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Impact of aerobic dance programme on the physical fitness among intercollegiate female players

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Abstract

Purpose of the study was to find the impact of 9 weeks aerobic dance programme on the intercollegiate 30 female players. The age of the subjects were ranging 18-22 from IGIPSS University of Delhi, University of Delhi. Collected data on the Physical Fitness variables i.e. muscular strength, and explosive strength was analysed through descriptive statistics, independent t-test, and post-hoc (LSD) test at the level of confidence 0.05. No significant differences were founded in muscular strength, and explosive strength variable on female intercollegiate players. On the basis of the results and findings it was concluded that 5days per week for 20 minutes aerobics dance programme is not effective to gain a desirable changes in female intercollegiate players.

Keywords: Aerobic Dance, Stepper, Cycle Ergometer

Introduction

Nowadays the performance of sportsmen in any game or event depends on physical fitness. Every vigorous game or sport requires certain qualities to physical fitness to be developed in every sportsperson on a priority basis. The physical fitness is a total of five motor abilities namely muscular strength, agility, power, speed, and cardiovascular endurance. In general, these qualities are speed (the ability to run, move, walk, or run faster), Agility (the ability to change direction in the air and on the ground), Flexibility (the range of movement determined by the joints of the body), Strength (the ability of muscles to pull, push, squeeze). During one's training in sports, these qualities are developed based on the physical constitution of an individual. All the basic components of physical fitness are extremely necessary for all the sports events, however, each sport event is dominated by one component of the other.

There are a lot of training models and methods of exercising which are used in order to reduce body fat percentage, amongst which running and cycling are said to be the most effective and the most popular ways. These methods are often taken as the most adequate ones since it is the easiest way to determine the appropriate strain intensity (40 - 60 % VO₂max) (Shimamoto *et al.* 1998) [11]. However, in recent years, apart from everyday traditional forms of physical exercises, there have emerged some other forms of physical exercise which are more appealing and more interesting compared to the previous forms of recreation. Dance as one of these types of exercise can take many forms and can be run in different conditions and without expensive equipment, which makes it acceptable with in a wide range of people and ages. Dance techniques in some dances such as disco dance include slides, jumps, hops, turns, pirouettes, and kicks, which can contribute to changes in coordination, power, speed, and ability by performing rhythmic structures and allowing these dance structures to move at a certain pace on music (Uzunović, 2008; Uzunović, *et al.* 2011) [17, 16].

Nowadays, aerobics can be classified in several modalities of work: (I) natural forms of movement during which the exerciser maintains a continuous or slightly discontinuous form of work like walking, running, cycling, rowing etc. (II) simulated natural forms of movement achieved by applying so-called cardio fitness equipment (e.g. work on a stepper, cycle ergometer, rowing ergometer etc.); and (III) contemporary aerobics, i.e. dance aerobics (cyclic poly structural activity). The term contemporary aerobics' contains all the movements which/ those are performed on a fixed rhythm and tempo of music which bring all different kind of movement pattern together and forms a unique entity. Due to it being performed to music and

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the dance steps following a choreography, this kind of exercise is called Aerobics dancing or aerobic dance.

Aerobic dance is the fitness sport that combines the health and figure benefits of jogging with the fun of dancing. It is the type of activity in which the amount of oxygen taken in equal to the amount of oxygen required (Sorensen and Jackie, 1972)^[12]. Dance aerobic is one of such forms of exercising, has attracted much attention for the reasons of its positive effects on the functional abilities of a man (Pantelić, *et al.*, 2007)^[8] and at the same time it is an easy and fun form of exercise that can be practised by everyone. By performing simple dance elements combined with various types of jumps, spins and some other elements with the appropriate music tempo, engaging the muscles of the entire body and depending on the intensity and the duration, it affects the cardiovascular, respiratory system and body composition. Much research exists which has confirmed the positive influence of physical exercise on cardiovascular endurance, muscular strength, flexibility and body composition (Gaesser and Rich, 1984; Pollock, *et al.*, 1987; Hagberg, *et al.*, 1989; Gaber, *et al.*, 1992; Ogawa, *et al.* 1992; Swain, *et al.*, 1994; Toraman and Ayceman, 2004; Toraman, *et al.*, 2004)^[8, 10, 3, 7, 13, 14, 15].

Although, some similar kind of studies have been conducted but still there is a need of determine the impact of aerobic dance programme on the muscular strength and explosive strength of intercollegiate female players. Thus, researcher have taken this study to find the results of impact of 9 weeks aerobic dance programme on the muscular strength and explosive strength of intercollegiate female players.

Purpose

The purpose of the study was to find out the effect of 9 weeks aerobic dance program on the selected physical fitness variables viz. muscular strength and explosive strength of intercollegiate female players of IGIPSS, University of Delhi; Delhi.

Hypotheses

It is hypothesized that, there will be no significant effect of 9 weeks aerobic dancing program on selected physical fitness variable viz. muscular strength and explosive strength of intercollegiate female players of IGIPSS University of Delhi; Delhi.

Methodology

Design: Single group (Pre- Post) design.

Selection of Subject: Total 30 female subjects age ranged from 18-22 years at intercollegiate level of participation were randomly selected for the study of Indira Gandhi Institute of Physical Education and Sports Science, University of Delhi, Delhi. Random sampling technique was used for the selection of the subjects for measuring the effect of 9 weeks aerobic dance program on the selected the physical fitness variables.

Inclusion & Exclusion Criteria

Inclusion Criteria

Sample: Intercollegiate female players, Sex: Female, Age Range: 18-22 Years, Physical Fitness Variable: Muscular Strength and explosive strength, Institution: Indira Gandhi Institute of Physical Education and Sports Science, University of Delhi, Delhi, Language of Research: English

Exclusion Criteria

Sample: Other than intercollegiate players, Sex: Male, Age

Range: Less than 18 years & more than 22 years, Physical Fitness Variable: Other than muscular strength and explosive strength Institution: Other than Indira Gandhi Institute of Physical Education and Sports Science, University of Delhi, Delhi, Language of Research: Non-English

Selection of Variables

Dependent variables: Muscular Strength and explosive strength

Independent variables: aerobic dance.

Criterion Measures

S. No.	Variable	Tests	Scoring
1.	Muscular Strength	Sit-ups	Rep.
2.	explosive strength	Standing Broad Jump	Meters

Training Programme

The aerobic dance programme was designed for 40 minutes schedule for 9 weeks (5 days per week). 40 minutes were distributed into three phase i.e. 10 minutes warm up, aerobic dance training for 20 minutes and 10 minutes cool down. Two days rest was scheduled in the programme per week after the 5 days schedule.

Collection of Data

The data on the muscular strength and explosive strength were collected on the university ground of IGIPSS with the permission of the ground authority. All the information regarding the administration of the test was provided to the subjects before conducting the test.

Statistical Technique

The descriptive statistics and independent t-test was applied for the comparison of pre and post data of the effect of 9 weeks aerobic dance program on muscular strength and explosive strength (Pre-post) and for mean comparison LSD post-hoc test was applied for female intercollegiate players of IGIPSS. Further, the level of significance was set at the 0.05 level.

Table 1: Analysis of effect of 9 weeks aerobic dance programme on muscular strength and Explosive Strength at intercollegiate female players

Variable	Pre-Test	Post-Test	Degree of Freedom	t-ratio
Muscular Strength	Mean±SD	Mean±SD	28	1.55
	25.07±11.74	29.43±10.03		
Explosive Strength	61.87±8.26	63.83±7.50	28	0.96

N= 30

*Significant at 0.05 level. $t_{0.05}(28) = 2.05$

Table -1 exhibits the mean and standard deviation of muscular strength (25.07±11.74) and mean and standard deviation explosive strength (61.87±8.26) of pre-test of intercollegiate female players of IGIPSS. Further, the table also highlights the mean and standard deviation of muscular strength (29.43±10.03), and mean and standard deviation of explosive strength (63.83±7.50) of post-test of intercollegiate female players of IGIPSS. Furthermore, the analysis of independent t- test of pre-test and post-test of muscular strength and explosive strength as indicated in table no – 1 were found to be insignificantly, as the obtained t – value of muscular strength (1.55), and explosive strength (0.96), were lesser than the required value of 2.05 at 0.05 level of confidence.

Thus, no significant difference was found between pre and post treatment in muscular strength and explosive strength of females of IGIPSS.

Further, the graphical representation of pre-test and post-test mean of selected physical fitness variables i.e. muscular strength, and explosive strength are shown in figure no. 1.0 and 1.1 respectively.

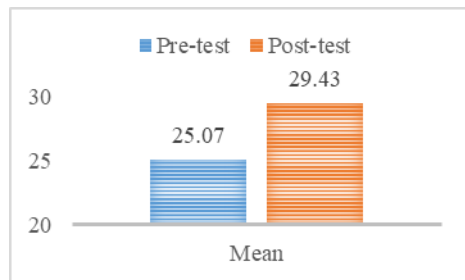


Fig 1.0: Graphical Representation of Mean (Pre-test and post-test) on Muscular Strength of Intercollegiate female players

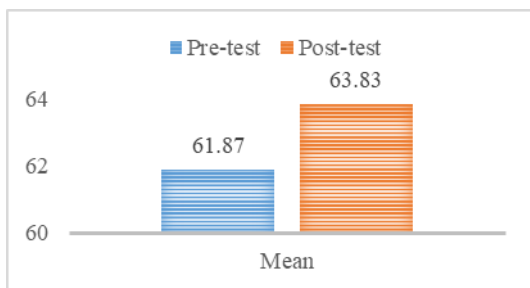


Fig 1.1: Graphical Representation of Mean (Pre-test and post-test) on Explosive Strength of Intercollegiate female players

Discussion of Findings

The study was conducted to find out the effect of aerobic dance on the muscular strength and explosive strength of intercollegiate female players of IGIPSS University of Delhi, Delhi. And, the findings of descriptive statistics from table no – 1 were indicated a higher mean values of post-test in muscular strength and explosive strength of intercollegiate female players. Further, the statistical analysis of independent t- test revealed no significance difference were found among selected intercollegiate female subjects of IGIPSS University of Delhi, Delhi in muscular strength and explosive strength respectively at 0.05 level of confidence from table no – 1. Data on the muscular strength and explosive strength between pre-test and post-test was found insignificant due to the fact that 9 weeks aerobic training for muscular strength and explosive strength was not effective regime to bring the desired changes in the intercollegiate female players who trained themselves in much high intensity training during their regular sports training sessions rather than 9 weeks aerobic dance programme of 40 minutes and 5 days in a week. Additionally, Hopkins *et al.*, (1990)^[4] also highlighted that 12 weeks of low impact aerobic dance, the group improved significantly on all functional fitness components of sedentary peoples only. In fact, the intensity is always higher if several body parts are activated at the same time with greater amplitude of stimuli (Kostić, 2006)^[6]. Further, Vairavasundaram *et al.*, (2014)^[18] reported significant improvement in all the selected physical variables namely agility, explosive power, muscular strength endurance and flexibility among handball players with high intensity aerobic exercise.

Conclusion

The findings of this study revealed statistically no significant effect aerobic training on muscular strength and explosive strength at the intercollegiate female players of IGIPSS, University of Delhi; Delhi. Based on the present study results and findings, it is concluded that intensity and selected exercises of 40 minutes aerobics dance programme for nine weeks (5 day per week) was not appropriate for the training of muscular strength and explosive strength of intercollegiate female players.

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