

**INFLUENCE OF SWISS BALL TRAINING ON SELECTED PHYSICAL
PHYSIOLOGICAL AND PERFORMANCE RELATED VARIABLES AMONG
TENNIS PLAYERS IN PUNE CITY**

Ravindra Baliram Khandare, Ph.D.

*Director of Physical Education Arts, commerce & Science College, Sonai Ta.:- Newasa ,
Dist.- Ahmednagar (MS)-414105*

Abstract

The purpose of the study was to investigate the impact of Swiss ball training programme on selected physical, physiological and performance related variables among Tennis players. For the present study 20 male Tennis players from Savitribai Phule pune University, affiliated college, Pune, Maharashtra State, India, were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test randomized group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of ten each and named as Group ‘A’ and Group ‘B’. Group ‘A’ underwent Swiss ball training and Group ‘B’ acted as control and not exposed any specific training / conditioning. The physical, physiological and performance related variables namely maximum strength, core strength, leg explosive power, breath holding time, peak expiratory flow rate, maximum heart rate, resting heart rate, systolic blood pressure, diastolic blood pressure, forehand clear, and backhand clear were chosen as variables. The standardized tests / equipments were used to collect relevant data namely 1RM bench press, plank test, sergeant vertical jump, digital stop watch, peak flow meter, 2.4 kilometer run in tread mill, digital heart rate / blood pressure monitor, Poole forehand clear test and Poole backhand clear test were used to collect data. The data was collected before and after six weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA) technique to find out the influence of Swiss ball training programme. The level of significance was set at 0.05. The findings of the present study have strongly indicates that Swiss ball training of six weeks has significant impact on selected physical, physiological and performance related variables namely maximum strength, core strength, leg explosive power, breath holding time, peak expiratory flow rate, resting heart rate, maximum heart rate, systolic blood pressure, diastolic blood pressure, forehand clear and backhand clear of Tennis players.



Scholarly Research Journal's is licensed Based on a work at www.srjis.com

Introduction

The Swiss ball training was developed in 1963 by Aquilino Cosani, an Italian plastics manufacturer. He perfected a process for large puncture-resistant plastic balls. Swiss balls are large, heavy-duty inflatable balls with a diameter of 45 to 75 cm (18 to 30 inches). Swiss balls offer one a fun, safe and highly effective way to exercise. Swiss balls are also known by a different names, including balance ball, body ball, fitness ball, gym ball, pilates ball, stability ball and yoga ball. **Sekendiz (2010)** investigated the effects of Swiss ball core strength training on trunk extensor (abdominal)/flexor (lower back) and lower limb extensor (quadriceps)/flexor (hamstring) muscular strength, abdominal, lower back and leg endurance, flexibility and dynamic balance in sedentary women and found that Swiss ball core strength training exercises can be used to provide improvement in the aforementioned measures in sedentary women.

Tennis is one of the most popular games played in more than 170 countries around the world. Tennis has more than 150 years' history. Among the indoor games, Tennis occupies a place of pride both as an individual as well as team sport in spite of frequent changes that have occurred in various aspects of competition pertained to the game including, fitness level, skills, strategies and tactics. Scientific pedagogies and innovative approaches have made the game more performance oriented than ever before. Concerning Tennis athletes' physical characteristics, several factors contribute to the success in the sport, including technique and tactics, psychological preparation and game strategy (**Chint et al., 1995**). Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance (**Mathur, 1985**).

Objective of the Study

The objective of the study was to design Swiss ball training and to see its impact on selected physical, physiological and performance related variables among Tennis players.

Methodology

Twenty male Tennis players from Savitribai Phule Pune University, affiliated college, Pune, Maharashtra State, India, were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test randomized group design which consists of control group (CG) and experimental group (STG) was used. The subjects were randomly assigned to two equal groups of ten each and named as Group 'A' and Group 'B'. Group 'A' underwent Swiss ball training and Group 'B' acted as control and not exposed any specific training / conditioning. The physical, physiological and performance related variables namely maximum strength, core strength, leg explosive power, breath holding time, peak expiratory

flow rate, maximum heart rate, resting heart rate, systolic blood pressure, diastolic blood pressure, forehand clear, and backhand clear. The standardized tests / equipments were used to collect relevant data namely 1RM bench press, plank test, sergeant vertical jump, digital stop watch, peak flow meter, tread mill, digital heart rate / blood pressure monitor, Poole forehand clear test and Poole backhand clear test. The data was collected before and after six weeks of training. The data was analyzed by applying analysis of Co-Variance (ANCOVA) technique to find out the influence of Swiss ball training programme. The level of significance was set at 0.05.

Figure I. The pre, post and adjusted post test mean values of experimental and control groups on selected physical variables among Tennis players

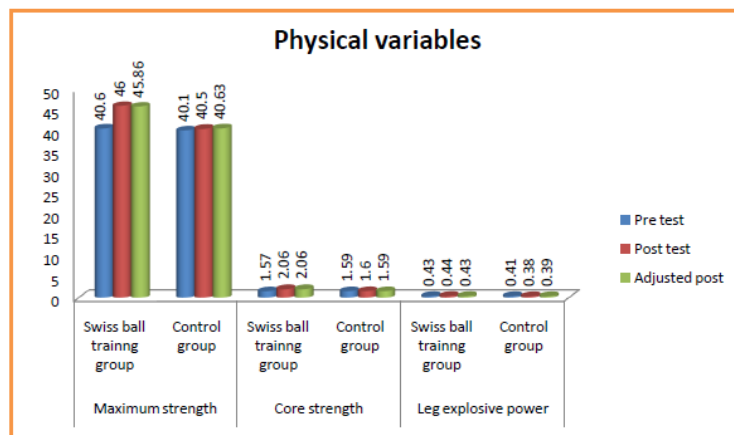


Figure II. The pre, post and adjusted post test mean values of experimental and control groups on selected physiological variables among Tennis players

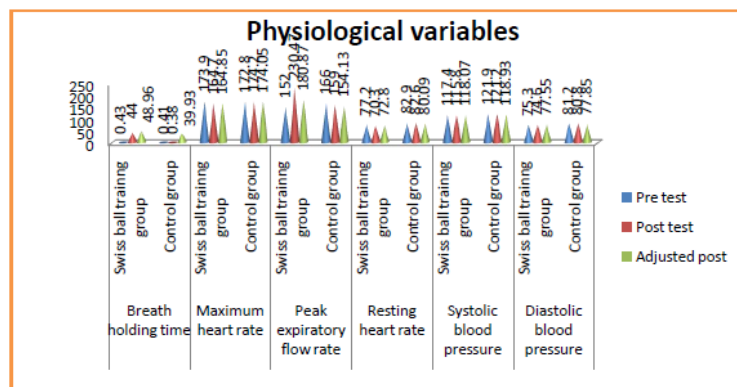
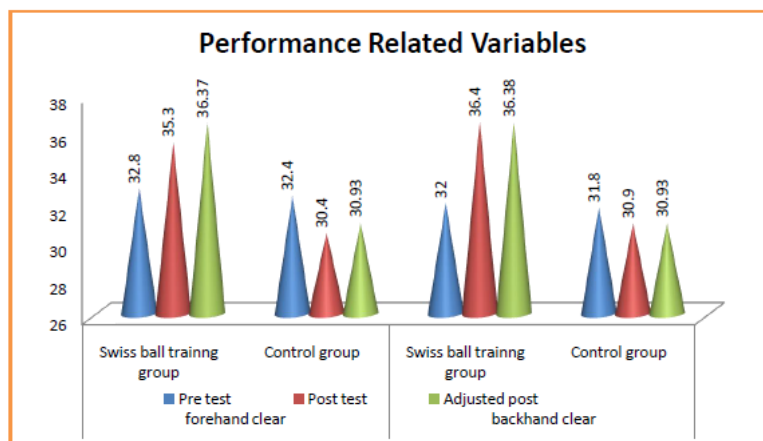


Figure III. The pre, post and adjusted post test mean values of experimental and control groups on selected performance related variables among Tennis players



Discussion and findings

The findings of the present study have strongly indicates that Swiss ball training of six weeks has shown significant improvement in all the selected physical, physiological and performance related variables namely maximum strength, core strength, leg explosive power, breath holding time, peak expiratory flow rate, maximum heart rate, resting heart rate, forehand clear and backhand clear except systolic blood pressure and diastolic blood pressure of Tennis players. The results of this investigation are also supported by the following studies of Bhuyan & Kumar (2013), Choi, et. al. (2012), Dharmendrakumar & Sakthignanavel (2014), Qiang (2011), Sekendiz,, Cug and Korkusuz (2010) and Seo, et. al. (2012).

Conclusions

1. The experimental group showed significant improvement in the following physical, physiological and performance related variables such as maximum strength, core strength, leg explosive power, breath holding time, peak expiratory flow rate, maximum heart rate, resting heart rate, forehand clear and backhand clear after undergoing six weeks of Swiss ball training.
2. The experimental group showed no significant level difference on physiological variables of systolic blood pressure and diastolic blood pressure among Tennis players.
3. The control group did not show significant improvement in any of selected variables.

References

Bhuyan, R., & Kumar, S. (2013). Effectiveness of Conventional Balance Training Exercise Versus Swiss Ball Exercise Program on Balance in Geriatric Population-A Randomized Controlled Trial. Indian Journal of Physiotherapy and Occupational Therapy-An International Journal, 7(4), 275-279.

- Choi, S. H., Lim, J. H., Cho, H. Y., Kim, I. B., Kim, M. K., & Lee, H. Y. (2012). *The Effects of Trunk Stabilization Exercise Using Swiss Ball and Core Stabilization Exercise on Balance and Gait in Elderly Women. Journal of the Korean Society of Physical Medicine, 7(1), 49-58.*
- Dharmendrakumar, & Sakthignanavel, D (2014) *Effect of four weeks swiss ball exercise on muscular strength and balance of college male students. Journal of physical Education, Sports and Fitness, 1(3), 10-15.*
- Hinds, E. (2011). *The additional effects of Swiss ball use during the wall squat exercise on lower limb muscle activity. British Journal of Sports Medicine, 45(2).*
- Okada, T, Huxel, KC, and Nesser, TW. (2011) *Relationship between core stability, functional movement, and performance. J Strength Cond Res, 25(1), 252-261.*
- Qiang, X. I. O. N. G. (2011). *The Effect of the Swiss Ball Training on the Core Explosive Strength of the College Football Players. Journal of Guangzhou Sport University, 4, 021.*
- Rajesh, M., Reddy, A. V., Kumar, K. S., & Madhavi, K. (2014). *Effectiveness of Floor Exercises versus Swiss Ball Exercises on Core Stability in Subjects with Mechanical Low Back Pain. Indian Journal of Physiotherapy & Occupational Therapy-An International Journal, 8(1), 75-80.*
- Sekendiz B, Cug M, Korkusuz F. (2010) *Effects of Swiss-ball core strength training on strength, endurance, flexibility, and balance in sedentary women. J Strength Cond Res, 24(11), 3032-3040.*
- Seo, B. D., Yun, Y. D., Kim, H. R., & Lee, S. H. (2012). *Effect of 12-week Swiss ball exercise program on physical fitness and balance ability of elderly women. Journal of Physical Therapy Science, 24(1), 11-15.*