ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 5| May 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

IMPACT OF PILATES TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG COLLEGE LEVEL BASKETBALL PLAYERS

Leema Rose.P[1], Hanny Lindha.C[2], Dr. V. Vallimurugan[3]
[1]*Master of Physical Education, Department of Physical Education, Bharathiar University, Coimbatore.*
[2]*Ph.D Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore.*
[3]*Assistant Professor, Department of Physical Education, Bharathiar University, Coimbatore.*

ABSTRACT
This research aims to assess the impact of Pilates training on selected physical fitness variables among college-level basketball players. Thirty basketball players aged between 18 and 25 years were selected from colleges affiliated with Bharathiar University, Coimbatore, Tamil Nadu. The subjects were randomly divided into two equal groups of fifteen each. Group I underwent Pilates training (PTG), while Group II acted as the control group (CG). The training programme was conducted for six weeks, with three sessions per week. The selected dependent variables included flexibility, balance, muscular strength, and core stability. Flexibility was measured using the sit-and-reach test in centimetres, balance was assessed using the stork balance test in seconds, muscular strength was measured by the push-up test in counts, and core stability was evaluated using the plank test in seconds. Measurements were taken before and after the training period. The collected data were analyzed using the dependent 't' test. The results of the study revealed that there was a significant improvement in flexibility, balance, muscular strength, and core stability among the Pilates training group compared to the control group.

KEYWORDS: *Pilates Training, Basketball, Flexibility, Balance, Muscular Strength And Core Stability*

INTRODUCTION

Pilates training has gained significant recognition in modern sports conditioning due to its holistic approach to physical fitness. For basketball players, who require a combination of strength, speed, agility, balance, coordination, and endurance, Pilates serves as an effective supplementary training method. It emphasizes core stability, controlled movements, proper breathing, flexibility, and mind–body coordination, all of which are crucial for optimal basketball performance. One of the primary benefits of Pilates training is the development of core strength. The core muscles (abdominals, lower back, hips, and pelvis) play a vital role in maintaining posture, balance, and stability during basketball movements such as jumping, shooting, pivoting, and rapid directional changes. Enhanced core strength helps players generate more power efficiently while reducing unnecessary strain on the spine and extremities.

Basketball demands excellent dynamic balance and coordination, especially during lay-ups, rebounds, defensive stances, and sudden stops. Pilates exercises focus on controlled, precise movements that improve neuromuscular coordination and body awareness. As a result, players can maintain better control of their bodies during complex game situations. Pilates promotes flexibility by emphasizing lengthening of muscles along with strengthening. Improved flexibility enhances joint mobility in the shoulders, hips, ankles, and spine, which is essential for shooting accuracy, defensive reach, and smooth movement execution. Increased range of motion also contributes to more efficient movement patterns and reduced stiffness. Basketball players are prone to injuries such as ankle sprains, knee ligament injuries, lower back pain, and shoulder problems. Pilates helps correct muscular imbalances, improves posture, and strengthens stabilizing muscles, thereby reducing injury risk. It is also widely used in rehabilitation programs, as it allows controlled, low-impact movements that support recovery without excessive stress. Pilates training involves sustained muscle engagement with controlled breathing, which enhances muscular endurance. Improved endurance enables basketball players to maintain performance levels throughout the game, particularly during long matches or tournaments where fatigue can negatively affect skills and decision-making.

Good posture is essential for efficient movement and injury prevention. Pilates emphasizes spinal alignment and postural awareness, helping basketball players maintain correct body mechanics during training and competition. Proper alignment improves efficiency in running, jumping, and landing movements. Pilates integrates breathing techniques with movement, which helps in reducing stress, improving concentration, and enhancing mental focus. Basketball is a fast-paced sport that requires quick decision-making and sustained attention. The mind–body connection developed through Pilates can positively influence confidence, composure, and overall mental performance. By improving core strength, flexibility, balance, endurance, and mental focus, Pilates training contributes to overall athletic performance. When combined with regular basketball-specific training, it enhances functional fitness, movement efficiency, and performance consistency.

PILATES TRAINING

Pilates training is a mind-body conditioning system developed in the early 1920s that emphasizes core strength, flexibility, posture, and muscular control through deliberate, breath-synchronized movements. Originally dubbed "Contrology" by Pilates in 1945, this methodology uses mat exercises or specialized apparatus (such as the Reformer) to strengthen the "powerhouse"—the abdomen, lower back, hips, and glutes—

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 5| May 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

while correcting imbalances. It aims for uniform development, creating a long, lean physique rather than bulk, enhancing functional movement, and fostering body awareness, making it effective for both athletic conditioning and rehabilitation. (Joseph Pilates-1920)

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the "Impact of Pilates Training on Selected Physical Fitness Variables among Basketball Players."

METHODS

EXPERIMENTAL DESIGN

The study was formulated as pre-test and post-test randomized groups design from the players initially for the study, based on the voluntary response to participate in thirty intercollegiate women basketball players were selected from Bharathiar University affiliated colleges further process in which thirty basketball players were randomly selected. The age ranged from 18 to 25 years and they were divided into two equal groups namely Pilates training group(PTG) and control group(CG). The selected subject (N=30) was divided into two groups (n=15) which group I underwent Pilates training group(PTG) and group II was consider as control group (CG). The Pilates training group (PTG) Group- I underwent the specific training in the evening session for a period of six weeks. Group-II (control group) was not treated with any special training had they were doing their regular activity.

TRAINING PROGRAM

The total duration of Pilates training was 6weeks. The load was increased one in two physical fitness training progress and lasted for 60 minutes During the training period the subject were treated with Pilates training for three alternative days (Monday Wednesday Friday) per week.

PHASE I

During the 1 to 2 weeks of Pilates training the subjects were treated with warm up for 10minutes. Followed by Pilates training namely breathing exercises, pelvic curl, plank, hip bridge, double leg stretch, side kick, side plank underwent 12 repetitions with 3 sets. Further the session ended with warming down for 10minutes.

PHASE II

During the 3 to 4 weeks of Pilates training the subjects were treated with warm up for 10minutes. Followed by Pilates training namely Breathing exercises, Pelvic curl, Hip bridge, Double leg stretch, Side kick, Side plank, plank underwent 15 repetitions with 3 sets. Further the session ended with warming down for 10minutes.

PHASE III

During the 5 to 6 weeks of Pilates training the subjects were treated with warm up for 10minutes. Followed by Pilates training namely Breathing exercises, Hip bridge, Side kick, Plank, Side plank, Double leg stretch, Pelvic curl, underwent 15 repetitions with 4 sets Further the session ended with warming down for 10 minutes.

STATISTICAL TECHNIQUE

The collected data on flexibility, balance, muscular strength and core stability due to the effects of Pilates training was analyzed by computing mean and standard deviation. In order to find out the significant improve if any 't' test was applied 0.05 level of confidence was fixed to test the level of significance.

RESULTS

Table: 1 Computation of 't' ratio between pre and post-test means of experimental group

Physical Fitness Variables	Pre/ Post Test	Mean	S.D	Std error mean	't' ratio
FLEXIBILITY	PRE TEST	32.6	3.13	0.13	11.00*
	POST TEST	34.06	3.21		
BALANCE	PRE TEST	37.53	0.49	0.01	11.30*
	POST TEST	39.27	0.52		
MUSCULAR STRENGTH	PRE TEST	37.86	5.42	0.1	11.22*
	POST TEST	39.06	5.39		
CORE STABILITY	PRE TEST	62.4	0.26	0.04	3.00*
	POST TEST	75.8	0.3		

*Significant at 0.05 level of confidence (2.145), 1 & 14.

Table 1 reveals that the Computation of 't' ratio between pre and post-test means of experimental group on selected physical fitness variables. The 't' ratio on flexibility, balance, muscular strength and core stability are 11.00,11.30,11.22 and 3.00 respectively. The required table value was 2.14 for the degrees of freedom 14 at 0.05 level of significance. Since the obtained 't' ratio values were greater than the table value, it was found statistically significant.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 5| May 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

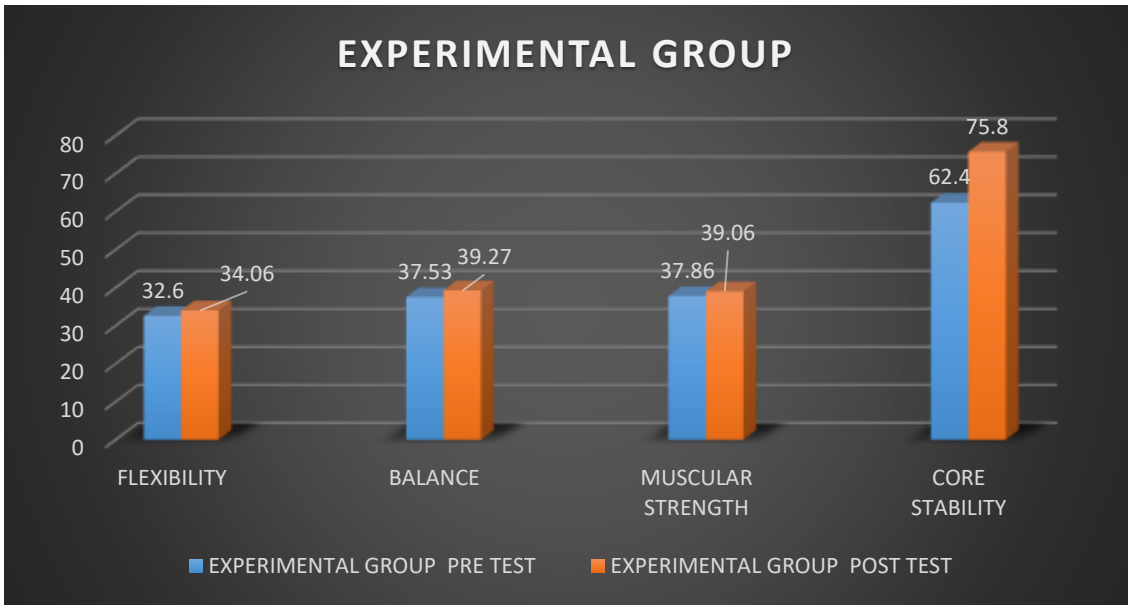
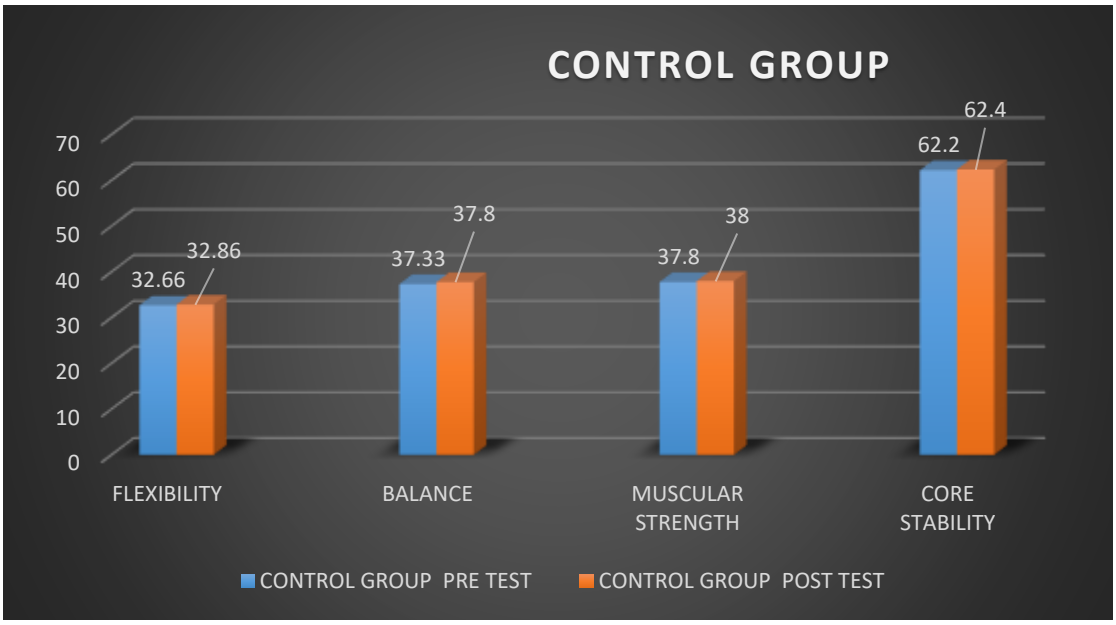


Table: 2 Computation of 't' ratio between pre and post-test means of Control Group

PHYSICAL FITNESS VARIABLES	PRE/POST TEST	MEAN	S.D	STD ERROR MEAN	t' ratio
FLEXIBILITY	PRE TEST	32.66	3.06	0.1	1.87
	POST TEST	32.86	2.94		
BALANCE	PRE TEST	37.33	0.41	0.02	1.97
	POST TEST	37.8	0.44		
MUSCULAR STRENGTH	PRE TEST	37.8	5.34	0.1	1.87
	POST TEST	38	5.29		
CORE STABILITY	PRE TEST	62.2	0.22	0.02	0.82
	POST TEST	62.4	0.22		

Significant at 0.05 level of confidence (2.14) 1 & 14

Table 2 reveals that the Computation of 't' ratio between pre and post-test means of Control group on selected physical fitness variables. The 't' ratio on flexibility, balance, muscular strength and core stability are 1.87,1.97,1.87 and 0.82 respectively. The required table valve was 2.14 for the degrees of freedoms 14 at 0.05 level of significance. Since the obtained 't' ratio values were lower than the table value. It was found statistically insignificant.



ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 5| May 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

DISCUSSION ON FINDINGS

The present study was experienced the effects of Pilates training programme on selected physical fitness variables among college level basketball players. The result of this study indicated that the Pilates training improved the physical fitness variables such as flexibility, balance, muscular strength and core stability.

The results of the present study would indicate the Pilates training programme was effective method to improve flexibility, balance, muscular strength and core stability of college level basketball players.

CONCLUSIONS

Based on the findings and within the limitation of the study, it was noticed that practice of Pilates training helped to improved flexibility, balance, muscular strength and core stability of college level women basketball players. It was also seen that there is progressive improvement in the selected physical fitness variables of Pilates training group of college level women basketball players after six weeks. Further, it also helps to improve flexibility, balance, muscular strength and core stability.

- It was concluded that six weeks of Pilates training produced significant improvement in flexibility of college level women basketball players.
- It was concluded that six weeks of Pilates training produced significant improvement in balance of college level women basketball players.
- It was concluded that six weeks of Pilates training produced significant improvement in muscular strength of college level women basketball players.
- It was concluded that six weeks of Pilates training produced significant improvement in core stability of college level women basketball players.

REFERENCE

1. *Hanny Lindha C, & Dr. V. Vallimurugan (2025) Impact of Pilates Training On Weight Reduction Among Obese Women, Recent Trends in Multidisciplinary Approach to Sports and Sports Sciences. Volume-2, Pages-232-234.*
2. *Tavares JMA, Cutisque LP, Buckley JG, Rodacki ALF (2025), Impact of Pilates training on lower limb joint muscle strength in unilateral transtibial amputees: a single-cohort pre-post-intervention study. Complement Ther Clin Pract. 2025 Aug;60:102000. doi:10.1016/j.ctcp.2025.102000. Epub 2025 May 6. PMID: 40347634.*
3. *Lee, K. (2025). Effects of Core Stability Training on Deep Stabilizing Muscle Function and Neuromuscular Control. Medicina, 61(3), 364*
4. *Karpouzi, C., Kypraiou, A., Mougios, V., & Petridou, A. (2025), Effects of protein supplementation during pilates training on body composition, core muscle endurance, and joint flexibility in trained women: a randomized controlled trial. Journal of the International Society of Sports Nutrition, 22(1), 2472891.*
5. *Zhang, K., Li, Y., Zhao, F., Xie, X., Yan, S., Kong, D., ... & Ma, H. (2025). The efficacy and safety of pilates exercise in patients with knee osteoarthritis: a systematic review with meta-analysis of randomized controlled trials. Annals of medicine, 57(1), 2540616.*
6. *Seong, D., & Kim, D. (2025). The effects of mat Pilates exercise and barrel Pilates exercise on body composition and muscle activity in adult women. Journal of Bodywork and Movement Therapies, 44, 686-690.*
7. *Saçlı, V., & Çatalbaş, M. (2025). The effect of Pilates exercises on functional movement screening: A systematic review. Advances in Health and Exercise, 5(1), 8-14.*
8. *arnas M, Marszałek A, Kufel-Grabowska J, Marszałek S, Wieliński D, Zieliński J 2024 , Effects of Pilates Training on Cardiorespiratory Functions in Medical Conditions - Comprehensive Approach: A Narrative Review. Aging Dis. 2024 Aug 1;15(4):1771-1783. doi: 10.14336/AD.2023.0929. PMID: 38029402; PMCID: PMC11272188.*
9. *Oliveira LS, de Oliveira RG, da Silva TQ, Gonzaga S, de Oliveira LC 2024, Effects of pilates exercises on strength, endurance and muscle power in older adults: Systematic review and meta-analysis. J Bodyw Mov Ther. 2024 Jul;39:615-634. doi: 10.1016/j.jbmt.2024.02.021. Epub 2024 Mar 9. PMID: 38876695.*
10. *Karthikeyan, S., Sumanth, G., & Senthilselvam, P. (2024), Effects of pilates training on performance among the collegiate basket ball players.*