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## Effect of yogic practice on selected motor fitness components of college students

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### Abstract

The purpose of the study was to investigate the effect of yogic practice on selected motor fitness components of college students. For the purpose of the study 30 male Physical Education students were selected from Sree Chaitanya Mahavidyalaya, Habra, North 24pgs, West Bengal as subjects for this study. The average range between 18- 21 years. Researcher has given training three days (alternative days) per week for a period of Eight week at the morning between 8.30am-9.30am. In order to find out the significant difference on selected Physical Fitness variables Physical Education students "t" test were set at 0.05 level of confidence, which was considered as appropriate and adequate for the purpose of this study. Significant difference was found in pull ups, Speed, Cardiovascular Endurance Agility, Abdominal Strength, Explosive Leg Strength, Balance and Flexibility between pre-Test and Post-Test due to effect of yogic practice on college students.

**Keywords:** Physical Education students, Physical Fitness variables, Physical Fitness variables

### Introduction

Yoga is the oldest system of personal development encompassing body, mind and spirit. The word yoga is derived from the Sanskrit root Yuj, which means to join or to yoke. In philosophical terms, yoga refers to the union of the individual self with the universal self. Yoga is an ancient Indian practice, first described in Vedic scriptures around 2500 B.C., which utilizes mental and physical exercises to attain samadhi, or the union of the individual self with the infinite (Lidell ;1983) [17].

Psychosocial stresses of our modern life precipitates various cardiovascular and other disorders by distorting basic neuroendocrine mechanism. The psychosocial stresses activate limbic system and hypothalamus which controls the autonomic nervous system. When this system is stimulated, increase in output of both adrenaline and nor-adrenaline occur, both from sympathetic nerve fibres as well as from adrenal medulla causing increase in heart rate, systolic and diastolic blood pressures. Chronic exposure to psychosocial stimuli will result in the development of increase in blood pressure, coronary thrombosis and heart failure. In addition to the activation of sympatho-adreno-medullary system, exposure to psychosocial stresses also activates the hypothalamuscentre governing pituitary adrenal axis. An increased secretion of corticotrophin releasing hormone from hypothalamus. This hormone releases stimulates the release of adrenocorticotrophic hormone from anterior pituitary which in turn stimulates adrenal cortex. The psychosocial stressful situation activates hypothalamo-pituitary-adrenal gland axis, glucocorticoid and aldosterone levels increase in the plasma causing salt and fluid retention which increases blood volume and blood pressure imposing severe strain on the heart. The harmful effects of these stresses on bodily systems can be reduced effectively eliminated by enhancing the adaptive mechanisms of our body that can restore the equilibrium. By giving rest to the mind and body, yoga can shake off many disorders of psychosocial origin.

Although yoga has established itself as a part of the exercise industry, it historically has been considered to be much more than a physical practice. Yoga has been defined as yoke, union, or discipline, representing that which is united or bound together, commonly being thought of as the union of the mind with the physical body. In Western society, yoga might be considered as a system of poses, breathing exercises, and seated meditation.

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The varied practices of asana, pranayama, and dhyana, have manifested a great number of yoga styles. All these styles have distinguishing characteristics, with varying levels of physical fitness required. Given this wide variety of yoga styles, it would seem that each could offer varying physical health benefits, or perhaps the same benefits at varying degrees.

Yogic exercise affects by and large all the organs and systems of the body especially on muscles and sinews. It effects on muscular contraction, relaxation, stretching, blood circulation etc. The very air is becoming unfit for human consumption. Our cities are growing noisier, dirtier and congested. All these do create tension. The mind is always under strain due to various social evils. When we are under stress, our digestion is not proper and we may suffer from some fairly serious ailments like Asthma and Spondylitis etc., and yoga comes to our rescue at this juncture. In the treatment of almost all the chronic disorders and ailments, yoga can assist in a big way, when practiced along with other streams of treatment. However it is not a panacea for all health problems. It has its own limitations. At the same time, it cannot cure the acute infective disorders of traumas. Obviously it is not possible to carry out surgical operations with its help. But it can definitely help in the post operational therapy, under able guidance. The practice of yoga on the other hand stresses gentle and rhythmic movement and by applying knowledge of physiological aspect of the body, that is the gland and organs on which its health depends. Yoga aims to keep the body young and full vigour of health, and always a fit machine to serve the needs of minds and spirits. Certain qualities necessary for industrial works as for example, attention and concentration, steadiness and manual skill, resistance to fatigue, optimum reaction time, perceptual capacity and precision in work can be properly developed by practice of yoga. Yoga practice enhances resistance to fatigue. A major value of Hatha yoga lies in the fact that it takes into consideration of the methodical stimulation necessary for organs and glands of the various body systems. The pituitary glands are affected by the hand stand, the heart and thyroid are involved in the soldier stand, the locust strengthens the reproductive organs and glands and the kidneys are stimulated through the cobra and bow. The abdominal lift provides a type of natural "massage" for the stomach, colon, intestine, liver, kidneys, gall bladder and pancreas. Life force is increased through yoga practice and nervous system is greatly strengthened.

Physical fitness is an important outcome of physical education and it is physical education in the school system that is most capable of bringing it out. The physical fitness over a long span and examination of the same reflect the status of health. Physical examination assesses the growth pattern and functional efficiency of sensory and Health organs, functional efficiency of the body in terms of strength, cardio respiratory endurance, flexibility, speed, agility, balance and neuromuscular co-ordination. Physical fitness is a combination of qualities that enable a person to perform well

in vigorous physical activities. These qualities include agility, endurance, flexibility and strength. Physical fitness and good health are not the same, though each influences the other. Physical fitness represents one of the several facets of sports and physical activity, which can have definite influences on the health and the well being of children and adolescents, as well as adults. The measurement of physical fitness raises several conceptual, methodological and technical problems, which explain why surveys including such measures have been scarce until recently.

### Statement of the Problem

The purpose of the study was to investigate the effect of yogic practice on selected motor fitness components of college students.

### Methodology

For the purpose of the study 30 male Physical Education students were selected from Sree Chaitanya Mahavidyalaya, Habra, North 24pgs, and West Bengal as subjects for this study. The average range between 18- 21 years.

### Administration of Physical Fitness test

1. For speed the students were asked to run as fast as they can up to 50 yards and the result were recorded to the nearest 1/10<sup>th</sup> seconds,
2. To measure arm and shoulder strength Pull up test was administered, The subjects were asked to step upon the chair and take a firm grip [palms facing away from face] on the bar and as they assumes a straight arm hang, they were asked to perform pull ups. The legal number of pull ups was measured as a result.
3. 4×10yds shuttle run test were administered to measure agility and the results were recorder to the nearest 1/10<sup>th</sup> seconds,
4. Standing Broad Jump was administered to measure explosive leg strength and the results were recorded in feet and inches.
5. Abdominal strength and endurance was measured through Bend knee sit up test for one minute and the number of legal sit up was considered as a result.
6. 600 yard Run and Walk test was administered to measured cardio vascular endurance. The subjects were asked to run and walk for a distance of 600 yards with full effort and the time was recorded in 1/10<sup>th</sup> of a second.
7. Balance was measured with the help of stock stand test and the results were recorded in 1/10<sup>th</sup> of a second.
8. Flexibility was measured with the help of sit and reach test and the results were recorded in inch

### Study Protocol

Researcher has given training three days (alternative days) per week for a period of Eight week at the morning between 8.30am-9.30am. The training schedule was as follow

**Table: Study Protocol**

Particular	Training Schedule	Surya Namaskar and Asanas		
		Tuesday	Thursday	Saturday
Total Duration	8 weekes	Suryanamaskara,	Suryanamaskara,	Suryanamaskara,
		Padusana,Vrikshasana,	Padusana,Vrikshasana,	Padusana,Vrikshasana,
Frequency	3 days per week	Trikonasana,Bhujangasana,	Trikonasana,Bhujangasana,	Trikonasana,Bhujangasana,
		Vajrasana,Shashankasana,	Vajrasana,Shashankasana,	Vajrasana,Shashankasana,
		Parvatasana,Bhujangasana,	Parvatasana,Bhujangasana,	Parvatasana,Bhujangasana,

Repeation	3 times	Dhanurasana,Makarasana,	Dhanurasana,Makarasana,	Dhanurasana,Makarasana,
		Naukasana,	Naukasana,	Naukasana,
		Poschimattanasana,	Poschimattanasana,	Poschimattanasana,
Duration	1hours 30minutes	Pavanamuktasana	Pavanamuktasana	Pavanamuktasana
		,Matsyasana,Chakrasana,	,Matsyasana,Chakrasana,	,Matsyasana,Chakrasana,
		Sarvangasana, Halasana,	Sarvangasana, Halasana,	Sarvangasana, Halasana,
		Salvasana,Matasana,	Salvasana,Matasana,	Salvasana,Matasana,
Time	4pm-5.30pm	Shavasana.	Shavasana.	Shavasana.

- Surya Namaskar was performed 5 minutes on training date.
- 25 secondhold in final positin of all asanas
- After every asana 2.30 minutes Savasana or Makarasana was given.

**Statistical Procedure**

In order to find out the significant difference on selected Physical Fitness variables Physical Education students “t” test

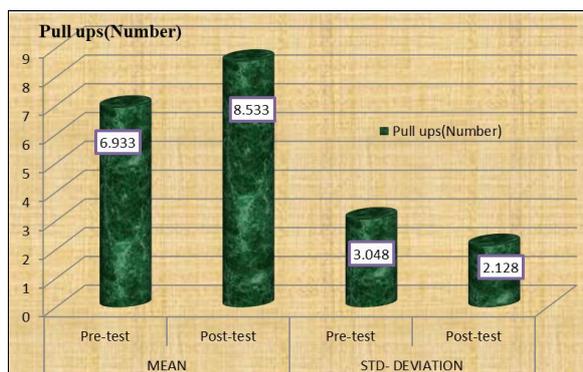
were set at 0.05 level of confidence, which was considered as appropriate and adequate for the purpose of this study.

**Finding**

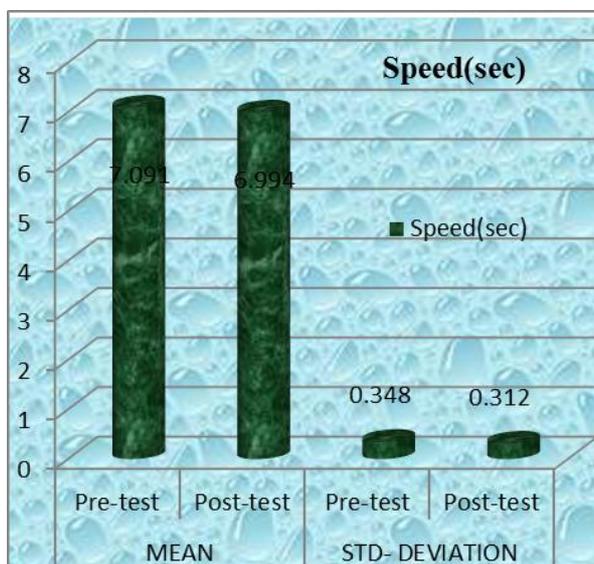
**Table 1:** Mean Standard deviation and ‘t’ test in pull ups, Speed, Cardiovascular Endurance Agility, Abdominal Strength, Explosive Leg Strength, Balance and Flexibility between pre-Test and Post-Test of college students

Variable	MEAN		STD- DEVIATION		‘t’ ratio
	Pre-test	Post-test	Pre-test	Post-test	
Pull ups(Number)	6.933	8.533	3.048	2.128	2.295*
Speed(sec)	7.091	6.994	.348	.312	3.388*
Cardiovascular Endurance(Min and sec)	1.50	1.40	.0858	.1647	2.94*
Agility(sec)	8.78	8.36	.258	.399	4.76*
Abdominal Strength(Number)	40	43	5.71	5.24	2.08*
Explosive Leg Strength (ft)	7.02	7.55	.129	.0863	5.517*
Balance (sec)	18.04	23.21	3.2	3.47	7.49*
Flexibility(inch)	13.68	15.2	2.17	2.01	2.01*

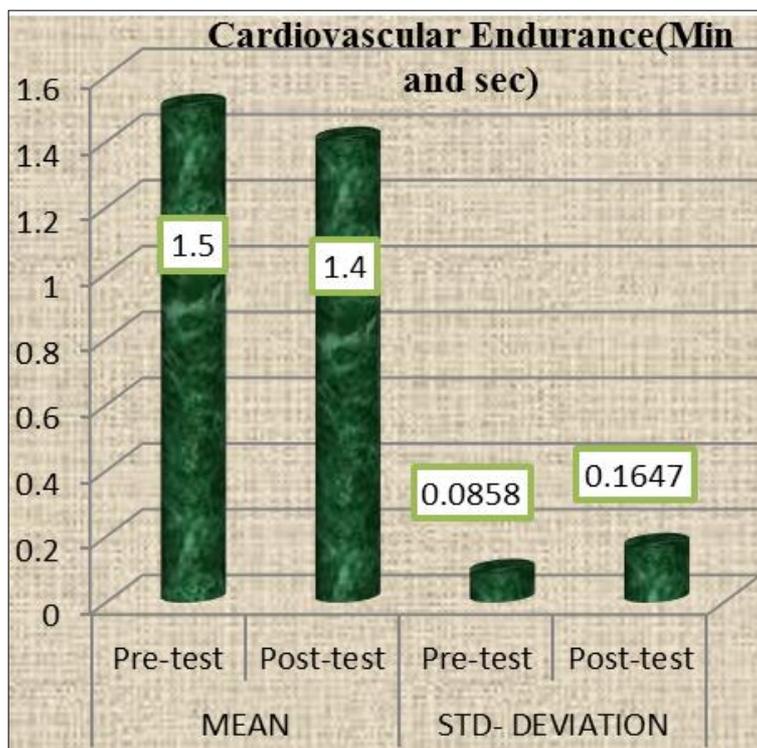
Tab<sub>0.05</sub>-(58) = 2.00, \*= Significant



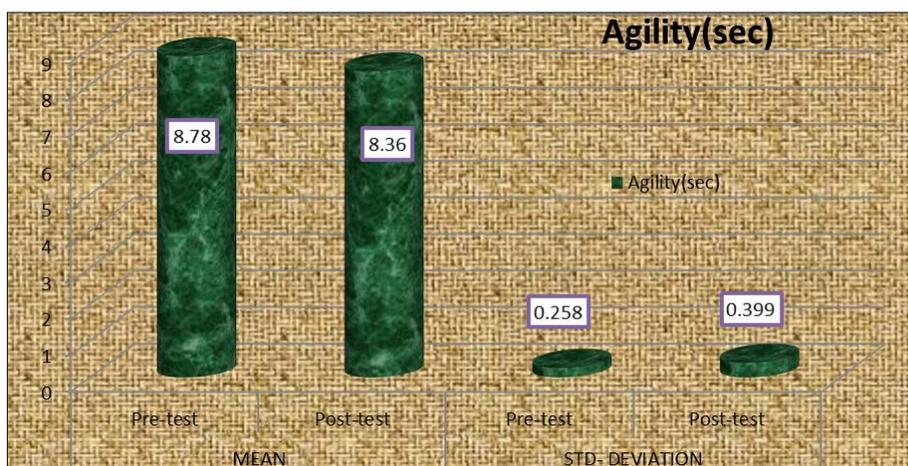
**Fig 1:** Comparison of Pull ups between Pre-test and Post- Test of college students



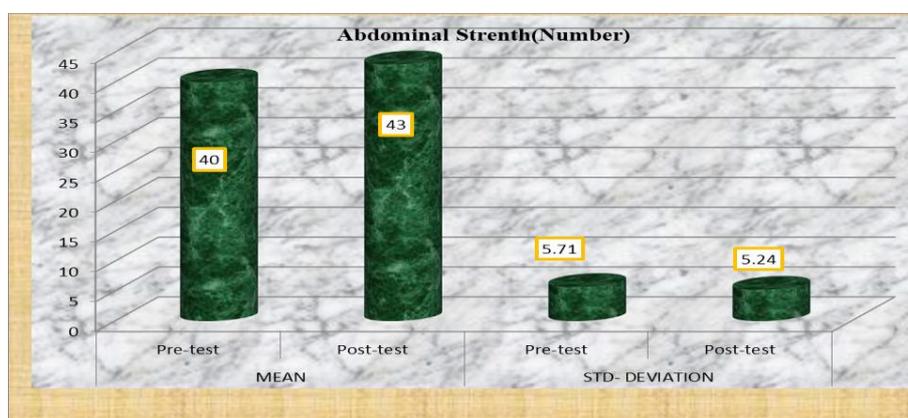
**Fig 2:** Comparison of Speed between Pre-test and Post- Test of college students



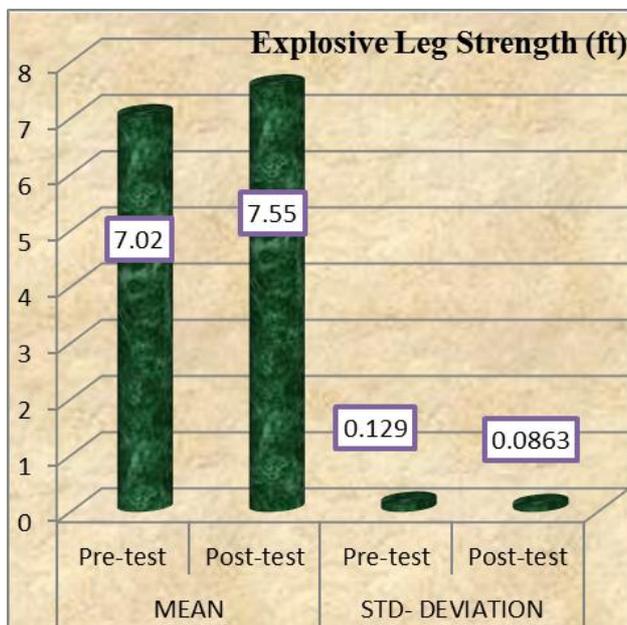
**Fig 3:** Comparison of Cardiovascular Endurance between Pre-test and Post- Test college students



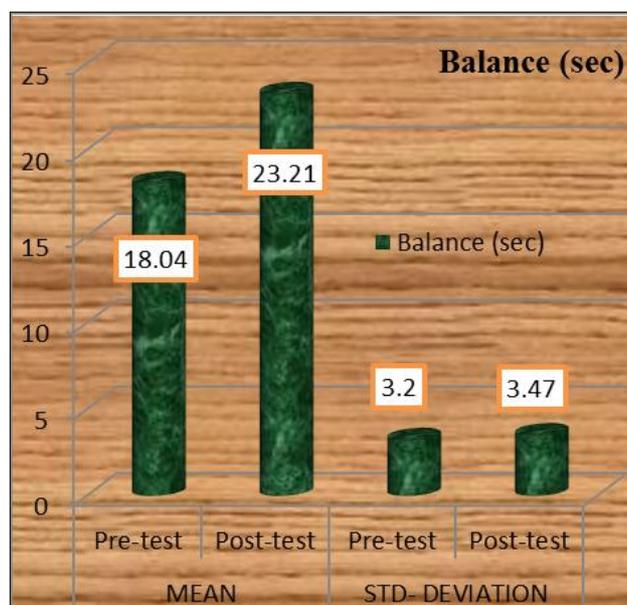
**Fig 4:** Comparison of Agility between Pre-test and Post- Test college students



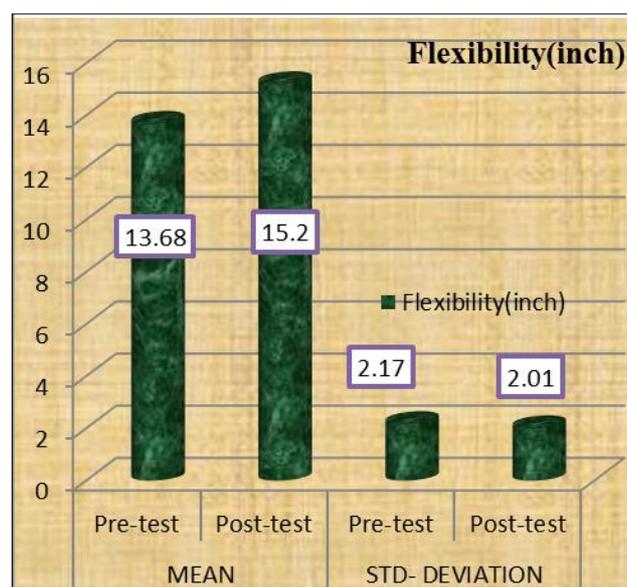
**Fig 5:** Comparison of Abdominal Strength between Pre-test and Post- Test college students



**Fig 6:** Comparison of Explosive Leg Strength (ft.) between Pre-test and Post- Test college students



**Fig 7:** Comparison of Balance between Pre-test and Post- Test college students



**Fig 8:** Comparison of Flexibility between Pre-test and Post- Test college students

### Discussion of Finding

It was found (Table-1) that there were significant differences in case of Physical Fitness components. The result shows that there were a significant difference in pull ups, Speed, Cardiovascular Endurance Agility, Abdominal Strength, Explosive Leg Strength, Balance and Flexibility between pre-Test and Post-Test due to effect of yogic practice on college students. Sit ups evaluate muscular strength and endurance of the abdomen. Sufficient intakes of calorie proper diet, and Yoga Exercise not only develops the strength and endurance and contractibility of the abdominal muscle but also improve the strength and endurance of the specific muscles of shoulder and arm which was reflected through the significant difference in the pull ups and sit up test. Sufficient calorie intake, balance diet and different type of Yoga Exercise influence the anaerobic capacity and muscle strength it also develops muscle contraction, ATP-PC system to the muscle so it was reflect in the significant manner in Shuttle Run., In case of Explosive leg Strength, significant differences were found because sufficient calorie intake, balance diet and different type of Yoga Exercise develops the higher muscular contraction. Sufficient calorie intake, balance and different type of Yoga Exercise diets also influences the various organs and develops the aerobic capacity and glycogen system and there by a significant difference were found in cardio respiratory endurance.

It is Located that the back of the leg, the hamstrings are made up of three muscles with tendons that cross over both the knee and hip joints. Because the muscle attaches to two joints, any decreased joint mobility affects the length of the muscle.

Because of our sedentary culture, we spend an inordinate amount of time sitting -- with both the knees and hips bent. This position directly impacts the length of the hamstrings. Athletic activities, such as running and biking, further shorten the hamstrings. This tightening also affects the pelvis because the tendons attach to the sit bones (ischialtuberosities), the bottom hooks of the pelvic bowl. In sitting and even in standing, the shortening of the hamstrings can rock the pelvis backward, causing a rounded, slouchy position in the lower back. This rounded position can stress the back muscles.

In general yoga practice is performed slowly and gradually, in a closed kinetic chain (specific poses or static postures), which may include active stretching, isometric muscle contractions, enhancing concentration and proper breathing patterns. Improve muscle strength, increase joint mobility and soft tissue flexibility, mobilize the nervous system, improve body posture, improve proprioception and thereby encourage better awareness of the body, releasing trigger points (Posadzki P, Parekh S 2009) [11]. Mastangelo *et al.* (2007) [13] who also used the sit and reach test for measurement of hamstring flexibility, found a significant increase in hamstring flexibility with yoga intervention group as well.

Information concerning the positioning of the body segments is provided by the sensory systems, with the motor systems being responsible for proper muscle activation when performing the movements. This supports the idea that one needs to be physically prepared for the implementation of tasks that require fine motor control (e.g., dynamic balance) in terms of concentrating energy sources and optimizing the muscle groups involved. This optimization is emphasized in yoga, which focuses on employing the muscles necessary to perform the task with minimal effort. Moreover, it has been reported that yoga practioners train their balance in situations, where somatosensory stimuli are constantly required during the asana positions because many of the exercises are

performed with the eyes closed, thus requiring the participation of the vestibular system. This corroborates with the principle of training specificity, where specific movements and motor coordination are needed to improve postural balance (Erick Tadeu Prado 2014) [14] (Galantino *et al.* 2004) [15] demonstrated that 6 weeks of *et al.* selected Hatha yoga training increased flexibility and balance significantly.

### Reference

1. Corder OW, Pridmore H. Effects of Physical Education on Psychomotor Development of Educable Mentally Retarded Boys Education and Training of the Mentally Retarded, 1966, 163-167.
2. Oliver JN. The Effect of Physical Conditioning Exercise and Activities on the Mental Characteristics of Educational Subnormal Boys” British Journal of Physiology, 1958.
3. Rarick GL, Widdop JH, Broadhead Gd. Physical Fitness and Motor Performance of Educable Mentally Retarded Children Exceptional Children, 1970.
4. Walter Kroll. An Anthropometrical Study of Some Big Ten Varsity Wrestler” Research Quarterly, 1954.
5. Johnson Barry L, Nelson Jack K. Practical Measurement for Evaluation in Physical Education, 2012.
6. Verma J, Prakash A. Text Book On Sports Statistics,
7. Deshpande Manali S. History of The Indian Caste System And Its Impact On India Today Socs 461,462 Senior Project Social Sciences Department College Of Liberal Arts, 2010
8. Bandy opadhyay Sanghamitra Polarisation, Stratification and Convergence Clubs: Some Dynamics and Explanations of Unequal Economic Growth across Indian States Department of Economics And Sticerd London School of Economics, 2002.
9. Singh Sahajad, Kumar Sunil. Comparative Study of Physical Fitness Components of Rural and Urban Female Students of Delhi University Delhi EconomicStratificationstaff.jcc.edu/eblobaum/soc122/.../11Notes%20-%20Stratification.ppt.
10. Goli1 srinivas, Singh Prashant K. Arokiasamy Perianayagam How Far Socio-Economic Determinants Affect The Demographic And Health Inequalities In Urban India: Evidences From Nfhs-3,
11. Posadzki P, Parekh S. Yoga and physiotherapy: a speculative review and conceptual synthesis”. Chin J Integr Med, 2009; 15:66-72.
12. Maja Petric, Renata Vauhnik and Miroljub Jakovljevic The Impact of Hatha Yoga Practice on Flexibility A Pilot Study Alternative & Integrative Medicine, 2327-5162.
13. Mastrangelo MA, Galantino M. House L. Effects of yoga on quality of life and flexibility in menopausal women a case series. Explore, 2007; 3:1.
14. Erick Tadeu Prado, Vagner Raso, Renata Coelho Scharlach, Cristiane Akemi Kasse. Hatha yoga on body balance JOY International Journal of yoga, 2014; 72:133-137.
15. Galantino M, Bzdewka TM, Eissler Russo JL, Holbrook ML, Mogck EP, Geigle P. *et al.* The impact of modified Hatha yoga on chronic low back pain” A pilot study. Altern Ther Health Med, 2004; 10:56-59.
16. Biddle S, Page A, Ashford B, Jennings D, Brooke R, Fox K. *et al.* Assessment of children's physical perceptions”. International Journal of Adolescence and Youth, 4, 93-109.

17. Lidell L. The Sivananda Companion to Yoga New York, NY: Simon & Schuster Inc, 1983.
18. Hadi N. Effects of hatha yoga on well-being in healthy adults in Shiraz, Islamic Republic of Iran. East Mediterr. Health J, 2004; 13:829-837.
19. Anand BK. Yoga and medical sciences. Indian J PhysioPharmacol, 1991; 35(2):84-87.
20. Selvamurthy W, Nayar HS, Joseph NT, Joseph S. Physiological effects of yogic practice. Nimhans journal, 1983; 71-80.