

THE COMPARISON EFFECT OF A SELECTED STRENGTH TRAINING ON THE DYNAMIC BALANCE IN ATHLETE AND NON-ATHLETE GIRLS



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Short Profile

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**ABSTRACT:**

Muscle strength has a significant role in balance of stature and overall health and fitness. The aim of this study was to compare the effect of a selected strength training on dynamic balance of non-athlete and athlete girls. Semi-empirical research was our research methods and 30 samples selected randomly from high school girl student with average and standard deviation of age  $16/45 \pm 1/44$  years, height  $160/07 \pm$

$5/77$  and weight  $57/14 \pm 9/35$  kg. 15 student non-athletes and 15 student athletes were divided as both groups and dynamic balance test was performed. Then the subjects did strength training for 8 weeks and 3 sessions each week for 90 minutes under the supervision of trainer. At the end of the 8 week period, dynamic test was evaluated again. A significant level of 0.05 and data using SPSS software by descriptive statistics and inferential statistics dependent t-test were analyzed. The research findings indicated that the selected strength training was not significant effect the dynamic balance in athlete and non-athlete girls.

**KEYWORDS**

*strength training, dynamic balance, athletic and non-athletic girls.*

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## INTRODUCTION

Balance is defined as Ability to maintain as a condition to carry out voluntary activities and deal with the turbulence (external or internal) (1). In terms of biomechanics, keeping the center of gravity of the body is defined in the range of support (2). The existence and balance the body's natural and appropriate, in many daily activities and sports are a lot more significance during the move and requires the interaction of sensory systems (sensory and vestibular system) and motor system by the central nervous system. Static balance control often (trying to keep the situation with a minimum of movement), or dynamic (maintain a stable level of reliance while executing a move) can be study. Balance, mechanical and physiological condition rely on the opportunity as much as it is desirable or desire to level in the center of gravity displacement. The skeletal structure of the human being in a balanced manner, the device handle body in maximum performance and minimal power usage. In such a situation, the less energy muscle consume and ligaments incur less stress (4).

Vertical postural is a situation in daily life and natural to organize human style, officials with the setting. Postural control is a active process to maintain balance (12). Maintain balance during the implementation of the basic condition for many sports activities and one of the factors is that fitness can be developed through specific exercises (7). Balance is divided into two types, static and dynamic. Run and maintain balance in static condition or during activities, to generate enough force through the muscles and apply it to the leverage of the body (bones) needs complex interaction musculoskeletal system and the nervous system (15). Keep a good stand to take control of the situation and the right caught moving the center of gravity on the surface of the needs limited reliance. Human through combination of sensory vision information could be able to stands (5). Balance as one of the essential components required to do any physical activities everyday. Balance is a functional neuromuscular processes includes different afferent sensory fibers by the central control processes and the muscle response (27). In order to keep balance, during the move, the body should be placed in a situation with stability and centre of gravity on the base of the backrest. Balance by the movements of the ankles, knees and thighs will be retained correctly. The balance system will work by a combination of the important implementation of a situation. If one of information systems disturbed, another afferent systems provide information (22). The most important part of an athlete's ability in almost any form of activity is involved to balance. Complex motor skills to provide balance as well as postural dynamics describes in preventing falling body (25). Inertia forces that balance will be applied to the body and body parts of inertia related features to be, plus a range of sustainability range that the body change it without relying on his status level (26). The balance theory defines as a static and dynamic. Ability to maintain the center of gravity in the range of the level of reliance on static balance is defined as a general dynamic equilibrium under high pressure center as the motion-activated during walking or standing (25). In terms of performance (operational) the balance categories to be stationary (maintaining a status with the lowest moving), dynamic half (keep a situation while the level of reliance on the move) and dynamic (maintain stability rely on the surface while a move described runs) (24). Dynamic balance required skills for everyday activities and weight transfer (11). Historically, physical strength as the most important factor for personal needs and survival of human attention and interest this factor more than has been thought, what took the life of primitive man, due to the natural lifestyle increased its power and how many expenses that nowadays is spent making the means of acquiring, and there no doubt in the importance of this factor. During the thousands of years that human with the hermeneutic grasped that the hard work and training severe muscle strength and size can be increased,

but only in recent years has scientific research contributed to might have been the severity and type of exercise can be the best way to increase muscle power or maintain it(3).

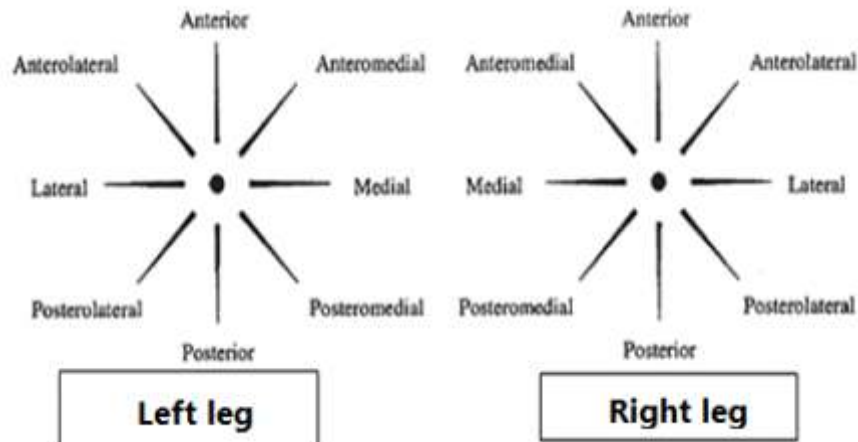
RESEARCH METHODOLOGY

The research was semi-experimental and subjects were selected randomly from 100 student (n = 43 non-athlete and n=57 athlete) volunteer students for participating in the study. The samples consists of 15 student athlete girl and 15 student non-athlete girl that were selected random sampling methods. The criterion for choosing the girl students in a range of sports activities, athlete (volleyball, basketball, fitness, sailing) has been a regular for three years. Subjects age range 14 to enter the research to 19 years. Dynamic balance measuring by star test. The experimental group training program consists of eight weeks and each week for three time and each time 90 minute strength training includes 15 minutes warm up and stretching, using stationary bikes, then 70 Min strength training activity. Also at the end of program 5 minutes stretching exercises as cool down was used. the characteristics of the training program was a direct supervision dominant trainer and examiner, respectively. all exercises according to the individual characteristics of each principle we designed and overload principle Respectively. After an eight-week practice stars test were taken as a post-test.

Training Protocol table:

Repetition	Sets	Technique name	Season	Weight
15	3	Dorsum of the foot by machine	9 season	Light weights in order to earn the physical fitness
15	3	The front foot by machine		
20	3	Belly sitting gathering foot		
10	3	Tuna back		
8 to 10 rep.	3	Dorsum of the foot by machine	15 season	Heavy weights due to be any person
8 to 10 rep.	3	The front foot by machine		
Free rep.	3	ABS feet together on the couch		
Free rep.	3	Under the belly of the pilot		
15	3	Tuna back		
8 to 10 rep.	3	Stretching a leg into the Stretch legs out		
8 to 10 rep.	3	Dumbbell with side bend		

Stars test (Sebt) is a simple way to control the dynamics balance of the postural people. Sebt was introduced for the first time by Gary and include 8 different directions in line with the angle of 45 degrees that the person should be stand with one leg in center of it and with other leg moves on 8 line up without falling (13, 14, 20). Today's Sebt test is a cheap tools to evaluate dynamic balance (24). Kinsey and Hartle, et al. has been reported validity of Sebt test between 0/78 and 0/96 (17,21).



Results

kg Weight	cm Hight	Year Age	Groups
60/31±8/45	159/80±6/10	16/07±1/03	Non-athlete
57/24±8/52	163/13±6/19	15/93±1/1	Athlete

Comparison of dynamic balance in athlete and non-athlete girls

T test	Post test	Pre test	Groups	Variable
P t Difference Average	Mean ± SD	Mean ± SD		Dynamic balance
0/518 -0/650 -1/503	14/100±91/0515	16/239±81/437	Athletic	
	7/157±89/568	7/38630±79/8040	Non-athletic	

DISCUSSION AND CONCLUSIONS

The results of the above research showed in tables so there are consistent differences with the following research. Mohammadi, Alizadeh, Gaeini (1392), in research titel, the effect of strength, balance and combination training (power and balance) on the dynamic balance of male athlete. Results obtained showed that strength training has greater improvement dynamic balance (6). Ahdeno and colleagues (1391) examine the effect of Ployometric and strength training on dynamic balance for 8 weeks in the

handball girls 13-18 years and concluded that dynamic balance improvement (5). Hadi and colleagues (1390), in a study for six week strength training and playometric test effect on dynamic balance of 30 athlete male students. The results showed that the combined exercises improves dynamic balance (9). Jarmo and colleagues (2014), also in a study to examine the effects of 12 weeks of explosive strength training and playometric training on muscle function, nerve and dynamic balance control in the 22 man engaged in 60-70 year-old. The results of this was that both practice mode can improve the dynamic balance on the same control in producing people (19). Samson (2005), in a period of four weeks study found the central area of the body on the sustainability of the dynamic balance of the tennis athletes was examined. The results showed that the central area of the body can exercise to improve dynamic balance tennis athletes (28). Perhaps because the selected dynamic balance with strength training in non-athlete girls did not have a significant difference is that the flexibility of the foot maybe more important role in the dynamic equilibrium to the selected strength training strength training workout if selected with flexibility or playometric was a significant differences. Move the wrist Dorsey flexion has been low, athlete foot individuals muscle weakness in the rest of the muscles that have not chosen to contribute to strength training and have not involved in balance and strength training strengthens muscles of the selected target groups.

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