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AN EXAMINATION OF THE IMPACT OF SIX WEEKS OF PILATES EXERCISES PROGRAM ON SCHOOL CHILDREN'S CORE STRENGTH ABILITY

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Abstract

The intention of the present study was to find out the upshot of six weeks pilates exercises on core strength among school children. Twenty (20) male children aged 14 to 17 years were purposively selected from Christhuraja Higher Secondary School, Tirunelveli, Tamilnadu, India. They selected subjects have been randomly divided into two equal groups namely Pilates Exercises Group (PEG) (N=10) and Control Group (CG) (N=10). Six weeks pilates exercises programme has been formulated to see the effectiveness of given training programme on core strength of school children. The core strength has been tested by 'Plank Test' on before the training starts and after completion of six weeks pilates exercises programme. Significant positive changes occurs in core strength has been found by analysing and comparing the pre-test and post-test score through paired sample 't' test and ANCOVA among the school children of PEG and CG. So this study was concluded that six weeks of pilates exercises programme was shown effective in the improvement of core strength among school children. However the control group had not shown any significant positive changes on core strength while because they were not engaged to participated in to any specific training programme apart from their routine works.

Keywords: Pilates Exercises, Core Strength, School Children

Introduction

Our body's core is mostly located in the middle and is encircled by the belly, hips, back, and chest (Mayo Clinic Staff, 2020). Various muscles, including the abdominal muscle, the lateral abdominal muscle, the deepest back muscle, and the erector spine musculature, strengthen the core muscles to help our bodies bend, twist, and rotate (Martin, 2013).

According to Hibbs et al., (2008), core strength is the capacity to generate muscular force through intra-abdominal muscle pressure and constrictive forces. Researchers in the

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present period have discovered the importance of core muscle when executing various sports talents since it enhances speed, acceleration, and jumping abilities, among other aspects (Bialowas, 2019).

Exercises that target the core muscles can improve muscle imbalances, body posture, cardiovascular fitness, flexibility, muscle strength, including muscle mass in overweight people (Datta et al., 2014; Boyaci et al., 2018; Widanita et al., 2019).

The Pilates method is a full-body training programme that emphasises appropriate body alignment, healthy breathing, building a strong core, and enhancing coordination and balance. It was invented by the renowned physical trainer Joseph Pilates (Houglum, 2016).

Aim of the Study

In recent years, Pilates, a body-mind exercise technique, has grown in popularity, particularly among younger school children. However, there is insufficient data to conclusively say that this workout technique improves people's physical and psychological conditions. The main aim of the this study was to investigated whether the core strength would be improved by this six weeks of pilates exercises among school children in the age group of 14-17 years.

Methods and Materials

This research stays in quantitative research, although in terms of the method used in this research, it is a quasi-experimental research. Based on data analysis using quantitative analysis, the intervention group was assessed by providing the kind of exercise in the form of pilates exercises to rise the ability of the core strength among school children. The samples in this study were all male school children of the Christhuraja Higher Secondary School, Tirunelveli. The sample in this study will be taken from the existing population by means of "Purposive Sampling". The selected subjects have been randomly divided into two equal groups namely Pilates Exercises Group (PEG) (N=10) and Control Group (CG) (N=10). Six weeks pilates exercises programme has been formulated to see the effectiveness of given training programme on core strength of school children. The core strength has been tested by ‘Plank Test’ on before the training starts and after completion of six weeks pilates exercises programme.

Pilates Exercises Protocol

The PEG followed a unique six-week Pilates mat exercise protocol formed by the investigator of this study. Conferring to previous reports, 6 to 8 weeks of Pilates exercises has positive effects on physical and psychological health (Bavli& Koybasi, 2016; Pourvaghar, Bahram, Sharif, & Sayyah, 2014; Rogers & Gibson, 2009). So we chose the 6-week training programme to prove efficacy as soon as possible in this study. Training sessions were conducted three alternative days a week and period of each session was 40-50 minutes in regular together with 5 minutes of warming up and 5 minutes of cooling down. Exercises were executed as group training and supervised by an investigator with the help of his supervisor and coach. The protocol was primarily composed of training for the abdomen, hip

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and lower limbs with the exercises such as front bridge, side bridge (both sides) and supine bridges, bridge exercises for abdominal and core muscles improve the back muscle strength and strengthening exercise like prone plunk, bridging, one leg bridging, side plunk, knee to chest exercise, crunches/extended legs and arms, bent knee crunch, rolling like a ball, bent knee raise in crawling position, knee swim, hip abduction. All exercises were done directing on the alignment and awareness of the core, and breathing correctly. Before the training programme the trainer demonstrated each activity using verbal and visual instructions to facilitate the correct position and movement. All exercises were coordinated in the group and there was a 10 seconds rest interval between each exercise.

Statistical Analysis

Significant positive changes occurs in core strength has been found by analysing and comparing the pre-test and post-test score through paired sample 't' test and to find out the difference exists between both groups were analysed through one way ANCOVA at the level of significance at 0.05. The collected data were statistically analysing with use of SPSS 17.1 trail version.

Analysis of Data

Table-1

Means and Paired Sample-'t' Test for the Pre and Post Tests on Core Strength of PEG and CG

Criterion variables	Test	PEG	PEG
Core Strength	Pre test	19.46	19.34
	Post test	25.91	20.08
	't'test	**8.34***	1.05

***Significant at .05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table-1 shows that the pre-test and post test mean value of PEG and CG on core strength were 19.46 & 19.34 and 25.91 & 20.08 respectively. The obtained paired sample t-ratio values between the pre and post-test means of PEG and CG were 8.34 & 1.05. The required table value for significant difference with df 9 at 0.05 level is 2.26. From the above table the paired sample t-test value of core strength between pre and post-tests means of PEG was greater than the table value 2.26 with df 9 at .05 level of confidence, it was concluded that the PEG had significant improvement in the core strength when compared to CG.

Table-2

Computation of Mean and Analysis of Covariance Core Strength of PEG and CG

Adjusted Post Mean	PEG	CG	Source of Variance	Sum of Squares	Df	Mean Square	F

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Core Strength	26.04	21.37	BG	28.28	1	27.28	11.32 *
			WG	40.97	17	2.41	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table-2 shows that the adjusted post-test means values on core strength of PEG and CG are 26.04 & 21.37. The obtained f- ratio of adjusted post-test mean value was 11.32 & 34.97 which was greater than the required table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicated that there was a significant mean difference exist between the adjusted post-test means of PEG and CG on core strength.

Discussion on Findings

The present study was to found statistically significant improvement on core strength, which showed that positive impact of pilates exercises among school children. According to Esteban Garcia et al., (2021) concluded that the exercises like front bridge, Side bridge (both sides) and Supine bridges used in this study proved to be very much effective in decreasing the body fatness and improving the core strength. Furthermore the bridge exercises for abdominal and core muscles improve the back muscle strength and strengthening exercise like prone plunk, bridging, one leg bridging, side plunk, knee to chest exercise used for this side may have improved thought by Mayo Clinic Staff, (2020) which may be the reason behind the better performance core muscle strength. The findings of the study were also agreed with the findings of Ghosh, (2022) conducted the study on the effect of pilates training on core muscles and BMI of obese children. Kulkarni, Saini, Palekar & Hamdulay, (2020) evaluated the effects of pilates on core muscle strength and endurance in post 6 months delivered women. Akbas & Unver, (2018) analysed the six-week Pilates exercise protocol for improving physical and mental health-related parameters. Suna & Isildak, (2020) investigated the effect of 8-week reformer pilates exercise on flexibility, heart rate and glucose levels in sedentary women. Tsai & Wang, (2016) determined the pilates exercise to improve lower limb strength and abdominal endurance in the workplace. Roh, (2016) conducted the study on the effect of 12-week Pilates exercises on wellness in the elderly.

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Conclusions

There was significant improvement on core strength due to the impact of pilates exercises practices among school children. There was significant differences exist between PEG and CG on core strength. However the control group had not shown any significant improvement on any of the selected variables. From this study we clearly noted that all age groups people, different body shape persons and low fitness levels peoples can benefit from this Pilates exercises. It is especially flexible for teenagers who don't like sports and have trouble locating an activity, they are truly enjoyed. Pilates exercises helps to enhance major components such as flexibility is improved, balance is enhanced, and general body strength and endurance are all increased.

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