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EFFECT OF ISOMETRIC TRAINING AND ASANAS PRACTICES ON AGILITY AND BODY FAT OF ADOLESCENT BOYS

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ABSTRACT

The purpose of the study was to find out the effect of isometric training and asanas practices on agility and body fat of adolescent boys. To achieve the purpose of the study thirty (30) adolescent boys in the age group of 15-17 years were selected from Zillaparishad high school,Jajapur, Mahaboobnagar district, Telangana state, India. Agility and body fat were assessed by shuttle run and Body fat scale (Bioelectrical impedance analyser). The subjects (N=30) were randomly assigned to two equal groups of 15 subjects each. The groups were assigned as Isometric training and Asanas practices group (ISMTAPG) and control group in an equivalent manner. The experimental group (ISMAPTG) participated in isometric training and asanas practices for a period of 8 weeks. The control group did not participate in any specific activities and they followed their regular routine. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through dependent 't' test and analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant level differences exist between isometric training and asanas practices group and control group. Isometric training and asanas practices group (ISMAPTG) showed significant improvement on agility and body fat of adolescent boys.

KEYWORDS: Isometric training, Asanas practices, Agility, Body fat.

INTRODUCTION

The human body evolved to be physically active. In other words, our bodies require physical activity to remain healthy. The advent of mechanization and modern technology in the last few decades has resulted in the human race becoming less physically active than ever before and we are paying for it with our health. Adolescence represents a critical period of development during which personal lifestyle choices and behaviour patterns establish, including the choice to be physically active. Strong evidence was found for a positive association between muscular fitness and bone health and self-esteem (1). Children and adolescents should accumulate at least 60 minutes of moderate to vigorous physical activity (MVPA) daily in the context of family, school, and community activities (2).

Sport participation can help develop social skills, teamwork and leadership. Physical activity is associated with reduced levels of risk-taking behaviours, smoking and excessive alcohol consumption (3).

ISOMETRIC TRAINING

Isometrics, or static resistance training, refers to a muscular action during which no change in the length of the total muscle takes place. This means that no visible movement at a joint (or joints) takes place. Isometric training is most commonly performed against an immoveable object such as a wall or a weight machine loaded beyond an individual's maximal concentric strength. Increases in strength from isometric training are related to the number of muscle actions performed, the duration of the muscle actions, whether the muscle action is maximal, and the frequency of training (4). Three training sessions per week using either maximal or submaximal isometric actions results in a significant increase in isometric maximal voluntary muscle actions. Alternate-day isometric training is 80% as effective as daily training sessions and that once-a-week training is 40% as effective (5). However, it isometric actions are to be used optimally in training, development of muscular strength is warranted.

ASANAS

Besides, Yoga postures(asanas) not only help to strengthen bones and muscles, but when one reaches the adolescence stage, the execution of the postures is done with more time and awareness than when one is younger and the body is still developing. Physical movements from one posture to another provide strength, flexibility and health in general to the bones and muscles; maintaining the positions for a period of time brings about internal, hormonal and cellular changes. Asanas practice balances the transition period between childhood and adolescence in growing children. When one performs, these practices synchronizing the physical movements with the breath, all the muscles, joints and

major internal organs are stimulated and balanced. The value of the sequences is that they are well-rounded sets of asanas that have been put together to bring about the maximum state of health with minimum effort. The breath and concentration that accompanies the postures makes them a complete sadhana (practice). Asanas practices have also positive effects on body composition variables. In recent years, no study has examined the effects of isometric training and asanas practices in adolescent boys. Therefore, the present study aim to investigate the effect of isometric training and asanas practices on agility and body fat of adolescent boys.

METHODS

To achieve the purpose of the study thirty (30) adolescent boys in the age group of 15-17 years were selected from Zillaparishad high school, Jajapur, Mahaboobnagar district, Telangana state, India. The subjects (N=30) were randomly assigned to two equal groups of 15 subjects each. The groups were assigned as Isometric training and Asanas practices group (ISMAPTG) and control group in an equivalent manner. The training program was administered for three alternate days (Monday, Wednesday and Friday) one week and 8 weeks in total. The subjects involved in isometric training were about 60 minutes for morning and evening asana practices lasted 45 minutes. Intensity was set at 50% for the 1st four weeks and 60% for the 2nd four weeks.

TESTING PROCEDURES

The subjects of the three groups on selected variables i.e. agility and body fat were assessed by shuttle run and Body fat scale (Bioelectrical impedance analyser) prior and immediately after the training period. Standard 15 minute warm-up began to conduct the shuttle run test.

STATISTICAL ANALYSES

The collected data were analyzed statistically through dependent 't' test. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

RESULTS

TABLE I
SIGNIFICANCE OF MEAN GAINS & LOSSES BETWEEN PRE AND POST TEST SCORES ON AGILITY AND BODY FAT OF ISOMETRIC TRAINING AND ASANAS PRACTICE GROUP (ISMAPTG)

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
1	Agility	12.25	11.83	0.42	0.67	0.17	2.44*
2	Body fat	13.53	12.40	1.13	1.72	0.44	2.54*

An examination of table-1 indicates that the obtained 't' ratios are: 2.44 and 2.54 agility and body fat respectively. The obtained 't' ratios on the selected variables are found to be greater than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it is significant. The results of this study are statistically significant and explained its effects positively. And also the results show that the muscular strength and muscle mass were increased at 3.42% and 8.35%.

DISCUSSION

Isometric exercises are proven to help build muscle, strength, agility balance, weight loss and range of motion. Agility, summed up, is the ability to absorb force and apply force for the means of changing directions. Without adequate strength, performing agility drills is not only ineffective, but it can be very unsafe as well. Besides isometric training does help burn calories and can contribute to weight loss. However, it is best to also incorporate eccentric and concentric muscle contractions during the workout so aware about how to functionally control our body. On the other hand calorie-burning with asanas practices are proportional to body weight, and by creating a calorie deficit in the body (eating less number of calories and burning more calories), one can speed up the weight loss results. In the present study all these concepts are incorporated during the training programme. With these perception the results conformity with other studies research conducted by H Pojskic et. al. (2015) compared the effects of different warm-up interventions on jump, sprint and agility performance in collegiate soccer players. Twenty-one healthy male college soccer players (age: 20.14 ± 1.65 years; body height: 179.9 ± 8.34 cm; body mass: 74.4 ± 13.0 kg; % body fat: 9.45 ± 4.8) participated in the study. Results from one-way repeated measures ANOVA demonstrated the hypothesis that low-intensity intermittent isometric exercise as a preconditioning stimulus can positively influence jump, sprint and agility performance was supported by the study. The present study showed that prolonged intermittent low-intensity

isometric protocols improved performance similar to dynamic stretching. This implies that such protocols for the warm-up session can be used as an alternative to dynamic stretching.

Mohammad Dehghanpor et. al. (2011) studied the effect of three exercising, Isometric on under-skin fat rate in non-athlete boy students. This study revealed that localized isometric exercises have been effectual in reducing the fat percentage, and there is a significant difference between average fat percent of subjects of exercises group before and after exercises. *Amandeep Singh et. al. (2015)* investigated the effect of yoga training on muscular strength, muscular endurance, flexibility and agility of female hockey players. Results revealed significant differences between pre and post-tests of experimental group in respect to Muscular strength (t-6.946), Muscular endurance (t-9.863), Flexibility (t-11.052) and Agility (t-14.068). However, insignificant differences were observed between pre and post-tests of control group. Dr. S. Chidambara Raja (2015) studied the effect of yogic practices on selected body composition measures and high density lipoproteins among obese boys. It was concluded from the result of the study, that yogic practice is a better tool to reduce the percentage of body fat and body mass index and increase the level of high density lipoprotein. Helena Khosravi et. al. (2015) studied the effect of yoga practice on muscle fitness and body composition in middle age women with overweight fat percentage, muscle percentage, water percentage and body mass index were significantly ($p<0.01$) decreased in the yoga group. Muscular endurance and Flexibility were significantly increased in the yoga group ($p<0.05$). These findings suggest that middle age women with overweight may benefit from yoga practice to improve the muscle fitness and body composition.

CONCLUSION

Based on the results of the present study it was concluded that the isometric training and asanas practices significantly improve the agility and body fat of adolescent boys than the control group

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