EFFECT OF 6 WEEKS YOGASANA PRACTICES ON BALANCE ABILITY OF SCHOOL GOING CHILDREN

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ABSTRACT

*Objective: The purpose of the study was to find out the effect of 6 weeks of yogasana practices on balance ability of school going children. **Methods:** For the purpose of this study 20 School going children selected from School of Varanasi was selected randomly as the subject of the study. The age of subjects was ranged between 12 to 16 years. For the study the pre test –post test randomized group design was used and involving 20 subjects who were grounded randomly into two group i.e., experimental and control group each group consist 10 subjects. Static balance was measured by using stork stand test and the score were recorded in seconds. Dynamic balance was measured by modified Bass test and the score were recorded in points. The experiment group was taken 6 weeks Yogasana practices and control group was performed our daily activity with any specific training program. **Statistical Procedure:** The data which was obtained from subjects was analyzed statistically by the analysis of covariance (ANCOVA) technique. The obtained "F" ratio was tested at .05 level of significance. **Results & Conclusion:** The results of the study showed that there is significant effect of 6 weeks of Yogasana practices on Balance ability of school going children. It is concluded that Yogasana Practices have better effect for improvement of balance ability of school going children.*

Keywords: Static & Dynamic balance, Yogasana Practice.

Introduction

Swami Satyananda Saraswati *says that "Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow."* (Saraswati, 1996)

Patanjali defines Yoga as the suspension of all the functions of the mind. Yoga is the Science of sciences that disentangles the individual soul from the phenomenal world of sense-objects and links with the Absolute, whose inherent attributes are Infinite Bliss, Supreme Peace, Infinite Knowledge and unbroken Joy. Yoga is that state of Absolute Peace wherein there is neither imagination nor thought. Yoga is control of mind and its modifications. Yoga teaches us how to control the modifications of the mind and attain liberation. It teaches us how to transmute the unregenerate nature and attain the state of Divinity. It is the complete suppression of the tendency of the mind to transform itself into objects, thoughts, etc. Yoga kills all sorts of pain, misery and tribulation. It gives you freedom from the round of births and deaths, with its concomitant evils of disease, old age, etc., and bestows upon you all the Divine Powers and final liberation through super-intutional knowledge. (Sivananda, 1997)

Yoga is the science of right living and, as such, is intended to be incorporated in daily life. It works on all aspects of the person: the physical, vital, mental, emotional, psychic and spiritual. The science of yoga begins to work on the outermost aspect of the personality, the physical body, which for most people is a practical and familiar starting point. When imbalance is experienced at this level, the organs, muscles and nerves no longer function in harmony, rather they act in opposition to each other. For instance, the endocrine system might become irregular and the efficiency of the nervous system decrease to such an extent that a disease will manifest. Yoga aims at bringing

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the different bodily functions into perfect coordination so that they work for the good of the whole body. (Saraswati, 1996)

According to Patanjali, the aim of yoga is to calm the chaos of conflicting impulses and thoughts. The mind, which is responsible for our thoughts and impulses, is naturally inclined to asmita or egoism. From this spring the prejudice and biases which lead to pain and distress in our daily lives. Yogic science centres the intelligence in two areas: the heart and the head. The intelligence of the heart, sometimes also called the "root mind", is the actual agent of ahankara or false pride, which disturbs the intelligence of the head, causing fluctuations in the body and mind. Patanjali Describes these afflictions as: vyadhi or physical ailments, styana or the reluctance to work, samshaya or doubt, pramadha or indifference, alasya or laziness, avirati or the desire for sensual satisfaction, bharanti darshana or false knowledge, alabdha bhumikatva or indisposition, angamejaytatva or unsteadiness in the body, and lastly , shvasa-prashvasa or unsteady respiration. Only yoga eradicates these afflictions, and disciplines the mind, emotions, intellect and reason. (Iyengar, 2011)

Yoga can help promote overall fitness by both stretching and toning virtually all the muscles in the body. Yoga exercises can help increase range of motion in joints and help protect muscles from being injured during sports and athletic activities. They can also help to lengthen and restore muscles after exercise. Yoga postures can help improve circulation and eliminate toxic waste substances from the body. They can help promote optimum functioning of the internal organs by helping to massage and tone them. Yoga postures can help open the area of the pelvis and organs of reproduction that are housed there. Yoga practices can help bring increased circulation, muscular control, and awareness to a man's sexual region, thus promoting enhanced sexual enjoyment. The breathing practices of yoga can help improve lung capacity and posture, and harmonize body and mind. The meditation practices of yoga can help still the mind and bring about greater inner clarity, peace of mind, and self-understanding and acceptance. This can help lead to greater emotional awareness and stability. For those men seeking spiritual enlightenment, yoga has a variety of techniques that can help support and guide you on your path. (Claire, 2004)

Balance ability is very important component of the body. Every activity is required balance ability because without balance we can performed any type of activity. Balance is the ability to keep the body's center of gravity within the base of support when one is maintaining a static position, performing voluntary movements, or reacting to external disturbances. Postural stability and equilibrium are terms often used to refer to the construct of balance. Clinically, balance is commonly thought of as static or dynamic. Static balance is the ability to maintain the center of gravity within the supporting base while standing or sitting, whereas dynamic balance refers to maintaining an upright position while the center of gravity and base of support are moving and the center of gravity is moving outside of the supporting base (e.g., walking). Reactive balance is the ability to compensate and recover from perturbations while standing or walking (e.g., maintaining balance after tripping over an obstacle). Functional balance refers to the ability to perform daily movement tasks requiring balance such as picking up an object from the floor, dressing, and turning to look at something behind you. (Vivian H. Heyward & Ann L.Gibson, 2014)

Methodology

For the purpose of this study 20 School going children selected from School of Varanasi was selected randomly as the subject of the study. The age of subjects was ranged between 12 to 16 years. For the study the pre test –post test randomized group design was used and involving 20 subjects who were grounded randomly into two group i.e., experimental and control group each group consist 10 subjects.

Control Group	**O**		**O**
Yogasana Practice Group	**O**	**T**	**O**

Static balance was measured by using stork stand test and the score were recorded in seconds. Dynamic balance was measured by modified Bass test and the score were recorded in points. The experiment group was taken 6 weeks Yogasana practices and control group was performed our daily activity with any specific training program. In this training, Suryanamaskar, Virabhadrasana, Shavasana, Halasana, Vrksasana, Matsyasana, Virabhadrasana, Bhujangasana, Dhanurasana, Makarasana, Gomukhasana, Ardhamatsendrasana, Utthita Trikonasana, Paschimotanasana, Padmasana, Tadasana and Garudasana performed by subjects with the help of experts. The data which was obtained from subjects was analyzed statistically by the analysis of covariance (ANCOVA) technique. The obtained "F" ratio was tested at .05 level of significance.

Findings

Table 1: Descriptive statistics analysis of Control and Experimental group in relation to Static Balance

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pre Test	Control	10	5.9000	0.99443	.31447	4.00	7.00
	Experimental	10	6.8000	1.03280	.32660	5.00	8.00
	Total	20	6.3500	1.08942	.24360	4.00	8.00
Post Test	Control	10	6.0000	1.24722	.39441	4.00	8.00
	Experimental	10	9.1000	0.56765	.17951	8.00	10.00
	Total	20	7.5500	1.84890	.41343	4.00	10.00

Table 1 showed that the mean and standard deviations of static balance of experimental and control group. The observed mean and standard deviation of Pre test of static balance of control group 5.90 & 0.99 and experimental group 6.80 & 1.03. The observed mean and standard deviation of Post test of Static balance of control group 6.00 & 1.24 and experimental group 9.10 & 0.56 are respectively. (Chan, Data Presentation , 2003)

The data are further analyzed with the help of analysis of variance (ANOVA) to find out of significance difference between statistical means of pre test and post test of Control group and experimental group in relation to static balance.

Table 2: Analysis of Variance of Comparison of means of Control and Experimental group in relation to Static Balance

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	4.050	1	4.050	3.941	.063
	Within Groups	18.500	18	1.028		
	Total	22.550	19			
Post Test	Between Groups	48.050	1	48.050	51.178	.000
	Within Groups	16.900	18	.939		
	Total	64.950	19			

Table 2 indicate that, the pre test obtained 'F' value of 3.941 is found to be insignificant at .05 level of significance in relation to static balance, which is clearly indicated that there are no significant difference and explain the random assignment of subjects to control and experimental group is quite successful. In relation to post test, significant difference is found between control and experimental group pertaining to static balance, since obtained 'F' value of 51.178 is found significant at .05 level of significance. (Chan, Quantitative data Parametric & Non Parametric Tests, 2003)

Table 3: Adjusted Post test means of Control and Experimental group in relation to static balance

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	6.272[a]	.257	5.730	6.815
Experimental	8.828[a]	.257	8.285	9.370

From the table 3, it is revealed that the adjusted post test mean of control group is 6.272 with the standard error of 0.257 and adjusted post test mean of experimental group 8.828 with the standard error of 0.257. The data are analyzed and the results pertaining to Analysis of Covariance (ANCOVA) between control and experimental group of school going children in relation to static balance for pre test-post test respectively. (Wayne W. Daniel & Chad L. Cross, 2013)

Table 4: Analysis of Covariance (ANCOVA) of Comparison of Adjusted post test means of control and experimental group in relation to static balance

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Contrast	26.781	1	26.781	44.990	.000	.726	44.990	1.000
Error	10.119	17	.595					

Table 4 revealed that the obtained 'F' value of 44.990 is found significant at .05 level of significance. This result indicates that the Yogasana treatment is given to subjects has increase static balance of school going children. (Mann, 2010)

The partial Eta Squared value (0.726) indicated that 72.6% effects of Yogasana training on static balance. (Triola, 2015)

Figure 1: The Graphical representation of mean plot of Control and Experimental group in relation to Static Balance
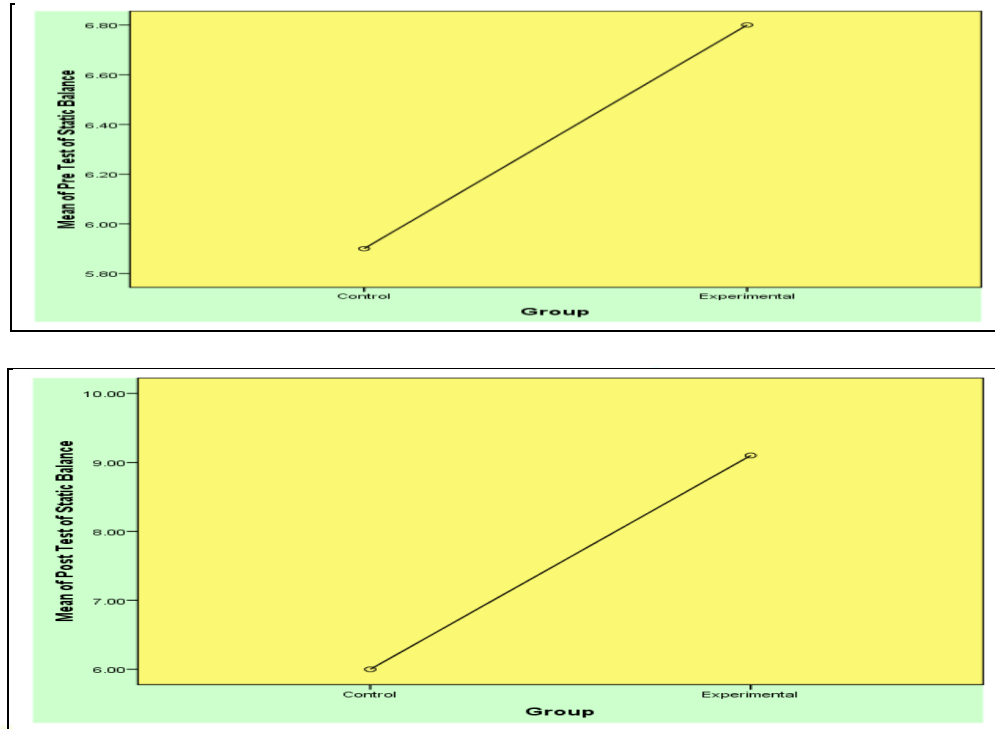
Table 5: Descriptive statistics analysis of Control and Experimental group in relation to Dynamic Balance

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pre Test	Control	10	62.8000	9.93087	3.14042	48.00	78.00
	Experimental	10	58.5000	9.89107	3.12783	45.00	73.00
	Total	20	60.6500	9.89564	2.21273	45.00	78.00
Post Test	Control	10	63.3000	10.19858	3.22508	46.00	79.00
	Experimental	10	65.4000	10.29779	3.25645	52.00	79.00
	Total	20	64.3500	10.03297	2.24344	46.00	79.00

Table 5 showed that the mean and standard deviations of dynamic balance of experimental and control group. The observed mean and standard deviation of Pre test of dynamic balance of control group 62.80 & 9.93 and experimental group 58.50 & 9.89. The observed mean and standard deviation of Post test of dynamic balance of control group 63.30 & 10.19 and experimental group 65.40 & 10.29 are respectively. (Chan, Data Presentation , 2003)

The data are further analyzed with the help of analysis of variance (ANOVA) to find out of significance difference between statistical means of pre test and post test of Control group and experimental group in relation to dynamic balance.

Table 6: Analysis of Variance of Comparison of means of Control and Experimental group in relation to Dynamic Balance

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	92.450	1	92.450	.941	.345
	Within Groups	1768.100	18	98.228		
	Total	1860.550	19			
Post Test	Between Groups	22.050	1	22.050	.210	.652
	Within Groups	1890.500	18	105.028		
	Total	1912.550	19			

Table 6 indicate that, the pre test obtained 'F' value of 0.941 is found to be insignificant at .05 level of significance in relation to dynamic balance, which is clearly indicated that there are no significant difference and

explain the random assignment of subjects to control and experimental group is quite successful. In relation to post test, insignificant difference is found between control and experimental group pertaining to dynamic balance, since obtained 'F' value of 0.210 is found insignificant at .05 level of significance. (Chan, Quantitative data Parametric & Non Parametric Tests, 2003)

Table 7: Adjusted Post test means of Control and Experimental group in relation to dynamic balance

| Group | Mean | Std. Error | 95% Confidence Interval | |
			Lower Bound	Upper Bound
Control	61.115[a]	.626	59.794	62.436
Experimental	67.585[a]	.626	66.264	68.906

From the table 7, it is revealed that the adjusted post test mean of control group is 61.115 with the standard error of 0.626 and adjusted post test mean of experimental group 67.585 with the standard error of 0.626. The data are analyzed and the results pertaining to Analysis of Covariance (ANCOVA) between control and experimental group of school going children in relation to dynamic balance for pre test-post test respectively. (Wayne W. Daniel & Chad L. Cross, 2013)

Table 8: Analysis of Covariance (ANCOVA) of Comparison of Adjusted post test means of control and experimental group in relation to dynamic balance

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Contrast	198.862	1	198.862	52.058	.000	.754	52.058	1.000
Error	64.941	17	3.820					

Table 8 revealed that the obtained 'F' value of 52.058 is found significant at .05 level of significance. This result indicates that the Yogasana treatment is given to subjects has increase dynamic balance of school going children. (Mann, 2010)

The partial Eta Squared value (0.754) indicated that 75.4% effects of Yogasana training on dynamic balance. (Triola, 2015)

Figure 2: The Graphical representation of mean plot of Control and Experimental group in relation to Dynamic Balance
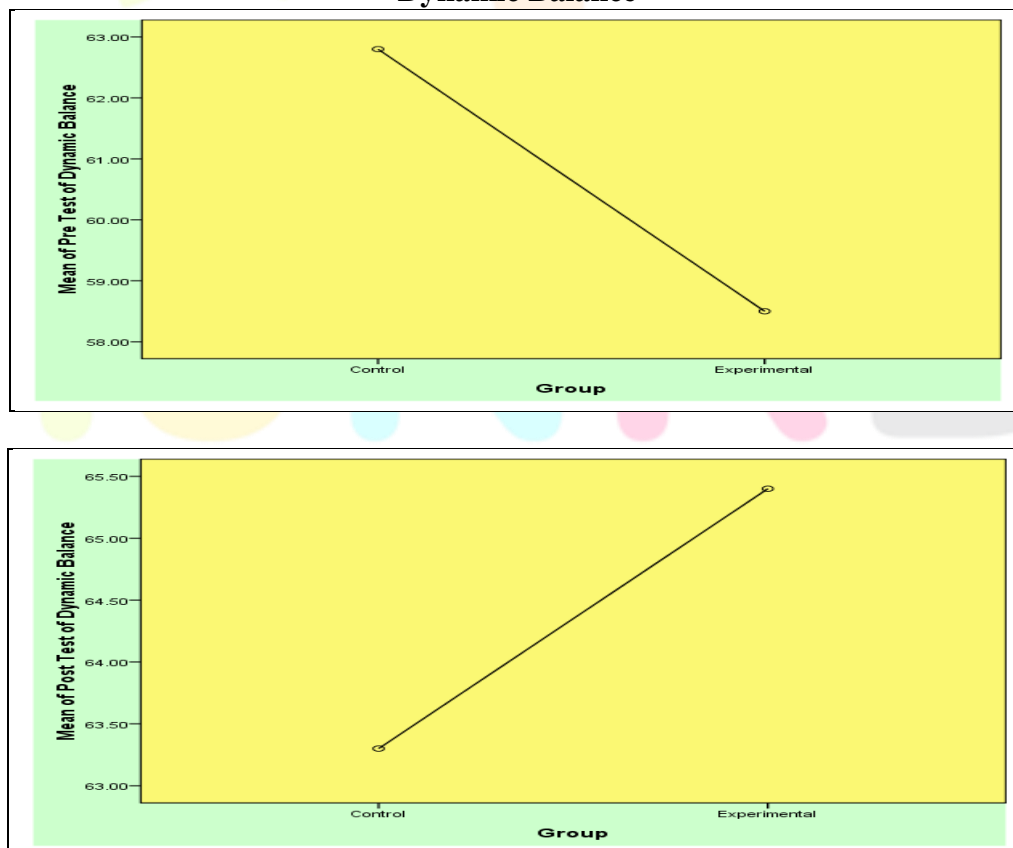
Discussion of Findings

Balance is a complex construct involving multiple biomechanical, neurological and environmental systems. Balance has moved from reflex and hierarchical perspectives to dynamic systems function and interact to achieve balance and postural control. The reflex model assumes that sensory input controls motor output; the hierarchical model is based on control of movement by higher brain centers (e.g., cortex and midbrain). The dynamic systems model describes balance control as adaptive and functional, providing multiple solutions for accomplishing a movement goal. The visual, somatosensory (proprioception), and vestibular (inner ear) systems interact to maintain balance. The visual system provides information about the body's location relative to its environment; the somatosensory system discerns position and movements of body parts; the vestibular system provides information about head position in relation to gravity and senses how fast and in what direction the head is accelerating. Balance performance is affected by muscle strength, power, and flexibility, resistance training and stretching programs may be useful for maintaining and improving balance. In addition to increasing strength and range of motion, Pilates, yoga, tai chi, dance, walking, and combinations of exercise modes may be suitable activities for improving balance. (Vivian H. Heyward & Ann L.Gibson, 2014)

The result of the study indicates that the experimental group had significant improvement on static and dynamic balance. The finding of the study suggest that these gains could be related to the practice of some yoga postures, such as Suryanamaskar, Virabhadrasana, Shavasana, Halasana, Vrksasana, Matsyasana, Virabhadrasana, Dhanurasana, Gomukhasana, Utthita Trikonasana, Tadasana and Garudasana. The finding of this study suggests positive improvements on the static and dynamic balance; the subjects also reported positive feeling related to yoga practice. The present findings of the study is confirmed by the studies conducted related to study such as (Vishvanath Pise, Balaram Pradhan & Manmath Gharote, Aug 2018), (Julia C Folleto, Keila RG Pereira & Nadia Cristina Valentini, Jul-Dec 2016), (Betsy Donahoe Fillmore & Ethan Grant, Oct 2019) and (R Ramakrishnan & S Sethu, 2019).

Conclusions

It is concluded that there is significant effect of 6 weeks of Yogasana practices on Balance ability of School going children.

Practical Applications

The results of the study provide insight into yogasana practices program for improvement of static and dynamic ability of school going children. The balance ability is very important motor fitness components of the human body while performing physical activity. This research paper provides better knowledge for improvement of balance ability through Yogasana practice.

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