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Effect of Asanas and Pranayama on Height of Males School Going Children

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Abstract

Yoga, an ancient culture of Indian heritage, regular practice leads to ideal physical, mental, intellectual, and spiritual health. Asana and Pranayama are the yogic practices. These have a number of beneficial physiological effects on various systems in our body. The present work was taken up as data reported on the effect of Asanas and Pranayama on height of males school going children.

To know whether there is any change in height in the subjects practicing Asanas, Pranayama & combination of Asana Pranayama and with that of subjects not practicing any type of yoga.

120 male student volunteers from Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar New Delhi-110059, India, of age between 8 to 10 years were selected. Subjects were equally assigned to the four groups by using random sampling procedure i.e. three experimental groups and one control group. The experimental Group A was administered Asanas (30 subjects), Group B was administered Pranayama(30 subjects) and Group C was administered combination of Asana Pranayama(30 subjects), and Group D control group(30 subjects) was given no training of an experimental period of twelve weeks. They practiced Asanas and pranayama for 45 minutes, six days a week and Sunday has been observed as weekly off. The control group consisted of age and sex matched 30 students. Pick flow rate was recorded to litter per minute with the help of peak flow meter.

Results: Significant improvement was not found in Height as a result of the experimental treatment in all the three experimental groups.

Increase heights of children are a natural process and depending on heredity and some of other factor. May be due to this reason, there is no Significant improvement was not found in height.

Key words: Asana, Pranayama, and Heights.

Introduction

"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 tomorrow."

Swami Satyananda Saraswati

The world yoga means 'unity' or 'oneness' and is derived from the Sanskrit word Yuj which means 'to join'. This unity or joining is described in spiritual terms as the union of the individual consciousness with the universal consciousness. On a more practical level, yoga is a means of balancing and harmonizing the body, mind and emotions. This is done through the practice of Asana, Pranayama, Mudra, Bandha, Shatkarma and Meditation, and must be achieved before union can take place with the higher reality (Swami Satyananda Saraswati, 2004). The restraint of the mind-stuff from taking various forms is yoga (Swami Vivekananda's translation) or Yoga is the control of thought-waves in the mind (as translated by Swami Prabhavananda of Sri Ramkrsana Math). The Maharsi further observes:-"thereafter the soul abides in it's real self". In other words, yoga lies in being one's real self.

Yogic practices, an ancient culture of Indian heritage, have led to ideal physical, mental, intellectual, and spiritual health. Yoga has a number of beneficial physiological effects on various systemsin our body. Regular yogic practices have been shown to cause profound improvement(Subbalakshmi NK, Saxena SK, Urmimala, D'Souza UJA, 2005) in cardiorespiratory, thermoregulatory(Madanmohan, Sivasubramaniyan KM, Balakrishnan S, Gopalakrishnan M, Prakash ES, 2008) and psychologic functions in healthy individuals(Ray US, Mukhopadhyaya S, Purkayastha SS, Asnani V, Tomer OS, Prashad R,2001) . Yogic practices have been also found to be most useful in alleviating hypertension(Murugesan R, Govindarajulu N, Bera TK,2000), bronchial asthma (Sathyaprabha TN, Murthy H, Murthy BT,2001), diabetes mellitus(Telles S, Naveen KV,1997) and coronary artery disease(Manchanda SC, Narang R, Reddy KS, Sachdeva U, Prabhakaran D, Dharmanand S,2000) . A previous study has shown that there is significant increase in PEFR in pranayama practicing school children(Sivapriya DV, Subamalani S, Shyamala T.,2010). Combination of various type of Asanas, pranayama has also led to significant increase in hand grip strength , hand grip endurance , maximum expiratory pressure , maximum inspiratory pressure , forced expiratory volume, forced expiratory volume in first second and peak flow rat(Madanmohan, Lakshmi J, Kaviraja U, Ananda BB,2003). Fifteen days regular practice of different types of pranayama(Ankad RB, Balachandra AS, Herur A, Patil S, Chinagudi S, Shashikala GV,2011) and practice of asanas, pranayamas & suryanamaskara(Makwana K, Khirwadkar N, Gupta HC,1988) has led to increase in the mean breath holding time significantly alone with other parameters. There is a need to know the effect

of Asanas and Pranayama training alone on height, so that benefits, if any, could be obtained by its practice.

Objectives of the Study

- ❖ To study the effect of Asanas on Height.
- ❖ To study the effect of Pranayama on Height.
- ❖ To study the combination effect of Asana Pranayama on Height
- ❖ To compare the effect of Asanas and Pranayama and their combination on Height.
- ❖ To compare the three treatments and its effect on the Height.

Hypotheses

- ❖ H1 There will be significant effect of Asanas Practice on Height of school going children.
- ❖ H2 There will be significant effect of Pranayama Practice on Height of school going children.
- ❖ H3 There will be significant effect of Asana Pranayama Practice on Height of school going children.
- ❖ H4 There will not be any significant different between three treatment groups.

Selection of Subjects

One hundred twenty (120) school going boys were selected randomly as subjects in the age group of 8-10 years from Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar New Delhi-110059, India. The subjects were divided into three treatment groups and one control group using random method. Group A was allotted Asanas treatment group consisted of 30 subjects, Group B was allotted Pranayama treatment group consisted of 30 subjects, Group C was allotted combination of Asana Pranayama treatment group consisted of 30 subjects and Group D control group consisted of 30 subjects. The study was confined to 12 weeks of training programme.

Experimental Protocol

A period of twelve weeks in the month of August to November 2012, the climate condition was rainy and atmospheric temperature was varying from 25^0 C to 38^0 C. Experimental population of 90 subjects were assembled in Activity Hall at Muni International School, A-2/16-18, Mohan Garden, Uttam Nagar, New Delhi-110059, India. Experimental training was executed from 9:00 AM onwards for 45 minutes, for six days a week and Sunday has been observed as weekly off. Each subjects of the experimental group was ready to learn Asanas and Pranayamas. Group 'A' acts as Asanas Group, 'B' acts as Pranayama group, Group 'C' acts as Combination

of Asana and Pranayama group and Group 'D' acts as control group which did not participate in the training programme. The subjects of experimental group 'A' practiced Asana (Surya Namaskar, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalvhasana, Dhanurasana, Chakrasana, Ardha Matsyendrasana, Paschimottanasana, Vajrasana, Yogamudra, Standing kati chakrasana, Tadasana and Shavasana) and group 'B' practiced Pranayama (Anuloma Vilom and Bhastrika) and group 'C' practiced combination of Asana and Pranayama (Surya Namaskar, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalvhasana, Dhanurasana, Chakrasana, Ardha Matsyendrasana, Paschimottanasana, Vajrasana, Yogamudra, Standing kati chakrasana, Tadasana ,Shavasana, Anuloma Vilom pranayama and Bhastrika pranayama).

Preparation of Treatment Programme

For the purpose of the study "Effect of Asanas and Pranayama on Selected Anthropometric and Psycho-Physiological Variables of School Going Children" the training programme consisted of three experimental groups (one control group). Keeping in mind the basic philosophy behind practicing Yoga that is ***"Sthira Sukham Asanam"*** (Patanjali)**,** the deep rooted meaning that has been taken as a guide line while execution of a training no body has been forced to do on an above his capacity on the contrary it has been observed by research scholar improvement has taken place like students could able to attend better posture and sustain it. Even in case of pranayama the magnitude has been increased like retention and frequency of stroke.

Three experts Yoga trainer were involved to administer the training simultaneously to all three experimental groups. All the training groups were supervised by the scholar.

Tool Used

Height was recorded on centimeter (Cm) with the help of Gulick Tape.

Results

Table-1:

Descriptive Statistics of the Data Measured In the Post Testing Height

Treatment group	Mean	Std. Deviation	N
Asanas group	127.19	7.16	30
Pranayama group	125.85	8.76	30
Asana pranayama group	124.30	6.70	30
Control group	125.32	6.97	30
Total	125.66	7.42	120

Table no.1 indicates the values of descriptive statistics of the experimental Groups (Asanas Group, Pranayama Group, Asana Pranayama Group) & Control Group for anthropometric variable of height, which shows that the mean and S.D. values of Asanas Group, Pranayama Group, Asana Pranayama Group and the Control Group were found to be 127.19±7.16, 125.85±8.76, 124.30±6.70 and 125.32±6.97 respectively. For the total subject the mean and S.D. was 125.66 ±7.42.

Table-2:

Descriptive Statistics of the Data Measured In The Post-Testing After Adjustment With The Initial Difference Height

Treatment group	Mean	Std. Error	95% Confidence interval	
			Lower bound	Upper bound
Asanas group	125.7A	0.004	125.66	125.68
Pranayama group	125.7A	0.004	125.65	125.67
Asana pranayama group	125.7A	0.004	125.65	125.67
Control group	125.7A	0.004	125.66	125.67

(a) Covariates appearing in the model are evaluated at the following values: general height scale for children pre test = 125.66.

The mean and standard error of different post-testing Groups after adjustment have been shown in table 2. Which is for Asanas Group 125.7 & 0.004, Pranayama Group 125.7 & 0.004, Asana Pranayama Group 125.7 & 0.004 and Control Group 125.7 & 0.004.

Table-3: Ancova Table for The Post-Test Data On Height

Source	Sum of squares	Df	Mean square	F	Sig. (P-value)
Pre height scale for children	6559.22	1	6559.22	1.364E7	0.00
Treatment group	0.002	3	0.001	1.17	0.32
Error	0.05	115	0.00		
Corrected total	6559.28	119			

Table no. 3 indicates the values test of difference between the subject effects, which shows that there was a significant difference in pre test values of anthropometric variable of height for the four selected Groups, as the value was found to be 1.364E7 (E7 means that the numerical error which represent the point after 7digits), which proves to be the base of Analysis of Co-Variance. Also, a significant difference was found between the post test values of the experimental and Control Group as the value was found to be 1.17, which was insignificant at

0.05 level.

Table-4:

Post Hoc Comparison For The Group Means In Post-Measurement adjusted With The Initial Differences Height

(I) Treatment Group	(J) Treatment Group	Mean Difference (I-J)	Sig.a (P-Value)
Asanas Group	Pranayama Group	0.01	0.07
	Asana Pranayama Group	0.007	0.23
	Control Group	0.003	0.54
Pranayama Group	Asana Pranayama Group	-0.003	0.57
	Control Group	-0.007	0.24
Asana Pranayama Group	Control Group	-0.003	0.54

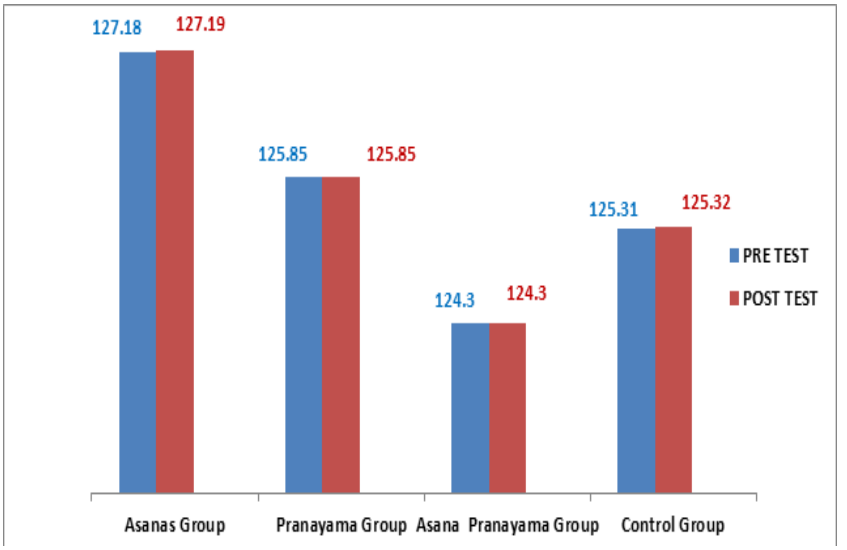
Based on estimated marginal means

Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

****The mean difference is significant at the 0.05 level.***

Table no. 4 indicates the values of post hoc test for the selected Groups for anthropometric variable of height, which shows that a significant difference was not found between the post test values of Asanas Group and the Control Group as the value was found to be 0.003which was not significant at 0.05 level, the post test values of Pranayama Group and the Control Group as the value was found to be 0.007 which was not significant at 0.05 level, Asana Pranayama Group and the Control Group as the value was found to be 0.003 which was not significant at 0.05 level.

Figure:-1 Comparison of the Means on Height of the Control Group and Three Experimental Groups



Interpretation of Findings

The values of the means and standard deviations for the data on height in the different Groups during the post testing is shown in the table 1. Further, adjusted means and standard deviation for the data on height of different Groups during post testing have been shown in table 2. This may be noted that these values are different from that of the unadjusted values shown in table 1. The advantage of using the ANCOVA is that the differences in the post-testing means are compensated for the initial difference in the scores. In other words, it may be said that the effect of covariate is eliminated in comparing the effectiveness of the treatment Groups during post-test. Table 3 shows the F –value for comparing the adjusted means of the four treatment Groups (Asanas Group, Pranayama Group, Asana Parnayama Group and Control Group) during post-testing. Since p-value for the F- statistic is 0.32 which is higher than 0.05, so of it is not significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on height in four treatment Groups may be accepted at 5%level. Since F-statistic is significant, post hoc comparison has been made for the adjusted means of the four treatment Groups which is shown in table 4. It may be noted here that p-value for the mean difference between Asanas Group and Control Group is 0.54, Pranayama Group and Control Group is 0.24, Asana Pranayama Group and Control Group is 0.54, all these p-values are higher than 0.05 and hence they are not significant at 5% level. Thus, the following conclusions can be drawn:

- There is no significant difference between the adjusted means of the Asanas

Group and Control Group on the data of anthropometric variable height during post-test.

- There is no significant difference between the adjusted means of the Pranayama Group and Control Group on the data of anthropometric variable height during post-test.
- There is no significant difference between the adjusted means of the Asana Pranayama Group and Control Group on the data of anthropometric variable height during post-test.

Hence, it may be inferred that Asanas, Pranayama and Asana Pranayama are not effective in increasing the height among the subjects in comparison to that of the Control Group.

Discussion

In the present study (Table 3) no significant difference was found in case of height after administrating the different training programme namely Asanas, Pranayama and combination of Asana Pranayama. The post hoc test (Table 4) revealed that height was not significantly improved in Asanas, Pranayama and combination of Asana Pranayama programme separately. Increase heights of children are a natural process and depending on heredity and some of other factor and all the four Groups (Asanas Group, Pranayama Group, Asana Pranayama Group and Control Group) subjects are increase in height naturally. May be due to this reason, there is no significant difference was found between the adjusted means of the Asanas Group and Control Group, Pranayama Group and Control Group, Asana Pranayama Group and Control Group on the data of anthropometric variable height during post-test. Therefore, proposed hypothesis has been rejected in case of height.

Conclusions

Significant improvement was not found in Height as a result of the experimental treatment in all the three experimental groups.

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