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**EFFECT OF DYNAMIC STABILITY TRAINING ON SELECTED  
STATIC AND DYNAMIC BALANCE COMPONENTS OF COLLEGE  
FEMALE BASKETBALL PLAYERS**

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**ABSTRACT**

The study's goal was to determine how dynamic stability training affected specific static and dynamic aspects of college female basketball players. Thirty (N=30) female college basketball players from Vanavarayar Institute of Agriculture, Manakkadavu, Divansapudhur, Pollachi and Department of Physical Education, Bharathiar University Tamil Nadu, India, were chosen as study subjects. They were between the ages of 18 and 21. The chosen participants were split into two equal groups (n = 15 each): the experimental group from Department of Physical Education, Bharathiar University and the control group from Vanavarayar Institute of Agriculture, Pollachi. For six weeks, the experimental group received dynamic stability training three days a week. The control group, on the other hand, continued to practice as usual without any additional instruction. Both static and dynamic balance was evaluated before to and following the six-week treatment period. The 't' ratio was used to statistically analyze the data gathered from the individuals. The study's findings showed that the six weeks of dynamic stability training helped college-level female basketball players' static and dynamic balance.

**KEYWORDS:** Dynamic stability training, Static balance, Dynamic balance and Basketball.

## INTRODUCTION

Basketball is one of the most popular and fast-growing sports played throughout the world. It is a high-intensity team game that requires speed, agility, coordination, balance, muscular strength and quick decision-making abilities. In recent years, basketball has gained greater importance among female athletes at the college level because it enhances physical fitness, competitive performance, teamwork and psychological confidence. The modern style of basketball involves rapid changes of direction, jumping, landing, dribbling, passing and shooting under pressure. Therefore, players require excellent body control and stability to perform skills efficiently and to prevent injuries during competition. Dynamic stability training has become an important component in modern basketball conditioning programmes. Dynamic stability refers to the ability to maintain body balance and postural control while performing movement-related activities. According to **Hrysomallis, Con (2011)**, balance ability plays a significant role in athletic performance, especially in sports involving rapid movement and directional changes. Basketball players frequently perform explosive movements such as sprinting, jumping, pivoting, rebounding and sudden stopping, which demand both static and dynamic balance.

Static balance is essential for maintaining body posture during shooting, defensive stance and landing after jumps, whereas dynamic balance helps players maintain control during running, dribbling, cutting and directional movements. Poor balance may reduce playing efficiency and increase the risk of ankle, knee and lower limb injuries. **Behm, David G. and Colado, Juan C. (2012)** stated that stability-oriented exercises improve neuromuscular coordination, muscular control and functional performance among athletes. Dynamic stability training highly influences basketball performance because it improves proprioception, core strength, coordination, reaction ability and movement efficiency. It also enhances the athlete's ability to control the center of gravity during complex sports movements. **Granacher, Urs et al., (2011)** reported that balance training significantly improves postural stability, movement control and sports-related performance in young athletes. Therefore, dynamic stability training is considered an essential training method for college female basketball players, as it contributes to better balance performance, improved athletic efficiency and reduced injury risk during training and competition.

### Purpose of the study

The purpose of the study was to find out the effect of six weeks of dynamic stability training on static balance and dynamic balance of college female basketball players.

## Hypothesis

It was hypothesized that six weeks of dynamic stability training would produce significant changes on static balance and dynamic balance of college female basketball players.

## METHODOLOGY

The college female basketball players from Department of Physical Education, Bharathiar University and Vanavarayar Institute of Agriculture in Manakkadavu, Divansapudhur, Pollachi, Tamilnadu, India were chosen at random to serve as study participants. They were between the ages of 18 and 21. The selected subjects were randomly divided into two groups: the experimental group consisting of fifteen subjects ( $n = 15$ ) from the Department of Physical Education, Bharathiar University, who underwent dynamic stability training and the control group consisting of fifteen subjects ( $n = 15$ ) from Vanavarayar Institute of Agriculture, who performed their regular activities. All individuals were tested on certain static and dynamic balancing components before to the commencement of the training experiment and the results were documented as pre-test scores. Following the pre-test, the experimental group engaged in a six-week dynamic stability training program consisting of three sessions on alternate days (Monday, Wednesday and Friday) for sixty minutes each. The intensity of the effort was raised by 5% every two weeks of training, ranging from 55% to 80%. The number of sets and repetitions determined the recommended volume of dynamic stability training. Conversely, the control group carried on with their regular activities without receiving any specialized instruction. All of the participants were retested for static balance (stroke stand test) and dynamic balance (modified bass test) after the six weeks of training and the results were recorded as post-test scores. The paired "t" test was used to analyse the pre- and post-test results.

## Statistical Technique

The examined the changes in mean values within each group from pre-test to post-test across the selected variables. The collected pre-test and post-test data were subjected followed by a paired t-test to determine the effects of the six-week training intervention. The results were presented in the form of tables and figures.

**Table – 1 Analysis of ‘t’ ratio for the pre-test and post-tests of control and experimental group.**

Variable	Group	Mean		SD		MD	SEM	df	‘t’ ratio
		Pre	Post	Pre	Post				
Static balance	Experimental	27.80	30.66	2.85	2.94	2.86	1.23	14	<b>3.32*</b>
	Control	27.93	27.33	2.68	2.25	0.60	0.30		1.96
Dynamic balance	Experimental	42.60	45.20	4.15	4.45	2.60	0.80		<b>3.21*</b>
	Control	42.53	43.26	3.96	4.07	0.73	1.18		0.61

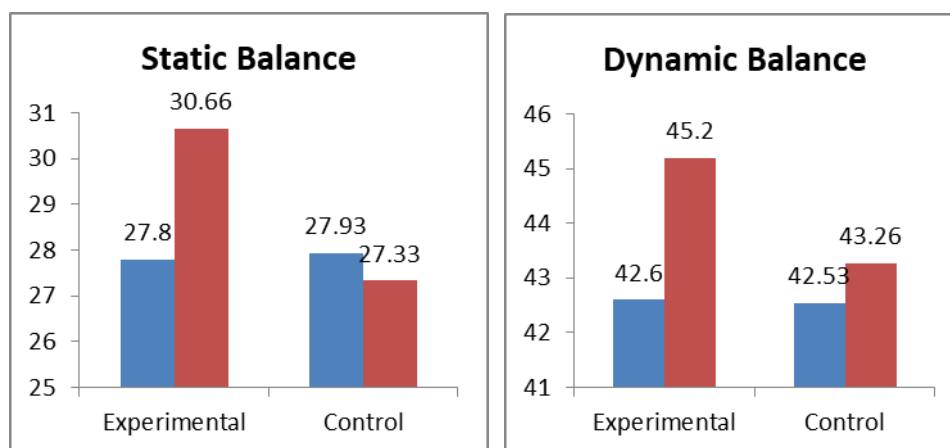
*\*Significance at 0.05 level of confidence 1 and 14 (2.14)*

The analysis of the paired ‘t’ ratio revealed that the experimental group showed significant improvement in both static balance and dynamic balance after undergoing dynamic stability training. In static balance, the mean value increased from 27.80 to 30.66 and the obtained ‘t’ ratio of 3.32 was higher than the required table value of 2.14 at the 0.05 level of confidence, indicating a significant improvement. Similarly, in dynamic balance, the mean value improved from 42.60 to 45.20 and the calculated ‘t’ ratio of 3.21 also exceeded the table value, showing significant enhancement due to the training programme. On the other hand, the control group did not show significant improvement in either variable. The obtained ‘t’ ratios for static balance (1.96) and dynamic balance (0.61) were lower than the table value of 2.14, indicating that regular activities did not produce significant changes in balance performance. Therefore, it was concluded that dynamic stability training had a positive and significant effect on improving both static and dynamic balance among the subjects.

## FINDINGS

1. The experimental group showed a significant improvement in static balance after undergoing dynamic stability training.
2. The experimental group demonstrated significant enhancement in dynamic balance following the training programme.
3. The obtained ‘t’ ratio values for static balance (3.32) and dynamic balance (3.21) in the experimental group were higher than the table value of 2.14 at the 0.05 level of confidence.
4. The control group did not show significant improvement in static balance, as the obtained ‘t’ ratio (1.96) was lower than the table value.
5. The control group also failed to show significant improvement in dynamic balance, with the obtained ‘t’ ratio (0.61) being lower than the required table value.

6. The results indicate that dynamic stability training was effective in improving both static and dynamic balance among the subjects.



**Fig - 1: Bar diagram shows the mean values of pre-test and post-tests of control and experimental group on static and dynamic balance.**

## DISCUSSION ON FINDINGS

The present study experimented with the effect of dynamic stability training on static and dynamic balance of college female basketball players. The significant improvement observed in static balance may be attributed to the regular practice of exercises involving controlled body movements, core muscle activation and proprioceptive stimulation. Dynamic stability training improves the ability of the nervous system to coordinate muscular actions effectively, thereby enhancing body control and equilibrium. **Granacher, Urs et al., (2011)** reported that balance-oriented training significantly improves postural control and neuromuscular efficiency among young individuals.

Similarly, the improvement in dynamic balance could be due to repeated movement-based exercises that challenge the body's center of gravity and improve reaction time, coordination and muscular responses. The findings of the present study are in agreement with the observations of **Behm, et al., (2012)**, who stated that instability and stability training enhance muscular coordination, joint stability and functional performance. On the contrary, the control group did not show any significant improvement in either static or dynamic balance because they continued their regular routine activities without participating in any specialized training programme. This indicates that normal daily activities alone are insufficient to produce measurable changes in balance performance. Therefore, it may be concluded that dynamic stability training is an effective method for improving both static and dynamic

balance among college students and can be included as an important component in physical education and sports training programmes.

## CONCLUSIONS

Based on the findings of the study, it was concluded that dynamic stability training significantly improved both static balance and dynamic balance among the subjects in the experimental group. The obtained results showed that systematic participation in dynamic stability exercises enhanced postural control, neuromuscular coordination and body equilibrium. The control group, which followed only regular activities, did not show any significant improvement in the selected variables. This indicates that ordinary daily activities alone are not sufficient to improve balance performance effectively.

Therefore, it was concluded that dynamic stability training is an effective training method for enhancing static and dynamic balance and may be incorporated into physical education programmes, fitness training and sports conditioning activities for college students.

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