



INFLUENCE OF SWISS BALL TRAINING ON LEG STRENGTH AND FLEXIBILITY AMONG UNIVERSITY MEN STUDENTS

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Abstract:

The purpose of the study was designed to examine the effect of swiss ball training on leg strength and flexibility of university men students. For the purpose of the study, thirty men students from various departments in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. Group I underwent swiss ball training for three days per week for twelve weeks. Group II acted as control who did not undergo any special training programme apart from their regular physical education programme. The following variables namely leg strength and flexibility were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using leg lift with dynamometer and sit and reach test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference, if any among the groups. The 0.05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate. The results of the study showed that there was a significant difference between swiss ball training group and control group on leg strength and flexibility. And also it was found that there was a significant improvement on leg strength and flexibility due to twelve weeks of swiss ball training.

Key Words: Swiss Ball Training, Leg Strength, Flexibility, University Men Students

Introduction:

Swiss ball training, also known as stability ball or exercise ball training, is a dynamic and effective form of exercise that enhances strength, flexibility, balance, and coordination. Originally developed for physical therapy and rehabilitation in the 1960s by Swiss physical therapists, these inflatable exercise balls have since gained widespread popularity in fitness, sports conditioning, and rehabilitation programs worldwide. A Swiss ball is a large, air-filled, and resilient ball that provides an unstable surface, requiring users to engage their core and stabilizing muscles to maintain balance. Unlike traditional resistance training that focuses on isolated muscle groups, Swiss ball exercises promote functional strength by activating multiple muscle groups simultaneously. This makes it an excellent tool for improving posture, preventing injuries, and enhancing overall movement efficiency.

One of the key benefits of Swiss ball training is its adaptability. It can be used by individuals of all fitness levels, from beginners to elite athletes, and can be incorporated into a wide range of workouts, including strength training, Pilates, yoga, and rehabilitation programs. Exercises performed on a Swiss ball challenge the core, improve spinal alignment, and enhance proprioception-our body's ability to sense movement and position. From simple core exercises like planks and crunches to advanced strength and stability drills such as ball squats and pike rollouts, Swiss ball training offers endless possibilities. Whether you're looking to build a stronger core, improve flexibility, recover from an injury, or add variety to your workout routine, the Swiss ball is a versatile and effective tool that can help you achieve your fitness goals.

In the world of fitness and rehabilitation, the Swiss ball-also known as a stability ball, exercise ball, or physio ball-has emerged as an essential tool for enhancing strength, flexibility, and balance. Originally developed for physical therapy, it has now become a staple in strength training, sports conditioning, and injury prevention programs. One of the key benefits of Swiss ball training is its ability to engage stabilizer muscles, which are often overlooked in traditional strength training routines. By introducing an unstable surface, the Swiss ball challenges core engagement, proprioception, and muscle coordination, making exercises more dynamic and functional.

When it comes to leg strength and flexibility, Swiss ball exercises offer a unique advantage. They help improve lower-body power, stability, and endurance while simultaneously enhancing flexibility through controlled movements. Whether you're an athlete looking to improve performance, a fitness enthusiast aiming to tone your legs, or someone recovering from an injury, Swiss ball exercises can be an effective addition to your workout regimen. This training method targets major muscle groups such as the

quadriceps, hamstrings, glutes, and calves, while also engaging the hip flexors and stabilizing muscles. Additionally, it aids in increasing the range of motion, reducing muscle stiffness, and preventing injuries through improved mobility.

Methodology:

The purpose of the study was designed to examine the effect of swiss ball training on leg strength and flexibility of university men students. For the study, thirty men students from various departments in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. Group I underwent swiss ball training for three days per week for twelve weeks. Group II acted as control who did not undergo any special training programme apart from their regular physical education programme. The following variables namely leg strength and flexibility were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using leg lift with dynamometer and sit and reach test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference if any among the groups. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate.

Analysis of the Data:

Leg Strength:

The analysis of covariance on leg strength of the pre and post test scores of swiss ball training group and control group have been analyzed and presented in table 1.

Table 1: Analysis of Covariance of the Data on Leg Strength of Pre and Post Tests Scores of Swiss Ball Training and Control Groups

Test	Swiss Ball Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	93.27	93.53	Between	0.5333	1	0.5333	0.43
S.D.	1.18	0.96	Within	34.6667	28	1.2381	
Post Test							
Mean	96.53	93.67	Between	61.6333	1	61.6333	19.90*
S.D.	0.96	0.87	Within	86.7000	28	3.0964	
Adjusted Post Test							
Mean	96.62	93.58	Between	68.6077	1	68.6077	203.76*
			Within	9.0912	27	0.3367	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The table 1 shows that the adjusted post-test means of swiss ball training group and control group are 96.62 and 93.58 respectively on leg strength. The obtained "F" ratio of 203.76 for adjusted post-test means is more than the table value of 3.35 for df 1 and 27 required for significance at .05 level of confidence on leg strength.

The results of the study indicated that there was a significant difference between the adjusted post-test means of swiss ball training group and control group on leg strength.

Flexibility:

The analysis of covariance on flexibility of the pre and post test scores of swiss ball training group and control group have been analyzed and presented in table 2.

Table 2: Analysis of Covariance of the Data on Flexibility of Pre and Post Tests Scores of Swiss Ball Training and Control Groups

Test	Swiss Ball Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	12.13	12.40	Between	0.5333	1	0.5333	0.40
S.D.	1.09	0.85	Within	37.3333	28	1.3333	
Post Test							
Mean	15.07	12.67	Between	43.2000	1	43.2000	15.61*
S.D.	1.14	1.25	Within	77.4667	28	2.7667	
Adjusted Post Test							
Mean	15.17	12.57	Between	49.9493	1	49.9493	100.15*
			Within	13.4662	27	0.4987	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The table 2 shows that the adjusted post-test means of swiss ball training group and control group are 15.17 and 12.57 respectively on flexibility. The obtained “F” ratio of 100.15 for adjusted post-test means is more than the table value of 3.35 for df 1 and 27 required for significance at .05 level of confidence on flexibility.

The results of the study indicated that there was a significant difference between the adjusted post-test means of swiss ball training group and control group on flexibility.

Conclusions:

- There was a significant difference between swiss ball training group and control group on leg strength and flexibility.
- And also it was found that there was a significant improvement on selected criterion variables such as leg strength and flexibility due to swiss ball training.

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