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Analysis of yogic practices and aerobic exercise on flexibility among children with down syndrome

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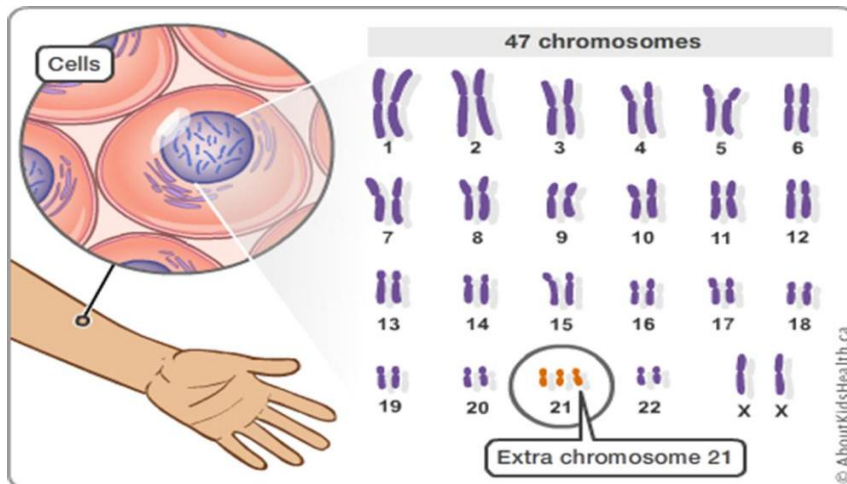
Abstract--Context: Analysis the impact of Yogic Practices and Aerobic Exercises on Flexibility among children with Down syndrome. Aim: This study aims to identify the effect of Yogic Practices and Aerobic Exercises on Flexibility among children with Down syndrome. Research Design : Random group design was used as research design. Material and Methods : 30 down syndrome boys age group 12 to 18 years have been selected for as final samples for further data collection process of the study. Subjects for study have been chosen from Anugraha special school Kanyakumari district, Tamil Nadu, India. The subjects were divided into three groups, namely Yogic practice group, Aerobic exercise group, and control group, each group consisting of 10 subjects. The subjects were divided into three groups, namely Yogic practice group, Aerobic exercise group, and control group, each group consisting of 10 subjects. The study was conducted on dependent variables such as flexibility. Statistical Analysis Used: Analysis the impact of Yogic Practices and Aerobic Exercises on Flexibility among children with Down syndrome were tested by Analysis of Co-variance (ANCOVA) would be applied to find out the significant improvement on them, the results were significant , the Schiff's post hoc test would be used to find out the paired mean differences. In all the cases the 0.05 level of confidence would be fixed was applied to determine whether two programs of training produced significantly different improvements in Flexibility after Twelve weeks of training. Results: To find out difference between experimental and control group of Flexibility. The 'F' value observed for the post-test on flexibility was 9.12. It was greater than the critical ratio of 3.35 for degree of freedom 2, 27at 0.05 level of confidence. Since the observed F-value on post test means among the groups namely yogic practice

group, aerobic exercise group and control group on flexibility was highly significant as the value was higher than the required critical value of 3.35. Thus the results obtained proved that the training on flexibility produced significantly different improvements among the experimental groups. The adjusted post-test means yogic practice group, aerobic exercise group and control group on flexibility of were 7.80, 7.53 and 5.63 respectively. The 'F' value observed for the adjusted post-test on speed was 19.75. It was greater than the critical ratio of 3.37 for degree of freedom 2, 26 at 0.05 level of confidence. Since the observed F-value on post test means among the groups namely yogic practice group, aerobic exercise group and control group on flexibility was highly significant as the value was higher than the required critical value of 3.37. Thus the results obtained proved that the training on speed produced significantly different improvements among the experimental groups. Conclusion: The results of the study indicate that the experimental groups namely yogic practice group and aerobic training group have significant improvement in Flexibility among children with Down syndrome (DS) after undergoing Yogic practices and Aerobic Exercise training for a period of Twelve weeks.

Keywords--yogic practice, aerobic exercise, flexibility, down syndrome.

Introduction

Down's syndrome (DS) was first described in detail by an English doctor, John Langdon Down, in 1866. DS is caused by an extra copy of chromosome number 21 inside each of the body's cells. It is a chromosomal accident, not caused by anything the parents have done before or during the pregnancy, and is only very rarely inherited. Our bodies are made up of billions of cells. Within each cell lie the fundamental units of inheritance, known as genes. These are bundled into packages called chromosomes, which can be seen under the microscope.



Yoga and Down syndrome

Yoga practice can improve Physical and Physiological variables and many other factors for children affected with Down syndrome, There is a tendency for children with Down syndrome to have weaker internal systems due to the genetic build up, through regular practice of yoga this can be improved. Breathing exercise are beneficial for these children as they improve the respiratory system strengthen the internal organs and thereby improving general health and development. These exercises gradually improve the central nervous system's functioning and impact motor and cognitive development- boosting body awareness, concentration and memory which have a positive effect on the child's everyday life. Joint dislocation is also quite commonly suffered by children with Down Syndrome, so working on body strength and core strength is fundamental. Therefore, asana such as plank pose are of great benefit in terms of strengthening the whole body.

Physical Activity for Down syndrome

Children with DS have cognitive, speech, and communication delays as well as consistent patterns of physical inactivity that, over extended periods, result in reduced health-related quality of life (Alhusaini et al., 2017; Bendak, 2018; Ulrich et al., 2011). Childhood obesity is a major health concern among children with DS, increasing their moderate to vigorous-intensity physical activity (MVPA) participation could help prevent obesity and promote lifelong health in this population (Whitt-Glover et al., 2006).The World Health Organization (2020) recommends that children should have a minimum of 60 minutes of (MVPA) daily. Unfortunately, meeting the recommended level of physical activity can be challenging for children with disabilities. Moreover, meeting the recommended daily MVPA becomes even more challenging for children with Down syndrome because they are at high risk for physical inactivity and obesity (Phillips & Holland, 2011). Therefore, strategies are needed to improve the quantity and quality of their physical activity.

Flexibility

Flexibility is defined as the range of motion of your joints or the ability of your joints to move freely. It also refers to the mobility of your muscles, which allows for more movement around the joints. Range of motion is the distance and direction your joints can move, while mobility is the ability to move without restriction.

Statement of the Problem

To achieve the purpose of the study was Analysis of Yogic Practices and Aerobic Exercise on Flexibility among Children with Down Syndrome

Methodology

The purpose of the study was to find out the effect of Yogic practice and Aerobic exercise on Flexibility of children with Down Syndrome. To achieve the purpose,

30 down syndrome boys age group 12 to 18 years had been randomly selected for as final samples for further data collection process of the study. Subjects for study had been chosen from Anugraha special schools in Kanyakumari district, Tamil Nadu, India. Based on the results of various tests conducted periodically by the said schools. The subjects were divided into three groups, namely Yogic practice group, Aerobic exercise group, and control group, each group consisting of 10 subjects.

Training programme

During the training period, training was given for both experimental groups. Group-I underwent yogic exercises, Group-II underwent aerobic exercises training and the Group-III acted as Control Group. The yogic practice and aerobic exercises had been given for twelve weeks. The training had been given 6 days in morning session of every week under the supervision of the investigator. The time duration was 30 to 45 minutes per class. All the subjects involved in the training programmes were questioned about their stature throughout the training period. None of them reported any injury. However muscles soreness and fatigue were reported in the early weeks which subsided later. The subjects were instructed not to begin the next exercise until they can complete the 30- second period of exercise. The exercise programme was individualized than group. Therefore the subjects were instructed to continue with the weekly designed programme with low-to moderate intensity of their own capacity. Flexibility was assessed by using sit and reach test.

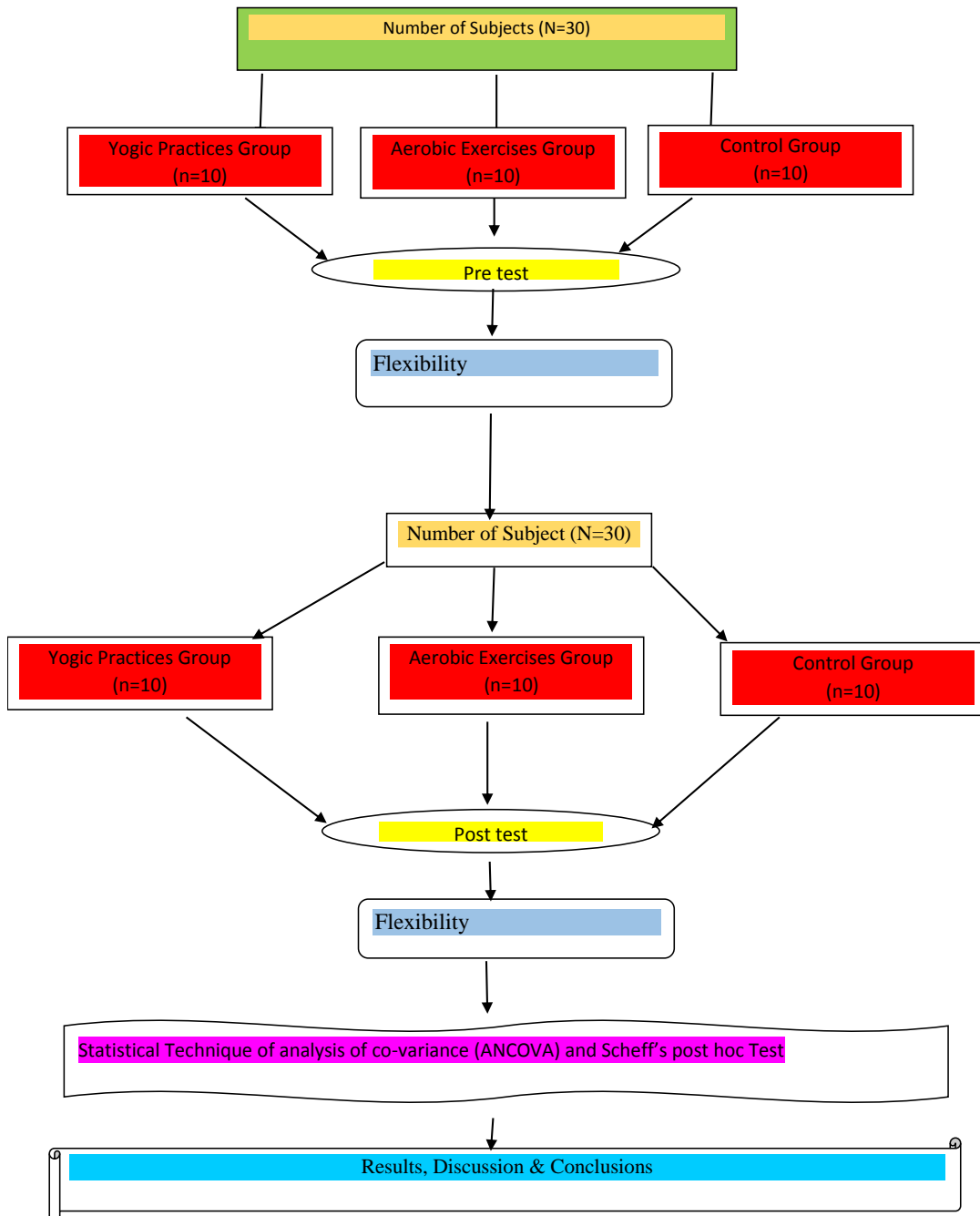
FLOW CHART SHOWING THE METHODOLOGY

Table-4.1
Analysis of Covariance among Yogic Practice Group, Aerobic Exercise Group and Control Group on Flexibility

	YPG	AEG	CG	SOV	SOS	df	MS	'F' ratio	Table Value
Pre Test Mean	6.60	6.60	6.40	Between	0.27	2	0.13	0.10	3.35
				Within	43.20	27	1.60		
Post Test Mean	7.86	7.59	5.52	Between	32.77	2	16.39	9.12*	3.35
				Within	48.55	27	1.80		
Adjusted Post Mean	7.80	7.53	5.63	Between	27.88	2	13.94	19.75*	3.37
				Within	18.35	26	0.71		

*Significant at 0.05 Level

Table-4.1 (a)
Scheffe's Post Hoc Values of Paired Mean Difference on Flexibility

YOGIC PRACTICE GROUP	AEROBIC EXERCISE GROUP	CONTROL GROUP	Mean Difference	C.V
7.80	7.53	-----	0.27	0.89
7.80	-----	5.63	2.17	
-----	7.53	5.63	1.90	

Data analysis

Table- 4.1 reveals that the obtained 'F' values on pre-test, post-test and adjusted post-test mean of yogic practice group, aerobic exercise group and control group. The pre-test means on flexibility of yogic practice group, aerobic exercise group and control group were 6.60, 6.60 and 6.40 respectively. The 'F' value observed for the pre-test on flexibility was 0.10. It failed to reach the critical ratio of 3.35 for degree of freedom 2, 27 at 0.05 level of confidence. Based on the results it was conformed that the mean differences among the groups of yogic practice group, aerobic exercise group and control group on flexibility before start of the respective treatments were found to be insignificant. The post-test means yogic practice group, aerobic exercise group and control group on flexibility of were 7.86, 7.59 and 5.52 respectively. The 'F' value observed for the post-test on flexibility was 9.12. It was greater than the critical ratio of 3.35 for degree of freedom 2, 27 at 0.05 level of confidence. Since the observed F-value on post test means among the groups namely yogic practice group, aerobic exercise group and control group on flexibility was highly significant as the value was higher than the required critical value of 3.35. Thus the results obtained proved that the training on flexibility produced significantly different improvements among the experimental groups. The adjusted post-test means yogic practice group, aerobic exercise group and control group on flexibility of were 7.80, 7.53 and 5.63

respectively. The 'F' value observed for the adjusted post-test on speed was 19.75. It was greater than the critical ratio of 3.37 for degree of freedom 2, 26 at 0.05 level of confidence. Since the observed F-value on post test means among the groups namely yogic practice group, aerobic exercise group and control group on flexibility was highly significant as the value was higher than the required critical value of 3.37. Thus the results obtained proved that the training on speed produced significantly different improvements among the experimental groups.

In order to find out the paired mean difference for the significance of adjusted means was tested by Scheffe's post hoc test. The results of the same are presented in the table 4.1 (a) shows the significant difference of paired adjusted post test means of yogic practice group, aerobic exercise group and control group on flexibility. The obtained mean differences between yogic practice group and aerobic exercise group, Yogic practice group and control group and aerobic exercise group and control group were 0.27, 2.17 and 1.90 respectively. The required confidence interval value was 0.89. Since the obtained mean differences between experimental groups and control group are greater than the obtained confidence interval value on flexibility, it was concluded that yogic practice group and aerobic exercise group improved the flexibility better than the Control group.

Results

The results reveal that the selected variables namely, flexibility, muscular endurance and body composition, were significantly improved due to the 12 weeks of Aerobic exercise at 0.05 level of significance and the hypothesis was accepted.

Discussions

The findings of the study proved that there was a significant difference between yogic practice group, Aerobic training group and control groups. Thus, Twelve weeks of tentative treatment increases in flexibility compared to control group. However there was significant difference between experimental groups on flexibility. The above findings are in consonance with the study conducted by Ramanathan, (2003) suggested that the immediate effect of mukha bhastrika practices improve the reaction time ability among the mentally challenged adolescents Young, (2017) concluded that the separate yoga practices increases the physiological performance for young down syndrome children Hawkins, (2012) conducted the study on the influence of a yoga exercise program for young adults with intellectual disabilities. From the of results of the study it indicated that percentage of exercise behavior and perceived exertion levels during yoga group exercise sharply increased with large effect sizes when compared to non-structured exercise sessions

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. The result of the study shows that yogic practices training increases flexibility when compare with control group.

2. The result of the study shows that Aerobic training increases flexibility when compare with control group.
3. Yogic practice group may have better effect to increases flexibility of down syndrome children.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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