Research Paper E-ISSN NO : 2455-295X | VOLUME : 9 | ISSUE : 2 | SPECIAL ISSUE FEBRUARY-2023

AN EXPERIMENTAL INVESTIGATION OF USE OF YOGA AND NUTRITION FOR IMPROVING PHYSICAL HEALTH OF TRIBAL STUDENTS

TEJSIHA LAXMANRAO JAGDALE | PHYSICAL EDUCATION DEPARTMENT, NABIRA MAHAVIDYALAYA, KATOL, DIST. NAGPUR.

ABSTRACT:

Malnutrition amongst the tribal population is a chronic problem in India and Maharashtra is no different. Despite large number of studies on health status of tribal population in general and the tribal children in particular among the various areas of Maharashtra, relatively few studies have focused specifically on the tribal groups of Vidarbha (portion of eastern part of Maharashtra). In view of this present investigation was carried out to study the role of Yoga practices and Nutrition supplements in improving the physical health of the tribal students. Although it is known that nutritional supplements can have positive impact on the health the major aim of this study was to check the combined effect of the Yoga intervention and nutrition for sustainable development of these tribal children. The nutritional requirements of the tribal children were determined from the data obtained with respect to their food consumption habits (studied by adopting three day diet recall method). The yogic exercises included Suryanamaskar, Shuddhikriya and Pranayam. In all two separate groups were formed one received only nutritional supplements and the other group was subjected to nutritional supplements as well as intervention by yogic exercises. The study results showed that the physical health of the experimental group that performed yogic exercises and received nutritional supplements was significantly better than the children belonging to other group, which received only nutritional supplements.

KEYWORDS:

TRIBAL POPULATION, MALNUTRITION, YOGA, NUTRITION, PHYSICAL HEALTH.

INTRODUCTION:

An adequate, well balanced diet combined with regular physical activity is a cornerstone of good health for all young and children. However, the problem of nutrition among the tribal population is persistent since long time. Poor nutrition of the tribal students leads to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity. Hence, it is necessary that the a healthy diet be given to them to prevent malnutrition in all its forms as well as wide range of non-communicable diseases and conditions apart from desired physical development. A balanced diet is one which contains variety of foods in such quantities and proportion that the need of all nutrients is adequately met for maintaining health, vitality and general wellbeing and makes a small provision for extra nutrients to withstand short duration of leanness.

Although many studies have reported that the tribal populations, especially the adolescent children have often been diagnosed with moderate to severe malnutrition, only few studies have made an attempt to correct this. Many studies have suggested that a nutritional supplement with respect to addition of proteins, carbohydrates and micronutrients like vitamins are necessary. However, very few studies have actually tried to minimize the malnutrition in tribal students by incorporating physical activities while doing the nutritional intervention as remedial measures. Apart from balanced diet, playing outdoors, physical activities of child are essential for optimum body composition and to reduce the risk of diet related chronic conditions in early as well as later in life and to prevent any sort of vitamin deficiency. In view of the above, this study was carried out to assess the utility of yogic exercises (Suryanamaskar, Shuddhikriya and Pranayama) along with nutritional supplements for improving the general health of the tribal students of Nagpur District.

METHODOLOGY

3.1 SELECTION OF SUBJECTS

The subjects were selected from the Nagpur District of Vidarbha. A total of 60 tribal students (30 each in experimental and control groups) were selected for the purpose of data collection. The age group of participants was 14 to 16 years.

3.2 CRITERION MEASURE

1. Body Mass Index
2. Power of legs
3. Agility
4. Strength endurance of abdominal muscles
5. Flexibility

3.3 RESEARCH DEIGN

In this research an ex-post facto experimental research design was used by the researcher.

3.4 DATA COLLECTION

For the purpose of data collection, experimental method was used. For this the tribal students were divided into two groups. Prior to experimental procedure and nutritional supplement intervention, the physical fitness and health of the tribal students was assessed. Based on this assessment it was clear that there was no significant difference in the physical fitness and health status of the students. Thereafter, the sixty students selected for this study were classified in two groups with each group consisting 30 students. The first group was subjected to only nutritional supplements for a period of three months, while the students of second group received nutritional supplements along with Yoga exercises such as Suryanamaskar, Shuddhikriya and Pranayam.

3.4.1 BODY MASS INDEX (BMI)

The most well-known indicator of body fatness is the body mass index (BMI). BMI values were calculated for the study participants using measured height and weight values as follows:

$$BMI = \frac{(\text{weight in kilograms})}{\text{height in meters}^2}$$

3.4.2 POWER OF LEGS – STANDING BROAD JUMP TEST

To measure the explosive power of the legs standing broad jump test was considered by the researcher. The measurement was taken from take-off line to the nearest point of contact on the landing (back of the heels). Recorded the longest distance jumped, the best of three attempts.

3.4.3 AGILITY – SEMO AGILITY TEST

To measure agility ability of the subject during forward, sideward and backward maneuvering movements SEMO agility test was used. Each subject was given two trials and time of each trial was noted accurate up to 0.1 second. The lesser value of the time out of the two trials was the score of the subject.

3.4.4 STRENGTH ENDURANCE OF THE ABDOMINAL MUSCLES – BENT KNEE SIT UPS

Bent Knee Test was used to determine the dynamic endurance of abdominal muscles of the subjects. The numbers of correctly executed sit ups performed by the subject in 60 seconds were considered as a final score.

3.4.5 FLEXIBILITY – SIT AND REACH TEST

To measure flexibility of the subjects Sit and Reach Test was used. The subject was allowed three attempts, and the best of these was recorded. The scores are measured in centimetres, rounding up to the nearest centimetre.

3.5 RELIABILITY OF DATA

To ensure that the investigator versed in the technique of conducting the test, the investigation had number of practice session in the testing procedure under the guidance of the expert. The tester's competency was also evaluated together with the reliability of the test.

3.6 STATISTICAL ANALYSIS OF DATA AND SIGNIFICANCE LEVEL

Analysis of data was done with the help of various statistical tests. The descriptive statistics, such as mean, standard deviation, minimum and maximum, etc. were determined from the collected data. The comparative assessment was done using 't' test procedure. The significance level was chosen to be 0.05 (or equivalently, 5%). The data generated during the study was analyzed with the help of Statistical Package for Social Sciences (SPSS) 18.0 software.

RESULTS AND DISCUSSION

4.1 BMI OF TRIBAL CHILDREN RECEIVING NUTRITIONAL SUPPLEMENTS

Tribal Students Receiving	N	Mean	±SD	MD	t	P
Nutritional Supplements	30	18.6	±2.3	-3.7	-2.989	**<0.05**
Nutritional Supplements & Yoga	30	21.3	±1.8			

N: Number of students, **SD**: Standard Deviation, **MD**: Mean Difference, **'t'**: t value, **P**: Probability, **NS**: Not Significant

Table 1 presents results regarding the comparative assessment of BMI scores of tribal children receiving nutritional supplements. Results shows that mean BMI score of tribal children receiving nutritional supplements was 18.6±2.3. However, that of the tribal children receiving nutritional supplements along with Yoga exercise was 21.3±1.8.

4.2 POWER OF LEGS - STANDING BROAD JUMP

Tribal Students Receiving	N	Mean	±SD	MD	t	P
Nutritional Supplements	30	1.35	±0.25	-0.21	-1.204	**NS**
Nutritional Supplements & Yoga	30	1.56	±0.31			

N: Number of students, **SD**: Standard Deviation, **MD**: Mean Difference, **'t'**: t value, **P**: Probability, **NS**: Not Significant

Table 2 presents results regarding the comparative assessment of standing broad jump scores of tribal children receiving nutritional supplements. Result shows that mean power of legs of tribal children receiving nutritional supplements was 1.35±0.25meter. However, that of the tribal children receiving nutritional supplements along with Yoga exercise was 1.56±0.31meter.

4.3 AGILITY – SEMO AGILITY TEST

Tribal Students Receiving	N	Mean	±SD	MD	t	P
Nutritional Supplements	30	17.9	±2.1	2.8	3.012	**<0.05**
Nutritional Supplements & Yoga	30	15.1	±1.8			

N: Number of students, **SD**: Standard Deviation, **MD**: Mean Difference, **'t'**: t value, **P**: Probability, **NS**: Not Significant

Table 3 presents results regarding the comparative assessment of SEMO Agility test scores of tribal children receiving nutritional supplements. Results show that mean agility of tribal children receiving nutritional supplements was 17.9±2.1seconds. However, that of the tribal children receiving nutritional supplements along with Yoga exercise was 15.1±1.8seconds.

4.4 STRENGTH ENDURANCE OF ABDOMINAL MUSCLE - SIT UPS

Tribal Students Receiving	N	Mean	±SD	MD	t	P
Nutritional Supplements	30	24	±3.4	-7	-2.845	**<0.05**
Nutritional Supplements & Yoga	30	31	±3.8			

N: Number of students, **SD**: Standard Deviation, **MD**: Mean Difference, **'t'**: t value, **P**: Probability, **NS**: Not Significant

Table 4 presents results regarding the comparative assessment of sit ups scores of tribal children receiving nutritional supplements. Result shows that mean strength endurance of abdominal muscle of tribal children receiving nutritional supplements was 24±3.4. However, that of the tribal children receiving nutritional supplements along with Yoga exercise was 31±3.8.

4.5 FLEXIBILITY - SIT AND REACH TEST

Tribal Students Receiving	N	Mean	±SD	MD	t	P
Nutritional Supplements	30	14.3	±4.1	-5.4	-3.024	**<0.05**
Nutritional Supplements & Yoga	30	19.7	±3.4			

N: Number of students, **SD**: Standard Deviation, **MD**: Mean Difference, **'t'**: t value, **P**: Probability, **NS**: Not Significant

Table 5 presents results regarding the comparative assessment of sit and reach test scores of tribal children receiving nutritional supplements. Result shows that mean flexibility of tribal children receiving nutritional supplements was 14.3±4.1cm. However, that of the tribal children receiving nutritional supplements along with Yoga exercise was 19.7±3.4cm.

CONCLUSIONS

5.1 BMI OF TRIBAL CHILDREN RECEIVING NUTRITIONAL SUPPLEMENTS

From the study results it is evident that there is significant (P<0.05) difference in the BMI scores of tribal children of two groups. Specifically, the tribal children receiving nutritional supplements with yoga training had better BMI than children receiving only nutritional supplements.

5.2 POWER OF LEGS - STANDING BROAD JUMP

From the study results it is evident that there is no significant difference in the power of legs scores of tribal children of two groups.

5.3 AGILITY – SEMO AGILITY TEST

From the study results it is evident that there is significant (P<0.05) difference in the agility of tribal children of two groups. Specifically, the tribal children receiving nutritional supplements with yoga training had better agility than children receiving only nutritional supplements.

5.4 STRENGTH ENDURANCE OF ABDOMINAL MUSCLE - SIT UPS

From the study results it is evident that there is significant (P<0.05) difference in the strength endurance of abdominal muscle of tribal children of two groups. Specifically, the tribal children receiving nutritional supplements with yoga training had better strength endurance of abdominal muscle than children receiving only nutritional supplements.

5.5 FLEXIBILITY - SIT AND REACH TEST

From the study results it is evident that there is significant (P<0.05) difference in the flexibility of tribal children of two groups. Specifically, the tribal children receiving nutritional supplements with yoga training had better flexibility than children receiving only nutritional supplements.

REFERENCES

1. Ali, A. (1988) Tribal Nutrition. An Orissa scenario health for the millions, Institution for Tribal Health and Social Sciences.CRESSIDA:40-42

2. Birdi, T. J., Joshi, S., Kotian, S and Shah, S. (2014). Possible Causes of Malnutrition in Melghat, a Tribal Region of Maharashtra, India, *Glob J Health Sci*, 6(5), pp. 164–173.

3. Danucalov, M. A., Simões, R. S., Kozasa, E.H and Leite, J. R.(2008). Cardiorespiratory and metabolic changes during yoga sessions: the effects of respiratory exercises and meditation practices, *Appl Psychophysiol Biofeedback*, 33(2), pp.77-81

4. Divakar, S. V., Balaji, P. A., Poornima, S., Varne, S. R., Ali, S. S and Puttaswamy, M. (2013). A comparative assessment of nutritional and health status between tribal and nontribal under five children of Mysore, India, *Muller J Med Sci Res*, 4, pp. 82-85

5. https://www.nhp.gov.in/healthlyliving/healthy-diet

6. Khemka, S. S., Ramarao, N. H and Hankey, A. (2011). Effect of integral yoga on psychological and health variables and their correlations, *Int J Yoga*, 4(2), pp. 93-99.

7. Phillips A., and Hornak J.E.,(1979), Measurement and Evaluation in Physical Education, (New York: John Willey and Sonspp.pp.262

8. Ross, A and Thomas, S.(2010). The health benefits of yoga and exercise: a review of comparison studies, *J Altern Complement Med*, 16(1), pp.3-12.

9. Sharma, D.D. and K.D. Sharma. (2005). Impact of demonstration on tribal women knowledge and adoption level of fruits and vegetable technology. *Indian Journal of Nutrition of Dietetics*, 30(11), pp.317-318.