

A Co relational Study on Selected Physical Physiological and Psychological Factors of Women Hockey Players

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Abstract

The objective of the research was to assess the relationship among Female Hockey playing ability and selected physical, physiological and psychological variables. For the said purpose, 25 current Hockey players (age 24.68 ± 3.172 yrs, height 155 ± 7 cm and weight 61.2 ± 7.29 kg), from district to national level were surveyed on selected variables. Physical variables constituted speed ability, arm strength, abdominal endurance, cardio-vascular endurance and leg power which were measured by using 50m dash, pull-up, one minute sit-up test, 600m run/walk test and standing broad jump respectively. Physiological characteristics consists Breath Holding Capacity, vital capacity and Peak flow rate measured by using stop watch, dry spirometer and peak flow monitor respectively. Rossenberg Self-esteem Questionnaire and SCAT were used to measure Self-esteem and competitive anxiety under psychological variables. The Hockey playing ability was assessed by applying Special Hockey Fitness test. Descriptive statistics, pearson product moment correlation and partial correlation along with various illustrative measures were used to analyze the data. Result shows that Hockey playing ability is highly correlated to speed, vital capacity, peak flow rate and Breath Holding capacity of the Female Hockey players.

Key words: *leg power, breath holding capacity, competitive anxiety*

INTRODUCTION

The Physical, Physiological and Psychological variables are poorly correlated phenomena as far as sports performance is concerned. Many researches have been carried out time to time in various countries that assess the relationship between playing ability of a particular sports and anthropometrical variables. But, most of them failed to identify most important and dominating characteristics that are highly associated with the sports performance of an athlete. Sports performance is a dynamic phenomenon that is not confined to bodily structure only. This is the limitation of most of the researches in the past on related subject. Dynamic variables such as fitness, health, functioning of body and its system, and behavior of the athlete on and off the ground are also equally important. With keeping this fact in mind, the researcher enlisted various fitness, physiological and psychological variables and made an attempt to establish the relationship among them. There are numerous variables under mentioned aspects. However, few variables under each category were selected namely speed, arm strength, abdominal muscle endurance, cardiovascular endurance and leg power in physical variables. In physiological variables, breath holding capacity, vital capacity and peak flow rate was included. And psychological variables included self-esteem and competitive anxiety of the Women Hockey Players. The wide range of heterogeneous variables was considered for this research in order to make an attempt in revealing the hidden factors for considerable hockey performance. With the hypothesis that selected variables will have the highest correlation with included sports person, this study was carried out and an attempt was

made to unfold the highest significant factors that would lead to great sports success in hockey.

The objectives of the present study were described as follows-

- To survey the selected Physical fitness variables of Women Hockey Players.
- To survey the selected Physiological variables of Women Hockey Players.
- To survey the selected Psychological variables of Women Hockey Players.
- To find out the most strongly correlated factors among selected physical, physiological and psychological variables with Hockey playing ability

PROCEDURE AND METHODOLOGY

Subjects

For the purpose of survey, total 100 male current Women Hockey Players were selected to collect data of selected variables. There were different levels of Women Hockey Players from Delhi. The age, height and weight values were obtained as 24.68 ± 3.17 yrs, 156 ± 09 cm and 62.4 ± 4.67 kg respectively.

Variables

After reviewing the literature, consultation with the experts and researcher's own understanding the following variables were selected for purpose of this study:

Physical Fitness

- a) Speed
- b) Arm Strength
- c) Abdominal Muscle Endurance
- d) Cardiovascular Endurance
- e) Leg Power

Physiological Variables

- a) Breath Holding Time
- c) Vital capacity
- d) Peak flow rate

Psychological variable

- a) Self-esteem
- b) CSAI

Tools

Variables	Test/Equipment	Unit
Speed	50 Yard Dash	Seconds
Arm Strength	Pull-up test	Numbers
Abdominal Muscular Endurance	Sit-up test	Reps/min.
Cardiovascular Endurance	600 m	Seconds
Leg Power	Standing Broad Jump	Cm
Breath Holding Capacity	Stop Watch	Seconds
Vital Capacity	Spirometer	Liters
Peak Expiratory Flow Rate (PEFR)	Peak flow Monitor	Liters
Self-esteem	Rosenberg Self-esteem Questionnaire	As per scoring key
Competitive Anxiety	SCAT	As per scoring key
Hockey Playing Ability	Chapman ball control test	Seconds

Test Administration for Psychological variables-

Subjects were contacted by the researcher and there sincere cooperation was expected. Respondents were called to a common place when they have enough time to spare for testing. Necessary instructions were given to the subjects by the researcher before the administration of each test. Confidentiality of responses was guaranteed so that the subject should not have any fear of his/her data. During the test care was taken that no boredom filling exists in the

subjects. The time limit for filling the questionnaire was intimated in advance to the subjects as per the guideline provided in the respective questionnaire. Once the instruction was understood by the subject, they were allowed to fill the questionnaire. To obtain the information psychological variables i.e. self-esteem and competitive anxiety, **Rosenberg's Self-Esteem Scale Questionnaire and SCAT Questionnaire** was executed. After the filling of the questionnaire by the subjects, physiological test was conducted followed by physical test.

Statistical Technique

The data was collected from Women Hockey Players on the selected Psychological, Physiological and Physical fitness variables, and used for the statistical treatment that specify descriptive statistics (Mean, Standard Deviation, percentile). The relationship among playing ability and selected physical, physiological and psychological variables were established by applying pearson product moment correlation where level of significance was set at 0.05 and 0.01. All the calculations were carried out by using SPSS (Statistical Package for Social Sciences) version 16.

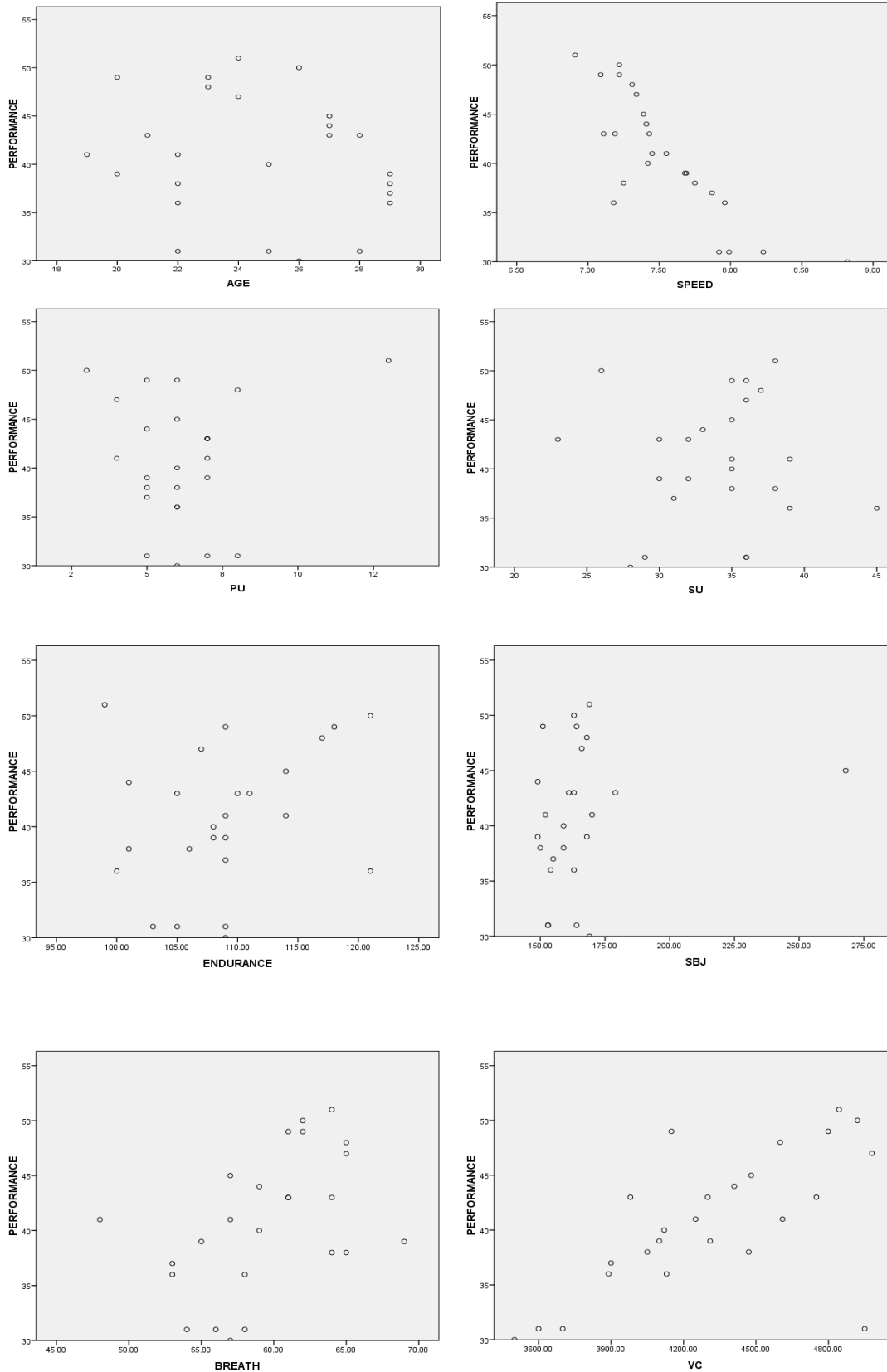
RESULTS AND DISCUSSIONS

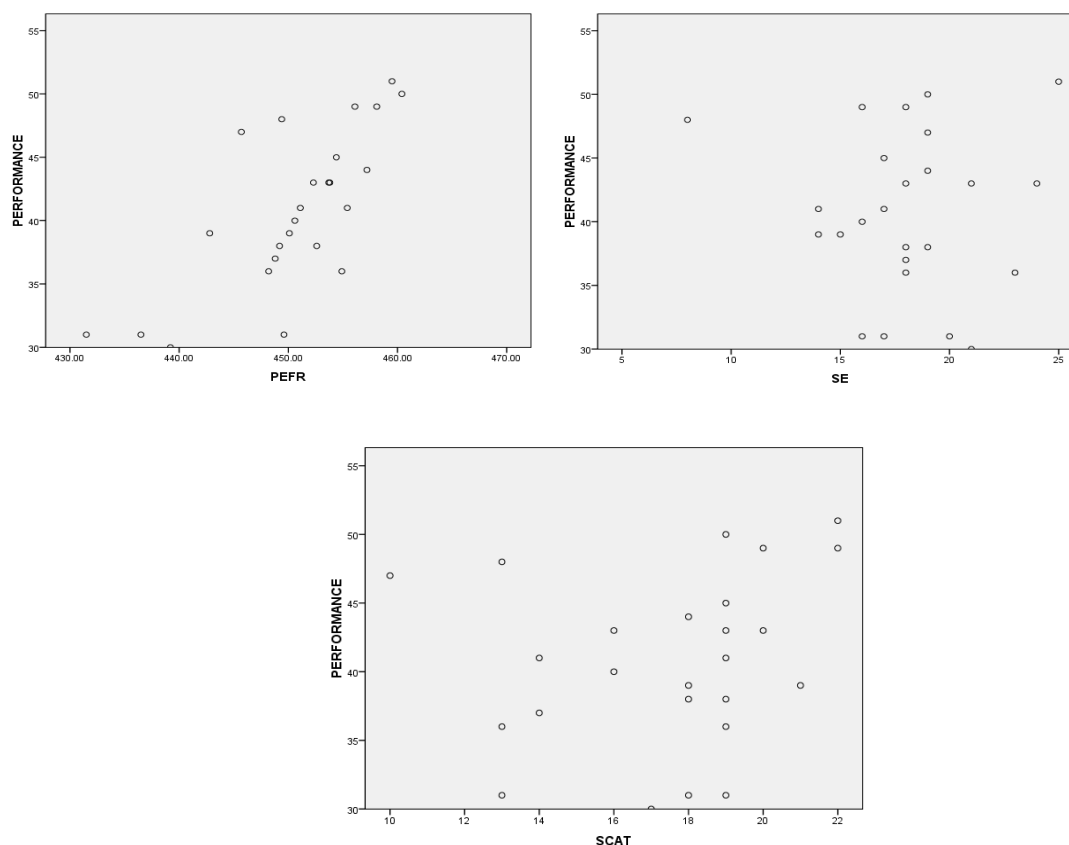
	Mean	Std. Deviation	N
PERFORMANCE	40.80	6.27	25
AGE	24.68	3.17	25
SPEED	7.53	.42	25
PU	6.16	1.88	25
SU	33.96	4.69	25
ENDURANCE	108.92	6.05	25
SBJ	204.76	20.09	25
BREATH	59.48	4.84	25
VC	4311.7	427.30	25
PEFR	450.44	7.01	25
SE	18.00	3.48	25
SCAT	17.44	3.08	25

The table above represents the status of all Women Hockey Players on their playing ability and physical, physiological and psychological variables. The chapman ball control test clearly shows that the playing ability of Women Hockey Players was observed 40.80 ± 6.27 . The variables that came under physical aspect i.e. speed, pull-up, sit-up, endurance and leg power have shown the status as 7.53 ± 0.42 , 6.16 ± 1.88 , 33.96 ± 4.69 , 108.92 ± 6.05 and 204.76 ± 20.09 respectively. Under physiological variables, the breath holding capacity showed its status as 59.48 ± 4.84 , vital capacity represented 4311.7 ± 427.30 and peak flow rate represented 450.44 ± 7.01 .

As far as psychological variables are concerned, their status in term of self-esteem was observed as 18.00 ± 3.48 and for competitive anxiety, it was 17.44 ± 3.08

Graphical Representation of Correlation of Hockey Playing Ability with Selected Variables





Correlation

		SPEED	VC	PEFR	BREATH
PERFORMANCE	Pearson Correlation	-0.815**	0.733**	0.652**	0.457*
	Sig. (2-tailed)	0.00	0.00	0.002	0.02
	N	25	25	25	25

The correlation analysis proved that playing ability of women hockey players is highly correlated to speed, vital capacity, peak flow rate and breath holding capacity. The correlation value obtained for speed was found to be -0.815 which was significantly correlated with the performance at 0.01 level of significance. Vital capacity was also found highly significant at 0.01 level of significance with pearson value of 0.733. Peak flow rate ability was also manifested significant result at 0.01 level of significance with pearson correlation value of 0.652. However, in the case of breath holding capacity, the correlation was found significant at 5% level of significance. Rest of the variables such as cardiovascular endurance, arm strength, abdominal endurance, leg power, self-esteem and competitive anxiety were not significantly correlated with the playing ability of Women Hockey Players.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of objectives of the study and result obtained after statistical application, it was concluded that the physical and physiological capabilities of Women Hockey Players was of above average standard. However, their psychological variables were lying in the range of average standard. Besides, there is a direct correlation of speed of Women Hockey Players

with their playing ability. Therefore, it was recommended that speed ability is the factor of utmost importance as far as development of hockey playing ability is concerned. Subsequently, another recommendation made that same research need to be conducted in other sports and/or different gender. Furthermore, various other variables like anthropometrical, mechanical and leftover variables in the category of physical, physiological and psychological aspects can be studied. They may have role in the performance of women hockey players. Similar study can also be conducted on different age groups as result may vary in different cases.

References

- Anand BK. (1991). Yoga and medical sciences. *Indian J PhysioPharmacol*, 35(2): 84 – 87.
- Bera, T.K., Rajapurkar, M.V., &Ganguly, S.K. (1990) Effect of yoga training on body density in school going boys. *NIS Scientific Journal*, 13,2 23-35.
- Bernardi L, Porta C, Spicuzza L, Bellwon J, Spadacini G. (2002). Slow breathing increases arterial baroreceptor sensitivity in patients with chronic heart failure circulation, 105-143.
- Bharadwaj, I., Kulshrestha, A. &Anuja.(2013). Effect of Yogic Intervention on Blood pressure and Alpha- EEG level of working women. *Indian Journal of Traditional Knowledge*, Vol. 12 (3), pp. 542-546.
- Bhargava R, Gogate MG and Macarenhas JF.(1988). Autonomic responses to breath holding and its variations following pranayama. *Indian J PhysiolPharmacol*, 32(4);257–264.
- Bhutkar, Pratima M., Bhutkar, Milind V., Taware, Govind B., Doijad, Vinayak and Doddamani, B.R.(2008). Effect of Suryanamaskar Practice on Cardio-respiratory Fitness Parameters: A Pilot Study. *Al ame en j med sci.*, 1 (2), 1 2 6 -1 2 9.
- Chowdhary, B. &Ghosh, B. (2015).Effect of Six Months Surya Namaskar and Selected Asanas on Body Composition Variables of Under Graduate Female Students of Jangalmahal. *Online International Interdisciplinary Research Journal*, Vol. 5(5), pp. 458-464.
- Devasena, I. &Narhare, P. (2011).Effect of yoga on heart rate and blood pressure and its clinical significance. *International Journal of Biological & Medical Research*, Vol. 2(3), pp. 750-753.
- Dhaliwal, G. S., Bal, B. S., Singh, P. & Singh, D. (2014). Effects of 6-weeks Yogasana practice on physiological fitness status of university level girls. *International Journal of Physical Education, Fitness and Sports*, Vol. 3(2), pp. 43-51.
- Gadham, J., Sajja, S. &Rooha, V. (2015).Effect of yoga on obesity, hypertension and lipid profile. *International Journal of Research in Medical Sciences*, Vol. 3(5), pp. 1061-1065.
- Gharote, M.L. (1997). An evaluation of the effects of yogic treatment on obesity A report *Yoga Mimamsa . XXIX* 13-37.
- Gopal KS, Bhatnagar OP, Subramanian N, Nishith SD. (1973). Effect of yogasana and pranayamas on blood pressure, pulse rate and some respiratory functions. *Indian J PhysiolPharmacol*, 17(3); 273–276.
- Gore, M.M. (1984). *Anatomy and pychology of yoga practices: lonavalakaivalayadham*, P-2.
- Gore, M.M. (1984). *Anatomy and pychology of yoga practices: lonavalakaivalayadham*, P-2.
- Karak, K., Jana, M. & Manna, A. (2015).Effect of yoga on Anthropometrical and physiological variables of college going students. *International Journal of Physical Education, Sports and Health*, Vol. 2(2), pp. 245-249.
- Khanam AA. Sachdeva V, Gulera R, Deepak KK. (1996). Study of pulmonary and automatic functions of Asthma patients after yoga training. *Indian J PhysiolPharmacol*, 40(1):318-321.

- Khanam AA, Sachdeva V, Gulera R, Deepak KK. (1996). Study of pulmonary and automatic functions of Asthma patients after yoga training. *Indian J PhysiolPharmacol*, 40(1):318-321.
- Khare K.C. and Kawathekar, G (2002). Lean Body Mass And Lipid Profile In Healthy Person Practicing Yoga, *Yoga Mimamsa XXXIV*. 123-128.
- Khosravi, H., Kazemzadeh, Y. & Sedaghat, S. (2015). The Effect of Yoga practice on Muscle Fitness and Body Composition in Middle age Women with Overweight. *Biological Forum – An International Journal*, Vol. 7(1), pp. 1924-1928.
- Kishore, R. & Pal, R. (2014). Effects of yogic practice in certain cardio respiratory parameters on overweight postmenopausal women. *Al Ameen Journal of Medicine Science*, Vol. 7(4), pp. 316-321.
- Lakshmi kanthan E, Alagesan R, Thanikanchalam S. (1979). Term effects of yoga on hypertension and/or coronary artery disease. *Jassoc physicians India*; 27:1055-1058.
- Lakshmi kanthan E, Alagesan R, Thanikanchalam S. (1979). Term effects of yoga on hypertension and/or coronary artery disease. *Jassoc physicians India*; 27:1055-1058.
- Lolage, R. S., & Bera, T. K. (2002). Effect of Pranayama on cardiovascular Endurance in Kho-Kho Players. *Yoga-Mimamsa*, 34(1), 13-26.
- Lyengar BKS. (1968). *Light of yoga*, George Allen and Unwin Ltd, London, 243-245.
- Lyengar BKS. (1968). *Light of yoga*, George Allen and Unwin Ltd, London, 243-245.
- Madhavi S. Raju, et al. (1985). Effect Of Yogic Exercises On Lean Body Mass, Skin Fold Thickness & Body Weight. *Journal of Association of Physicians of India* 33, 465-466.
- Madhavi S. Raju, et al. (1985). Effect Of Yogic Exercises On Lean Body Mass, Skin Fold Thickness & Body Weight. *Journal of Association of Physicians of India* 33, 465-466.
- Mahajan AS, Reddy Sachedva U. (1999). Lipid profiles of coronary risk subjects following yogic life style intervention. *Indian Heart*, 51, 37.
- Mahajan AS, Reddy Sachedva U. (1999). Lipid profiles of coronary risk subjects following yogic life style intervention. *Indian Heart*, 51, 37.
- Malhotra, V. & Tandon, O. P. (2005). A study of the effect of individual Asanas on blood pressure. *Indian Journal of Traditional Knowledge*, Vol. 4(4), pp. 367-372.
- Manikandan, S. (2014). Influence of yogic practices on selected cardio respiratory system and body composition variables. *International Journal of World Research*, Vol. 1(12), pp. 14-19.
- Marger, C. F., Hicklin, L. K. & Garner, D. P. (2016). Effects of Bikram Yoga on Body Composition, Blood Pressure, and Sleep Patterns in Adult Practitioners, *Journal of Basic & Applied Sciences*, Vol. 12, pp. 75-80.
- Narayani, U. & Raj, R. L. S. P. (2010). Effect of Aerobic Training on Percentage of Body Fat, Total Cholesterol and HDL-C among Obese Women. *World Journal of Sport Sciences*, Vol. 3(1), pp. 33-36.
- Pradhan, B., & Nagendra, H. (2010). Immediate effect of two yoga-based relaxation techniques on attention in children. *Int J Yoga*, 3(2), 67-69.
- Raja, S. C. (2014). Composition measures and high density lipoproteins among obese women. *Academic Sports Scholar*, Vol. 3(11), pp. 1-7.
- Raja, S. C. (2015). Impact of yogic practices on selected body composition measures and high density lipoproteins among obese boys. *PARIPEX-Indian Journal of Research*, Vol. 4(1), pp. 145-148.
- Rajendran, K. (2014). Effect of Yoga on Cardio Respiratory System and Body Composition of School Going Children. *International Journal of Recent Research and Applied Studies*, Vol. 1(3(20)) pp. 81-84.

- Raju P. S. et al. (1997). Influence of intensive yoga training on physiological changes in 6 adult women: a case report. *Journal of Alternative and Complementary Medicine*.3(3), 291-5.
- S harma, M., Meena, M., Sharma, R., Meena, C. B., Meena, P. D. & Chauhan, N. (2013). Study on the effect of yoga (Yogasans, Pranayam and meditation) training on hypertension. *Ind. J. Sci. Res. and Tech*, vol. 1(2), pp. 89-95.
- Santha Joseph, Sridhar K, Patel SKB, Kumaria ML, Selvamurthy W, Joseph NT et al. (1981). Study of some physiological and biochemical parameters in subjects undergoing yoga training. *Indian J medicine res*, 74; 120 – 124.
- Satyanarayana, P., Benerji, G. V., Dulala, R. K., Meka, F. B. & Kummari, N. R. (2013). Effect of Yoga on Heart Rate, Blood Pressure, Body Mass Index. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, Vol. 8(2), pp. 36-39.
- Selvamurthy W, Nayar HS, Joseph NT, Joseph S. (1983). Physiological effects of yogic practice. *Nimhans journal*, 71 – 80.
- Shenbagavalli, A. (2005). Cardio vascular endurance and body fat percentage in relation to the practice of selected yogic exercises in students. *Yoga Mimamsa*, 37(1&2), 45-51.
- Tundwala, V., Gupta, R. P., Kumar, S., Singh, V. B., Sandeep, B. R., Dayal, P. & Prakash, P. (2012). A study on effect of yoga and various asanas on obesity, hypertension and dyslipidemia. *International journal of basic and applied medical sciences*, Vol. 2 (1), pp. 93-98.
- Udupa KN, Singh RH. (1972). The scientific basis of yoga. *J Am Med Assn*, 220(10): 1365.
- Vijayalakshmi P, Madan Mohan, Bhavanani AB, AsmitaPatil, Kumar Babu P. (2004). Modulation of stress induced by isometric hand grip test in hypertensive patients following yogic relaxation training. *Indian J PhysiolPharmacol*, 48(1): 59-60.
- Yadav, H. K. & Singh, M. K. (2014). Effect of Surya namaskara on selected physical and physiological variables of college students. *Golden Research Thoughts*, Vol. 3(12), pp. 1-5.
- Yogendra, (1971). *yoga physical education*. Bombay : the yoga institution Santa, p-21.
- Zorofi, F., Hojjati, Z. & Elmiyeh, A. (2013). Effect of Yoga Exercises on the Body Composition of Fasting Females. *Journal of Fasting Health*, Vol. 1(2), pp. 70-78.
- <https://pyfp.org/doc/fitnessgram/fg-07-muscular.pdf>