



EFFECT OF YOGA TRAINING PROGRAM ON HEALTH RELATED FITNESS OF SCHOOL BOYS SUFFERING FROM EXCESSIVE CONVEX KYPHOSIS CURVATURE

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Abstract

The present study assessed the impact of three months yoga program on health related fitness of school boys suffering from excessive convex kyphosis curvature. This study was conducted on 24 school boys studying in B.M.C. School Kurla suffering from excessive convex kyphosis curvature i.e. postural deformity called kyphosis. Standard health related fitness battery which includes bent knee sit up, 9 minute run/walk test, sit and reach test and push-up were used in the present study. The result reveal statistically significant beneficial effect of three months yoga program on muscular endurance, flexibility and muscular strength but not on cardio vascular endurance and body composition of school boys suffering from excessive convex kyphosis curvature. It was concluded that health related fitness of school boys suffering from kyphosis may be enhance with the help of specifically designed yogic program of certain duration.

Keywords: *Excessive convex kyphosis curvature, Yoga, School boys*



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Introduction:

Health related fitness is a must for day-to-day life. Cardio vascular fitness is required when we climb stairs or run to take a bus or train. Strength is required when we lift luggage that is somewhat heavy. To maintain balance and avoid low back pain flexibility of joint is important. Ploughing a farm field or digging requires muscular endurance. Health related fitness is not only useful for daily routine work but deficient health related fitness may hinder growth and development and overall well-being during childhood and adolescence. Among the factors that adversely affect health related fitness, postural dysfunction is prominent. Misalignment of muscle tissues may cause muscle imbalances, which may in turn adversely affect health related fitness (Novak, 2004). One of the common postural deformity is kyphosis or excessive convex kyphosis curvature. M40.0 or postural kyphosis is the most common type and attributed to sloughing in young population. Correcting the muscle balance

may decrease excessive kyphosis curvature. Studies conducted by Vukanic (2006), Krsmanović and Bigović (2006) and Rasheed and Pagare (2015) elaborated the impact of postural deformity on physical fitness.

Since ages it has been documented that yoga is useful for flexibility of body, muscle strengthening as well as for correct body posture. Pilkington et al. (2005) found that yogic exercise is useful for flexibility, range of motion and muscular strength. Surprisingly effect of yogic exercise was not observed on health related fitness parameters i.e. muscular endurance, flexibility, muscular strength and cardio vascular endurance of school boys collectively. In order to scientifically address this issue, the present study was planned to assess the effect of yoga training program on health related fitness of school boys suffering from excessive convex kyphosis curvature.

Objective of the Study

The main objective of the present study is to assess the effect of yoga on health related fitness of school children suffering from excessive convex kyphosis curvature i.e. kyphosis.

Hypothesis

It was hypothesized that follow up data on health related fitness battery namely bent knee sit up, 9 minute run/walk test, sit and reach test, push-up and body composition respectively will not show positive effect of three months yogic exercise program imparted to school boys suffering from kyphosis.

Methodology

Sample :

To conduct the study 1500 school children between six to 12 years were selected from B.M.C. School Kurla. Kypholordometer was used to determine presence of kyphosis among selected subjects. Out of these 1500 school children, 24 were found to be suffering from postural deformity kyphosis. These 24 school children were selected as sample.

Tools

Kypholordometer Test for Kyphosis:

Kypholordometer is an instrument used to assess angle of kyphosis. The same is used for screening of kyphosis in school boys.

Health Related Fitness Battery:

Health related fitness battery comprising push-up test for muscular strength, bent knee sit-up test for muscular endurance, 9 min run/walk test for cardiovascular endurance and

sit and reach test for flexibility of the back and leg muscle. The administration of all these tests was conducted as per directions given in author's manual (Kansal, 2008).

Yoga Program:

A especially designed yoga program incorporating asanas in supine, prone and sitting position were chalked out by the researcher with the help of yoga experts. The duration of yoga program is of one hour duration and five days in a week. The main Asanas and Kriya incorporated in this program were Savasan, Ardha Salabhasana, Ardha Halasana, Ardha –Padmasana, Vakrasana, Tadasana, Chakrasana, Makrasana, Kapalbhathi, OM’ chanting, Ujjayi Pranayam, and Anulomvilom.

Procedure:

Subjects suffering from kyphosis were subjected to three months yogic exercise program. Subjects performed on all the items in health related physical fitness test twice i.e. before the commencement of study period and after the completion of three months yogic exercise program. In this single group experimental design, the pre and post test performance scores on health related physical fitness was compared with the help of paired sample 't' test. The results depicted in table 1.

Analysis and Interpretation:

Table 1 Depicting Pre and Post Test statistics (Before and After Yoga Training Program) on Health Related Physical Fitness Components in a Group of School Boys Suffering from Postural Deformity Kyphosis

Health Related Physical Fitness	N	Pre-Test	Post Test	Mean Diff.	‘r’	‘t’
		Mean±S.D.	Mean±S.D.			
Bent Knee Sit-ups (Muscular Endurance)	24	8.75±3.03	10.29±2.75	1.54	.92	6.40**
9 minute run/walk test (Cardio-vascular Endurance)	24	3457.70±286.96	3488.00±301.01	30.29	.95	1.69
Sit and reach test (Flexibility)	24	28.37±3.42	31.20±3.59	2.83	.93	10.89**
Push-ups (Muscular Strength)	24	21.04±3.04	21.95±3.06	.91	.93	4.23**

** Significant at .01 level

Results of the correlated 't' test show that in a group of school boys with kyphosis, mean bent knee sit up scores differ before yoga exercise program (M=8.75) and after yoga exercise program of three months (M=10.29) at .01 of statistical significance. The mean difference of 1.54 shows that after imparting yoga exercise program mean bent knee sit up scores was significant increased as compared to what it was before the commencement of study period. (t=6.40, df=23, r=.92, p<.01). It indicate that three months program of yoga has significantly increased the endurance capacity of abdominal muscles in school boys suffering from kyphosis.

Results of the correlated 't' test show that in a group of school boys with kyphosis, mean 9 minute run/walk scores did not differ before yoga exercise program (M=3457.70) and after yoga exercise program of three months (M=3488.00). The mean difference of 30.29 shows that after imparting yoga exercise program mean 9 minute run/walk scores was increased but without statistical significance as compared to what it was before the commencement of study period. (t=1.69, df=23, r=.95, p>.05). It indicates that three months program of yoga has increased the cardio vascular endurance in school boys suffering from kyphosis but the results could get weight age of statistical significance.

Results of the correlated 't' test show that in a group of school boys with kyphosis, mean sit and reach test scores differ before yoga exercise program (M=28.37) and after yoga exercise program of three months (M=31.20) at .01 of statistical significance. The mean difference of 2.83 shows that after imparting yoga exercise program mean sit and reach test scores was significant increased as compared to what it was before the commencement of study period. (t=10.89, df=23, r=.93, p<.01). It indicates that three months program of yoga has significantly increased the flexibility in school boys suffering from kyphosis.

Results of the correlated 't' test show that in a group of school boys with kyphosis, mean push up scores differ before yoga exercise program (M=21.04) and after yoga exercise program of three months (M=21.95) at .01 of statistical significance. The mean difference of 0.91 shows that after imparting yoga exercise program mean push up scores was significant increased as compared to what it was before the commencement of study period. (t=4.23, df=23, r=.93, p<.01). It indicates that three months program of yoga has significantly increased the muscular strength in school boys suffering from kyphosis.

Result and Discussion:

Result indicates that yoga has significantly increased the endurance capacity of abdominal muscles, cardio vascular endurance, flexibility and muscular strength in school boys suffering from kyphosis. According to Latalski et al. (2013), posture is a motor habit shaped on a specified morphological and functional background. Based on this point of view posture is an indicator of the mechanical efficacy of the kinetic sense, as well as muscular balance and neural muscular coordination. Walsakom (2000) assessed the response of selected asanas on balance, flexibility, muscular endurance and reaction time among school boys. The results revealed that balance, flexibility, muscular endurance variables were significantly improved after practice of asanas.. Hence the results are consistent with the theories and principles associated with effect of yoga on health related fitness.

Conclusion

On the basis of results it was concluded that yoga training program of certain duration enhances health related fitness of school boys suffering from excessive convex kyphotic curvature. Summarily it can be concluded that yogic exercise program is beneficial for health related fitness of school children with postural deformity such as kyphosis.

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