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COMPARATIVE EFFECTS OF SELECTED YOGIC PRACTICE AND AEROBIC TRAINING ON FLEXIBILITY AND BLOOD PRESSURE AMONG COLLEGE MEN

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Abstract:
Indeed yogic practice has been an integral part of mindfulness on human life which leads to control our physical, physiological and psychological well-being. **Aim:** The researcher wants to know the impact of six weeks yogic and aerobic exercise intervention on flexibility and blood pressure (systolic & diastolic). Samples of 30 college men (N=30; age 18 to 21 years) as per the college record at the time of data collection, all the samples from Gems arts college, Kerala. **Procedure:** Simple random sample method was used for this study, entire samples have been divided into three groups (n=10 samples each) and they were assigned into two treatment group (yogic exercises & aerobic practice groups) and one intervention restricted group. Duration of experimentation was up to 12 weeks, all the subject have been tested their flexibility and blood pressure from the initial and after the experimentation. The ANCOVA was used to find out the significant difference between and within the groups the level of Alpha were fixed 0.05 level. **Result:** the outcome exposes of the study has to bring the significant improvement on dependent variables due to the impact of a dependent variable. **Conclusion:** The both training programme (yogic & aerobic) bring slight changes in flexibility and blood pressure (systolic & diastolic) when compared to control group. Yogic practice group bring slight development in flexibility and blood pressure than the aerobic group, as per the collected data.

Keywords: Yogic practice, Hatha yoga, aerobic, systolic and diastolic pressure

1. Introduction

Yoga is a traditional and spiritual way of lifestyle for our forbiddance, which is more exercise than the spiritual-psychological process to leads association with our body,

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mind and soul (Mahadevan, S. et al., 2008) yoga has become a recent trend of exercise in our modern society its five major benefits are included (physical, mental, social, emotional, and spiritual as well). To many scholars (Acharya) there are many structured form of yogic practices which different outcomes, major form of yoga are including body posture (Asanas), breath controlled exercises (Pranayama) and meditation (Saxton J. M., 2011).

The ultimate target of yogic practices is to be an integral part of body, mind, breath with a benefic physiological impact (Kraftsow G., 1999). One of the popular branch of yoga is called 'Hatha yoga' is an association of physical exercises performed along with mind as well. Unfortunately, hatha yoga was developed and mostly was practiced by the western part of the globe. Hatha yoga significantly influenced flexibility, balance, muscle strength and body-mind combination, improved self-awareness through the meditation has a combination of pranayama (Morone N.E., Greco C.M., 2007). Yoga is a tool of mind purification and physical benefits (Sinha J., 1995) according to Sinha; mind purification through pranayama; the body get fresh air from the atmosphere and circulates all parts of the body including brain. The current styles of hatha yoga were originate and practiced by the northern part of America (Broad, W.J., 2012). Many of the scholars indicated regular yogic practices influenced significantly reduced lifestyle diseases like cardiovascular illness (CVD), diabetic mellitus and metabolic syndrome, osteoporosis and may cases shown that cancers (Knowler W.C. et al., 2002; McGuire M.T. et al., 1999; Duren C.M. et al., 2008).

Nowadays yoga has not only physical and physiological benefits, it's a treatment with remedies in many cases such as postural deformities, back pain, menopause, schizophrenia and type II diabetes mellitus (Kosuri M., and Sridhar G.R., 2009). The regular scheduled physical activity has a higher impact on physical, physiological, and mental development if practiced more often. The researcher selected another independent variable called 'aerobic training', aerobic training is the one of stress-less training programme which can recommended irrespective of age and gender. No doubt, physical activity is very much associated with the mood and anxiety; to a reduced chance of developing a mental illness like depression due to the regular practice of aerobic and strength exercises programme (Farmer M.E., 1988; Rethorst CD et al., 2009). A 12 weeks aerobic exercises programme can be significantly developed on blood pressure of old aged people and indicated more health benefits as well (Young, D et al., - 1999). In fact, at certain stage, aerobic training programme has showed positive influence of total well-being (Carroll D., Norris R., & Cochrane, R. 1990). Aerobic exercise is using a therapy of nonpharmacological treatment of mental depression and blood pressure (Kiyonaga A et al., 1985). Moreover, yoga is not a physical exercise like aerobic activity, it's a way of life which is daily routine of many people; after effect of yogic practice has been better improvement of mood, anxiety and blood pressure (Streeter C.C. et al., 2010). Two training menu which is selected for this study (Yogic & Aerobic) has to be certain role and relationship of dependent variables like flexibility

and Blood pressure (systolic & Diastolic). The outcome of the investigation has to discover the best training menu among the independent variable.

2. Procedure

Simple random sampling technique was used for the current study by the researcher, there were thirty samples (N=30) their age category from 18 to 21 years as per the college records. All the subjects from Gems Arts & Science College Ramapuram, Kerala, were assigned for the study. The selected samples was assigned to three different groups with ten samples each, all the three group selected random design, with two treatment (experimental) groups and one restricted group. Treatment Group I assigned for yogic practices of selected asanas and pranayama. Treatment Group II, were assigned to selective aerobic exercises programme. Total duration of the treatment programme (experimentation) up to 12 weeks, three times per week and each session of the training of 60 minutes. Control group was not assigned to any specific target (treatment programme) rather than their routine work. Dependent variable were fixed based on the available literature such as flexibility and blood pressure (BP) it's including systolic and diastolic blood pressure. Flexibility was measured standardized test by sit and reach test the unit of a score was in centimeters, systolic and diastolic blood pressure was measured by using sphygmomanometer which is standardized instrument, the testing score in millimeters of mercury (mm Hg). All the selected subject has to be appearing pre-test programme from the beginning of the training programme. The yogic practice such as Loosening Exercises, Asanas, Pranayama, Relaxation technique. The Aerobic training programme may be contained warming up exercises, slow movement, medium movement, fast movement and cooling down. Overall training programme up to 6 weeks, immediately all the tree group of subject conducted post-test, investigator carefully noticed score data. The researcher has no power to control climatic condition and diet as well as the individual difference for the study so that these kinds of things considerate as a limitation of the study. Analysis of covariance (ANCOVA) has been used in order to find out the significant deference between the groups and within the groups with help of SPSS. The alpha 0.05 level of confidence were fixed in all the cases.

3. Outcome and result tables

Table 1: Anthropometric Measurements of participants

	Yogic group (n:10)	**Aerobic group (n:10)**	**Control group(n:10)**
Sex	Male	Male	Male
Age	18 ± 2	19±2	18±3
Height	172 ± 5	170 ± 4	171 ± 5
Weight	62 ± 3	65 ± 5	65 ± 4

Table 2: Analysis of covariance of Dependent Variables; Representing mean and 'F' value of pre, post, and adjusted post-test among the groups

VB	Test	YG	AG	CG	S V	S S	D F	M S	F
Flexibility	**PT**	6.92	6.81	6.74	B w	0.17	2	0.82	0.17
					W n	13.07	27	0.48	
	POT	7.77	7.40	6.81	B w	4.49	2	2.24	**4.26***
					W n	14.22	27	0.53	
	ADPOT	7.68	7.41	6.91	B w	3.00	2	1.50	**18.05***
					W n	2.16	26	0.08	
Systolic blood pressure	**PT**	128.30	128.20	128.40	B w	0.20	2	0.10	0.00
					W n	1088.60	27	40.30	
	POT	120.80	123.30	128.10	B w	275.27	2	137.63	**3.58***
					W n	1038.60	27	38.47	
	ADPOT	120.80	123.40	128.00	B w	266.27	2	133.13	**73.26***
					W n	47.25	26	1.82	
Diastolic blood pressure	**PT**	78.70	78.80	78.80	B w	0.67	2	0.03	0.00
					W n	615.30	27	22.79	
	POT	74.50	76.00	78.90	B w	100.07	2	50.03	**3.74***
					W n	361.40	27	13.39	
	ADPOT	74.55	75.98	78.88	B w	97.35	2	48.67	**20.45***
					W n	61.87	26	2.38	

*level of significance at 0.05 (Alpha) / table value 3.37 for df 2
Abbreviations: VB: Variables; **YG**: Yogic Practice Group; **AG**: Aerobic Group; **SV**: Sum of Variables; **SS**: Sum of squire; **PT**: Pre-season test; **POT**: Post season test; **ADPOT**: Adjusted Post Test.

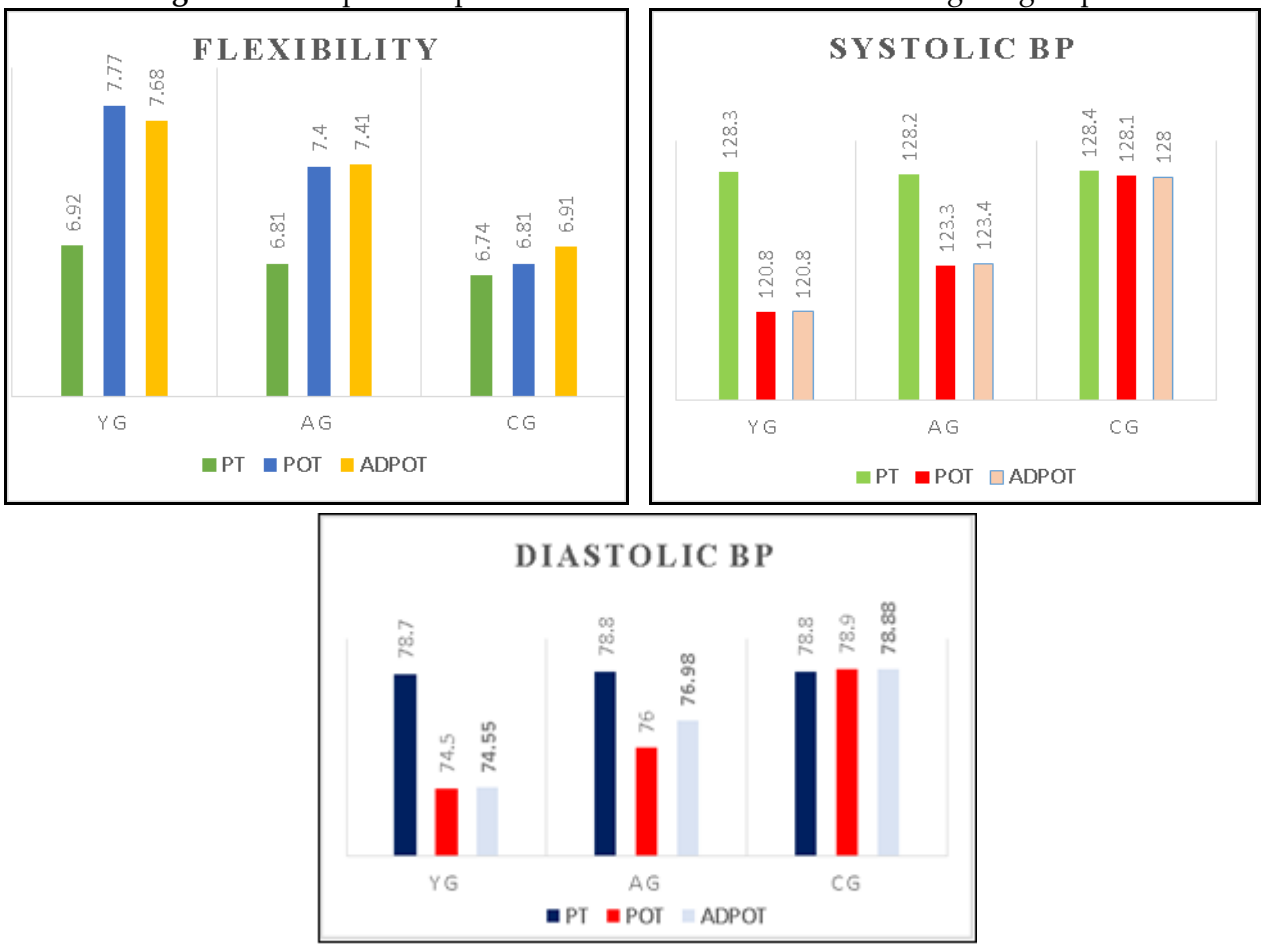
Table 2 summarized that Analysis of covariance among the groups (YG, AG, & CG) of dependent variables (Flexibility, Systolic & Diastolic blood pressure). The table clearly evident there were no significant difference of pre-test among the groups for Flexibility (PT – F: 0.17), Post-test and Adjusted post-test were shown the statistical significance difference (POT- F: 4.26*, APOT-F: 18.05*). The initial test mean value of Flexibility such as YG: 6.91, AG: 6.81, & CG: 6.74. Like ways Systolic blood pressure pre-test were shown the insignificant difference (PT- F: 0.00) and post-test adjusted post-test were shows significance difference as well (POT-F:3.58* & APOT-F:73.26*). The initial mean value of systolic blood pressure such as YG: 128.30, AG: 128.20 & CG: 128.40. Diastolic initial mean value of among the group such as YG: 78.70, AG: 78.80 & CG: 78.80, the initial test f value shows no significant difference among the groups (PT-F: 0.00), post-test and adjusted post-test were showing significant difference among the groups (POT-F: 3.74* 7 ADPOT). The selected dependent variables somewhat have been influenced due to the 12 weeks intervention programme, in the case of control group didn't show the improvement also. In order to more clarifying the mean difference between the groups, the Scheffe's post-hoc test was used by the researcher.

Table 3: The Scheffe's post hoc Test for the depended variables means values

	Means			Mean Difference	Required CI
	YG	AG	CG		
Flexibility	7.77		6.81	**0.94***	0.13
		7.40	6.81	**0.57***	
	7.77	7.40		**0.37***	
Systolic BP	120.80		128.10	**7.30***	0.12
		123.30	128.10	**4.80***	
	120.80	123.30		**2.50***	
Diastolic BP	74.50		78.90	**4.40***	0.12
		76.00	78.90	**2.90***	
	74.50	76.00		**1.50***	

Table 3 shows that the adjusted post-test mean difference of flexibility between three groups. The paid mean difference between yogic practices group and control group is 0.94*, aerobic and control groups is 0.57*, and two training groups (yogic and Aerobic) is 0.37* it is greater than the required CI value of 0.13 so all the groups are significantly difference from others. Here the yogic practice group shows little more improvement on flexibility (0.37%) when comparing the aerobic group. concluded from the results of the yogic practices group is slight greater than the aerobic training group. The adjusted post-test mean difference of Systolic blood pressure between three groups, the paid mean difference between yogic practices group and control group is 7.30*, aerobic and control groups is 4.80*, and two training groups (yogic and Aerobic) is 2.50* it is greater than the required CI value of 0.12 so all the groups are significantly difference from others. Here the yogic practice group shows little more improvement on flexibility (2.5%) when comparing the aerobic group concluded from the results of the yogic practices group is better than the aerobic group. The adjusted post-test mean difference in diastolic blood pressure between yogic practices group and control group is 4.40* aerobic and control groups is 2.90*, and two training groups (yogic and aerobic) is 1.50* it is greater than the required CI value of 0.12 so all the groups are significantly difference from others. Here the yogic practice group shows little more improvement on diastolic blood pressure (1.5%) when comparing the aerobic group. concluded from the results of the yogic practices group is better than the aerobic group.

Figure 1-3: Graphical representation of mean difference among the groups



3.1 Discussion on flexibility

The both training menu has showed certain level of improvement on flexibility, with exclusion criteria like limitation and delimitation were May or me not be influenced on the samples. Calculated results of the study indicates that flexibility is improved by 12.28% in yogic practices group (three sessions per week) and 8.66% in aerobic exercises group (three sessions per week) though both trainings shows improvement, yogic practices group shows better improvement than the aerobic exercises group and control group. This is due to the training adapted by the subjects; this clearly shows that a yogic practice is a suitable training method; the similar result were existing by (Karunakaran and Ramesh, 2009); Bharatha Priya and Gopinath (August, 2011). According to current study the aerobic training programme not that much effectively on the flexibility, it may because of the training menu, and subject body nature.

3.2 Discussion on Blood Pressure

The intervention of yogic and aerobic training menu has influenced significantly improvement on blood pressure especially diastolic blood pressure level (James A. Blumenthal- 1989), current study results of the study indicates that upper systolic blood pressure is improved by 5.85% in yogic practices group (three sessions per week) and 3.82% in aerobic exercises group (three sessions per week) though both trainings shows

improvement, yogic practices group shows better improvement than the aerobic exercises group and control group. This is due to the training adapted by the subjects; this clearly shows that a yogic practice is a suitable training method. Physiologically changes may occur due to aerobic training (Blumenthal, J.A. et al., 1989). The selective yogic practice brings significant improvement on blood pressure (Innes, K.E., & Selfe, T.K. (2012).

5. Conclusion

High blood pressure and Lifestyle diseases are the serious health problems that face in the digital society in India, in fact, it may because of the nature of the occupation and sedentary lifestyles. Here come to the importance of the physical activity especially yogic practice and aerobic exercises may reduce blood pressure and other life style diseases at certain levels. Within the limitation of the study, the researcher has concluded that due to yogic practices there was a significant positive improvement in flexibility and blood pressure. Due to aerobic exercises, there was a significant positive improvement in flexibility and blood pressure. The investigator found that Yogic practice slight better than when we compared to the aerobic group on flexibility and blood pressure.

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