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THE INFLUENCE OF THE IMPLEMENTATION OF FOOD YOGA AND PHYSICAL TRAINING ON PHYSIOLOGICAL AND ECHOCARDIOGRAPHY INDICATORS OF SCHOOLCHILDREN

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ABSTRACT

Determination of this study was to look the influence of the implementation of food, yoga and physical work out on physiological and echocardiography indicators of school children. As for the study methodology, twenty players (as experimental group) and 50 sedentary students (as control group) were at random allotted for this study. Twelve weeks food yogasanas and physical training has been used for the purpose of this study, which consists of different types of exercise and yogasans, and food supplements also used for the fulfill the various deficiency of the children. Heart Rate, Resting Pulse Rate, Resting Blood Pressure, Blood Oxygen level and Serum Hemoglobin were measured as physiological parameters. Serum Lipoprotein and Left Ventricular Ejection Fraction were measured as echocardiography parameters. 'T' test was applied to examine the existence of important difference amid experimental and control group and also invention out the noteworthy difference between pre and posttest. In conclusion significant changes were observed.

Keywords: *Blood Oxygen Level, Serum Hemoglobin Level, Lipoprotein (a), Left Ventricular Ejection Fraction, Exercise, Asanas.*

Introduction

Regular exercise, exercise and yoga throughout life can improve the quality of life and overcome many conditions of disability, as shown in many research studies. One method that can explain the increase in life expectation by workout and yoga movement can be the result of rhythm heart rate (RHR), blood pressure and heart problems. Poor diet and absence of workout lead to added than 300,000 deaths a year. Living inactive routine is measured a sovereign danger issue for heart disease.

Steady bodily movement can lessen both the underlying illness and the underlying causes of death, including diabetes prevention, high blood pressure and the development of obesity (Jennings *et al*., 1989). Inflammation of the physique is closely connected to the forthcoming danger of long-lasting illnesses and life-threatening situations. In addition, research shows that the protective benefits of physical activity can be enhanced by increasing the amount of while expended on exercise (Berg, 1963). In one topical study, people through very high levels of physical action and vitality needed a significantly lower peril of early passing (Nicol*et al*., 2006). Excessive use of asana, supports to lesser blood pressure, increases lung volume, recovers breathing and heart rate, increases flow and quality. Wholly body systems are enthused and measured through making yogasana. In fact nearby is an amplified rational clarity, and a better intellect of well-being. Feelings can be precise by the normal rehearsal of yogasanas. The practice of a few months of yogasanas stimulates the neuro hormonal pathway that brings health benefits.

Quality of life is one pointer of ahead upright fitness. A strong frame is the foundation for good corporeal suitability. One of the influences that affect a person's immune system is nutrition. Physical fitness is achieved when it is reinforcedthrough the use of healthful foods. One of the components of a healthy diet associated with fitness is Hemoglobin levels. When you consume insufficient food, the Hemoglobin level in the blood will be affected. There are numerous aspects that touch a person's hemoglobin stages, namely diet, age, sex, occupation, smoke habit and infection. Apart from persons reasons, workout or physical activity likewise affects a being's hemoglobin. Exercise greatly affects a being's hemoglobin levels because consistent exercise raises hemoglobin levels. This is for the system or cell will essential extra O_2 when it performs functions in order to adapt and bind O_2 in blood.

Halat *et al*. (2001) studied on the effect of vitamins on footballers playing the armature football league and found vitamins may be used to increase performance.

Alternatively, workout container have useful possessions on the hazard of heart sickness, by way of serum lipids and high blood pressure. While some connotations between serum lipid levels and body function stated, it is not pure whether the variations in serum lipid concentration are straight caused by exercise the situation. Considering this view, the present researcher felt that the introduction of diet, yogasana and physical training can address the physiological symptoms and echocardiography of school children. The researcher therefore conducted the study entitled, ***"the influence of dietary use, yoga and physical training on physical and echocardiography for school children"***.

Definition of terms

Heart rate

According to medicine, a heartbeat denotes to the number of times a heart beats over a retro of while, typically a minute. A heartbeat can be felt on the wrist, on the side of the neck, behind the knees, on the foot, in the groin, and elsewhere in the body where

the vein is close to the skin. Heart rate is unit of heart rate each unit of time. Heart rate is usually expressed as minute (BPM). The heart beats to supply clean oxygenated blood from the leftward ventricle to coronary arteries through the aorta.

Relaxing Pulse Rate

Rhythm of heart rate (RHR) is the number of times the heartbeat per minute (bpm) when you are fully rested. It is a sign of strength. Low heart rate specifies well suitability for individuals in sports or exercise drill, but there may be other health benefits for people who are physically inactive (often referred to as bradycardia).

Blood Relaxation

Blood pressure is the strength of human blood that presses contrary to its artery walls. An individual's blood pressure can be very small or very high. Blood pressure is often measured on many different days and at rest. When blood pressure is measured at rest, it is called resting blood pressure. This means sitting down and relaxing in a chair, then coming up for near three minutes before pleasing a dose for the circulatory organization to relax (Wendy, 2021).

Blood oxygen level

Blood oxygen level is a degree of in what way much O_2 a red blood cell carries. The body effectively regulates the level of oxygen in the blood. Maintaining a good balance of oxygen-rich blood is essential to health. Oxygen helps to replace aging cells, replenishes our physiques, wires our immune system, and so on. Low blood O_2 levels show that there may be a problem with lungs or the circulation.

Hemoglobin

Hemoglobin is a protein that is rich in iron in red blood cells. The O_2 in the lungs attaches to Hemoglobin in the blood, that carries to the tissues in the body. Hemoglobin similarly dramas a key role in serving red blood cells to regain their disc-like structure, that aids them to circulate more simply through blood vessels.

Serum Lipoprotein (a)

Lipoprotein (Lp) (a), is a protein that carries lipid to the bloodstream. High levels of Lp (a) in the blood can increase the chances of formation or blood clots forming in the blood vessels. There are two main types of lipoprotein: high density lipoprotein (HDL) cholesterol, what individuals might call decent cholesterol, and low-density lipoprotein (LDL), or evil cholesterol. Lp (a) is a jeopardy factor for developing heart disease.

Ejection Fraction

Ejection fraction (EF) trials the volume of blood drawn outside the lower chambers of the heart. It is the proportion of blood that leaves the left ventricle where the heart contracts. Measuring a fraction of the discharge can help doctors diagnose a serious heart condition, especially heart failure.

Statement of the problem

The drive of the present study was to the influence of implementation of food yoga and physical training on functional and

echocardiography indicators of schoolchildren.

Method and Materials

Subject

The study sample was selected randomly from various schools. The subject selection method was double blind study method. The researcher was selected 50 sedentary students among class I to III (6-8 years) and class V to VII (10-12 years), these sedentary students treated as control group. On the other hand, 20 players were selected and divided into two groups, 10 Basketball players (5 players among 6 years to 8 years and 5 players among 10 years to 12 years) and 10 Volleyball players (5 players among 6 years to 8 years and 5 players among 10years to 12 years). Both groups belong to same socio-economic status.

Test/tools

Physiological parameters:

1. Heart Rate- Heart Rate (beats/min) was measured by Stop Watch.
2. Resting Pulse Rate- Resting Pulse Rate (beats/min) was measured by Stop Watch.
3. Resting Blood Pressure- Resting Blood Pressure (mmHg) was measured by Sphygmomanometer.
4. Blood Oxygen level- Blood Oxygen level (SPO_2 %) was measured by Finger Pulse Oximeter.
5. Serum Hemoglobin - Serum Hemoglobin (gm/dl) was measured by Spectrophotometric Method.

Echocardiography parameters:

1. Serum Lipoprotein (a) - Serum Lipoprotein (a) (mg/dl) was measured by ELISA Kit.
2. Left Ventricular Ejection Fraction - Left Ventricular Ejection Fraction (percentage, slope and different valve) was measured by Echocardiography with Doppler.

Procedure

Twenty school going players (N=20, as experimental group) and 50 school going sedentary children (N=50, as control group) were participated. The purpose of this experiment was to evaluate the influence of the implementation of food yoga and physical training on physiological and echocardiography indicators of schoolchildren. For this study, we used the twelve weeks exercise (**Table 1**) and asanas training (**Table 2**) schedules along with good food supplements which is needed for the children for maintenance of various nutritional deficiency but control group did not take any training and food supplements. All of these variables have been assessed on two occasions: pre-test were engaged previously imposed the working out and food supplements and post-test was taken next twelve weeks of working out.

Dietary plan

The baseline survey data revealed that experimental subjects of the study found to be suffered from malnutrition. To overcome the mal nutrition condition proper food supplements were introduced after consulting paediatrician that is shown in **Table 3**.

Table 1: Exercise Schedule

		Numbers of week (1 rep≤ 10 sec)											
Sl. No.	**Contents of exercises**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	Warming upexercises	10m	10m	10m	10m	10m	10m	10m	10m	10m	10m	10m	10m
2	Speed Training50 mts sprint	4 rpt	4rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4rpt	4 rpt
3	Spot jump andsprint10 spot jump then 30 mts sprint	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt
4	10 mts high knee then 30 mts sprint	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt	4 rpt
5	Stretching exercises	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m
6	Endurance Run	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m	5m
7	Core exercises: Dynamic–Sit-up Static–Plank	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m	10 no. 2m

Table 2: Yogasanas Schedule

Asanas	Duration and repetition
1. ***Eka-Pada-Rajakapotasana*** 2. ***Kumbhakasana*** 3. ***Virabhadrasana*** 4. ***Uttanasana*** 5. ***Parsvakonasana***	Each posture consists of 3 bouts and intotal it is within 90 sec. followed by 30 sec. rest

Table 3: Diet Schedule

Pre-intervention Diet	Diet During Training
Breakfast: Carbohydrate-84%, Protein-11%, Fat-5% **Lunch**: Carbohydrate-59%, Protein-9%, Fat-32%, Saturated Fat-43%, Monounsaturated Fat-44%, Polyunsaturated Fat-13% **Dinner**: Carbohydrate-76%, Protein-17%, Fat-7%, Saturated Fat-55%, Monounsaturated Fat-15%, Polyunsaturated Fat-30%	**Breakfast**: Carbohydrate-84%, Protein-11%, Fat-5% **Lunch**: Carbohydrate-49%, Protein-27%, Fat-24%, Saturated Fat-26%, Monounsaturated Fat-36%, Polyunsaturated Fat-38% **Dinner**: Carbohydrate-38%, Protein-37%, Fat-25%

Table 4: Mean SD and 'T' ratio of Experimental Group

Variables	Pre Test (Mean ± SD)	Post Test (Mean ± SD)	T Value
Physiological			
Heart rate (HR)	75.70±0.90	73.55±0.73	7.77*
Systolic Blood Pressure (SBP)	106.30±0.71	100.55±0.80	21.83*
Diastolic Blood Pressure (DBP)	67.55±0.73	63.60±2.05	9.12*
SPO_2	96.60±0.73	94.15±0.72	9.10*
Hemoglobin	10.80±0.67	12.25±0.62	7.04*
Echocardiography			
$Lipoprotein_{(a)}$	80.60±1.06	28.60±0.91	156.79*
EF%	60.95±0.80	69.35±0.72	33.73*
EF slope	78.20±0.78	90.75±0.76	48.35*
FEV1/FVC	71.80±0.87	75.60±0.48	15.77*
FEV1/SVC	70.10±0.70	77.70±0.45	42.48*

Significant at 0.05 level

't' value required to be significant at 0.05 level of confidence with 19 degree of freedom was 2.09

Table 5: Mean and SD Value of Control Group

Variables	Pre Test (Mean ± SD)	Post Test (Mean ± SD)
Physiological		
Systolic Blood Pressure	104.48±0.61	104.50±0.67
Diastolic Blood Pressure	61.76±0.59	65.86±0.80
Heart Rate	76.60±0.53	75±0.63
SPO_2	94.50±0.70	94.44±0.73
Hemoglobin	11.68±0.47	11.64±0.48
Echocardiography		
Lipoprotein(a)	46.68±0.47	45.02±0.58
EF%	74.60±0.49	73.50±0.50
EF slope	94.66±0.47	94.34±0.74
FEV1/FVC	73.60±0.49	74.56±0.50
FEV1/SVC	89.56±0.50	88.34±0.68

Statistic procedure

'T' test was functional to examine the being of significant difference of experimental group and also discovery out the important difference between pre and post-test (**Table 4**).

Conclusion

The study, it aims to explore the consequence of dietary, yogasanas and physical training on physiological and echocardiography parameters for school children. From the above **Table 4** it was found that in the event of the experimental

group statistically significant difference were observed after the training program but there was no significant difference in the control group mentioned in **Table 5**.

Conferring to scientist's opinion that neither a surge in inactive parasympathetic tone nor a reduction in retort to beta-adrenergic inducement contribute to reduction in resting heart rate (RHR) afterward constant workout or physical activity in individuals.

Numerous studies shown that consistent aerobic exercise can lesser the arterial blood pressure in both hypertensive and dynamic subjects (May *et al.,* 2015). Unvarying bodily action fortifies the heart. Mersev (1991) found in his study that stout heart pumps a lot of blood with little effort. As a result, vascular strength decreases and reduces the stiffness of the blood vessel so that blood can flow more easily. It leads to lower blood pressure. Blumenthal *et al*. (2000) conducted a study and his finding supported this study.

Exercise like running roots the volume of blood and Hemoglobin (Hb) flowing and guaranteed to the blood to rise (Jain, 2011). Created on this statistic, we know that steady physical activity can upsurge the level of Hemoglobin in the blood, regular workout and a healthy diet increase the levels of Hemoglobin in the blood. Mairbaurl *et al.* (2013) found that Hemoglobin levels in the blood increased with the support of nutrients and exercise, this finding and supporting the outcome of the present study (Blumenthal *et al.,* 2000).

Ozel *et al*. (2017) holds the same view as the current study that oxygen saturation decreased after exercise. Burcu *et al*. (2016) conducted a study and found that the outcome of exercise on Lp (a) levels also supported outcome of the current study.

The current study limitations to increase the number of subjects were small, with years of study, limited to middle childhood. In addition, their lifestyle was not controlled so that the results of this study were not easily affected. So, in the future, the study has some learning limitations to do.

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