant difference was found between the Pranayama Group and Control Group.

Graphical representation of the Comparison of Means of Pranayama, Tratak and Control Groups in relation to Reaction Ability
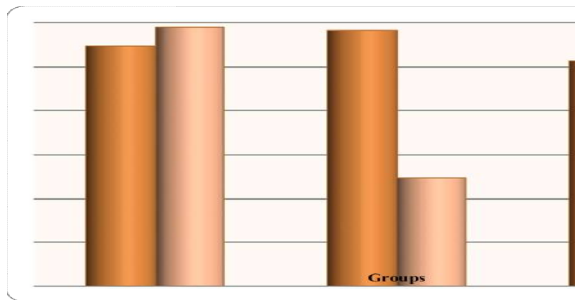

Table: 7 Descriptive Statistics of Balance Ability of Pranayama, Tratak and Control Groups in Pre-Test and Post-Test

		Mean	Std. D	Std. Error	Min	Max
Pre Test	Pranayama Group	8.7067	.89556	.16351	7.00	10.00
	Tratak Group	8.8133	.84761	.15475	7.60	10.00
	Control Group	8.8133	.91717	.16745	7.40	10.00
Post Test	Pranayama Group	8.2167	.82340	.15033	6.80	9.60
	Tratak Group	8.3033	.77615	.14170	7.10	9.60
	Control Group	8.9033	.91632	.16730	7.50	10.20

Table: 8 Adjusted Post Test Means of Pranayama, Tratak and Control Groups in relation to Balance Ability

GROUPS	Mean	Std. Error
Prandharana Group	8.283	.026
Tratak Group	8.270	.026
Control Group	8.870	.026

Table: 9 Analysis of Variance of Comparison of Means of Pranayama, Tratak and Control Groups in relation to Balance Ability

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	.228	2	.114	.139	.831
	Within Groups	68.488	87	.787		
Post Test	Between Groups	8.390	2	4.195	6.101*	.005
	Within Groups	61.481	87	.707		

*Significant at .05 level
F value required to be significant at 2, 87 df = 3.10

Table 9 revealed that the obtained 'F' value of 0.145 was found to be insignificant at 0.05 level in relation to the pre-test since this value was found lower than the tabulated value 3.10 at 2, 87 df.

In relation to the post-test, a significant difference was found among pranayama, tratak and control groups pertaining to Balance Ability since the F value of 5.936 was found significant at .05 level.

Table: 10 Analysis of Covariance of Comparison of Adjusted Post Test Means of Pranayama, Tratak and Control Groups in relation to Balance Ability

	Sum of Squares	Df	Mean Square	F	Sig.
Contrast	7.346	3	3.646	181.121*	.000
Error	1.810	89	.028		

*Significant at .05 level
F value required to be significant at 2, 86 df = 3.10

Table 10 revealed that the obtained 'F' value of 175.701 was found to be significant at 0.05 level since this value was found higher than the tabulated value 3.10 at 2, 86 df.

Since the F-value was found to be significant, the Least Significant Difference (LSD.) Post Hoc Test was applied for inter-group comparison.

Table:-11 Least Significant Difference (LSD.) Post Hoc Test for Comparison of the Adjusted Post Test Means of All Groups in relation to Balance Ability

(I) GROUPS	(J) GROUPS	Mean Difference (I-J)	CD
Pranayama Group	Tratak Group	.016	0.072
	Control Group	-.616*	
Tratak Group	Control Group	-.610*	

*Significant at .05 level

Table 11 revealed that a significant difference was found between the Pranayama Group and Control Group, Tratak Group and Control Group. On the other hand, an insignificant difference was found between Pranayama Group and Tratak Group.

Graphical representation of the Comparison of Means of Pranayama, Tratak and Control Groups in relation to Balance Ability
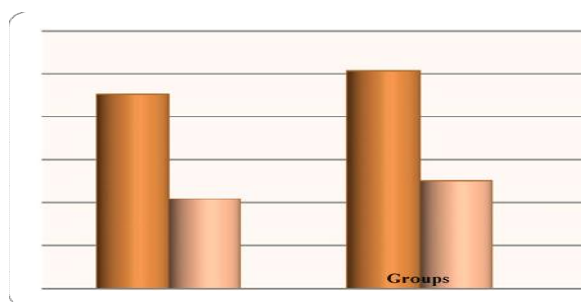
Conclusion

Based on the findings and within the study's limitations, it is noticed that the practice of Pranayama and Tratak helped improve some coordinative abilities of students of NCR. It was seen that there is progressive improvement in some coordinative abilities of experimental groups of students after ten weeks of practice. No significant improvement was found in some coordinative abilities of experimental groups. Following conclusions were drawn.

- A significant difference was found among the adjusted post-test means of experimental groups and control group in Reaction Ability since the F-value (13.660) was found significant at .05 level with 2, 86 df.

- Tratak Group proved to be superior to Pranayama Group in Reaction Ability.

- A significant difference was found among the adjusted post-test means of experimental groups and control group in Balance Ability since the F-value (175.701) was found significant at .05 level with 2, 86 df.

- Pranayama Group proved to be superior to Tratak Group in Balance Ability.

References

1. Upadhyay, D. K., Malhotra, V., Sarkar, D., & Prajapati, R. (2008). Effect of alternate nostril breathing exercise on cardiorespiratory functions. Nepal Medical College Journal, 10(1), 25-27.
2. Satish Singh, Varsha, Hari Shankar Singh and Amit Kumar Singh (2017). A

comparative study of selected motor fitness components among badminton table tennis and squash. International Journal of Physical Education, Sports and Health, 4(3): 203-206

3. Pramanik, T., Sharma, HO., Mishra, A., Prajapati, R., & Singh, S. (2009). The immediate effect of slow pace bhastrika pranayama on blood pressure and heart rate. Journal of Alternative and Complementary Medicine, 15(3), 293-5.

4. Madanmohan, Udupa, K., Bhavanani, A.B., Vijayalakshmi, P., Surendiran, A. (2005). Effect of slow and fast pranayams on reaction time and cardiorespiratory variables. Indian Journal of Physiology and Pharmacology, 49(3), 313-318.

5. Bhavanani, AB., Sanjay, Z., & Madanmohan. (2011). Immediate effect of sukha pranayama on cardiovascular variables in patients of hypertension. International journal of yoga therapy, (21):73-6.

6. Pramanik, T., Pudasaini, B., & Prajapati, R. (2010) Immediate effect of a slow pace breathing exercise Bhramari pranayama on blood pressure and heart rate. Nepal Medical College journal, 12(3):154-7.

7. Nivethitha, L., Mooventhan, A., & Manjunath, N. K. (2016) Effects of Various Prāṇāyāma on Cardiovascular and Autonomic Variables. Ancient science of life, 36(2):72-77

8. Saoji, A. A., Raghavendra, B. R., & Manjunath, N, K. (2019) Effects of yogic breath regulation: A narrative review of scientific evidence. Journal of Ayurveda and integrative medicine, 10(1):50-58

9. Sherlee, J. I., David, A.(2020). Effectiveness of yogic visual concentration trataka on cognitive performance and anxiety among adolescents. Journal of complementary and integrative medicine, 23;17(3)

10. Raghavendra, B. R., Singh, P.(2015). Immediate effect of yogic visual concentration on cognitive performance. Journal of traditional and complementary medicine, 8;6(1):34-6