

EFFECT OF WEIGHT TRAINING ON STATIC BALANCE AMONG HANDBALL PLAYERS

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Abstract: The present study aimed to investigate the effect of weight training on static balance among handball players. A total of 100 male handball players aged between 14–19 years were selected and randomly divided into two groups: experimental (n=50) and control (n=50). The experimental group underwent a structured weight training program for 12 weeks, while the control group continued their regular routine without any specialized training. Static balance was assessed using the BASS Stick Test before and after the training period. The results revealed that the experimental group showed improvement in balance performance, while the control group demonstrated minimal or no change between pre and post-test scores. However, statistical analysis using Analysis of Covariance (ANCOVA) indicated that the difference between the groups was not significant at the 0.05 level. Although the findings were not statistically significant, practical improvement observed in the experimental group suggests that weight training may contribute positively to balance development. Balance is a key component in handball, influencing stability, coordination, and overall performance during dynamic movements. The study concludes that weight training alone may not be sufficient to significantly enhance balance among handball players and should be combined with balance-specific exercises. Future studies are recommended with longer duration and larger samples to establish stronger evidence.

Keywords: Weight Training, Static Balance, Handball Players, Physical Fitness, BASS Stick Test

I. INTRODUCTION

Balance is a fundamental component of physical fitness and plays a crucial role in sports performance, particularly in handball, where players frequently perform rapid movements, jumps, and directional changes. Static balance refers to the ability to maintain body equilibrium while stationary and is essential for stability during skill execution (Winter, 2009). In handball, maintaining balance is critical for shooting accuracy, defensive positioning, and injury prevention. Poor balance can lead to decreased performance efficiency and increased risk of falls or injuries (Hrysomallis, 2011). Therefore, improving balance is an important objective in athletic training programs.

Weight training is widely used to enhance muscular strength and neuromuscular coordination, which are key factors influencing balance. Strengthening core and lower limb muscles contributes to better postural control and stability (Stone et al., 2007). However, research findings regarding the effect of weight training on balance are inconsistent. Some studies (Bansode & Singh (2022); Bansode & Singh (2022 a); Bansode & Singh, 2022 b). Singh S.K, 2018; Sinku S.K, 2016) report improvements in balance due to increased muscular control, while others suggest that balance requires more specific training stimuli (Behm & Anderson, 2006).

According to Singh S.K. (2018), balance is influenced by multiple factors such as proprioception, coordination, and neuromuscular efficiency, which may not be fully developed through resistance training alone.

Considering the importance of balance in handball and the limited evidence on the role of weight training, the present study aims to examine its effect on static balance among handball players.

II. METHODOLOGY

Participants

A total of 100 handball players aged 14–19 years were selected:

1. Experimental Group: 50
2. Control Group: 50

Research Design

Experimental pre-test and post-test design.

Inclusion Criteria

1. Willing participants
2. Collegiate-level handball players
3. Age between 14–19 years

Exclusion Criteria

1. Injuries or physical illness
2. Chronic medical conditions
3. Substance use during study

Variable

1. Independent Variable: Weight Training
2. Dependent Variable: Static Balance

Test Used

1. BASS Stick Test (Crosswise)

Training Programme

12 weeks weight training (4 days/week, 60 minutes/session) for experimental group only.

Statistical Analysis

Mean, Standard Deviation, and ANCOVA at 0.05 significance level.

III. RESULTS

Table-1

Means &SDs of Pre & Post test of handball players with respect to Balance ability among Control group.

components	Test	Numbers	Mean Scores (sec.)	Standard Deviations
Balance	Pre Test	50	33.45	5.55
	Post Test	50	34.45	5.55

Table-1 presents the mean scores and standard deviations of balance ability among handball players in the control group as measured by the BASS Stick Test. The mean value of the pre-test was 33.45 seconds with a standard deviation of 5.55, while the post-test mean slightly increased to 34.45 seconds with the same standard deviation of 5.55. This marginal increase in mean score indicates a very slight improvement in balance performance. However, the difference between pre and post-test values is minimal, suggesting that no substantial improvement occurred in the control group. Since no specific training intervention was provided, the results indicate that regular routine activities alone were not sufficient to significantly enhance balance ability among handball players.

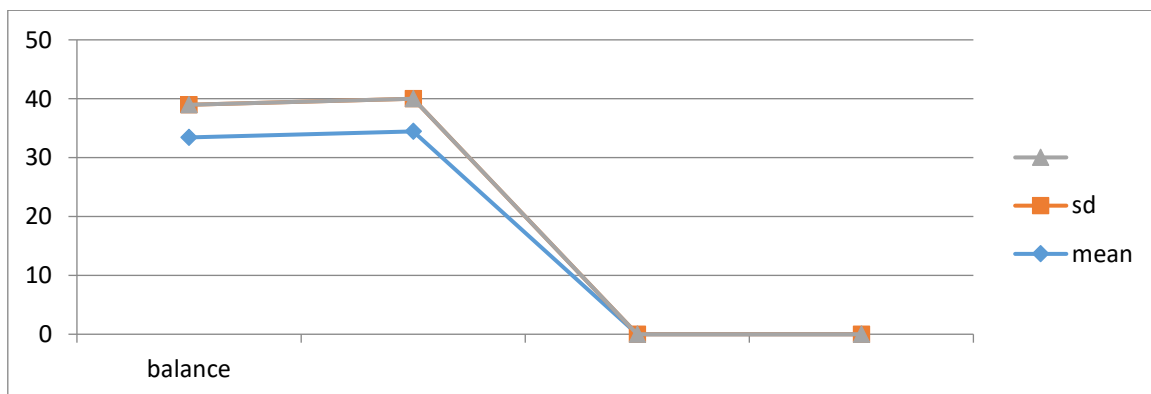


Figure-1 shows the Means &SDs of Pre & Post test of handball players with respect to Balance ability among Control group

Table-2
 Means &SDs of Pre & Post test of handball players with respect to Balance ability among Experimental group.

components	Test	Number	Mean Scores	Standard Deviations
Balance	Pre Test	50	34.39	6.40
	Post Test	50	37.34	7.06

Table-2 presents the mean scores and standard deviations of balance ability among handball players in the experimental group as measured through the BASS Stick Test. The pre-test mean score was 34.39 seconds with a standard deviation of 6.40, while the post-test mean increased to 37.34 seconds with a standard deviation of 7.06. This noticeable increase in mean score indicates an improvement in balance performance, as higher duration reflects better static balance. The difference between pre and post-test values suggests that the training intervention had a positive effect on balance ability among the experimental group. Therefore, it can be inferred that structured training contributed effectively to enhancing the balance performance of handball players.

Figure-2 shows the Means &SDs of Pre & Post test of handball players With respect to Balance ability among Experimental group.

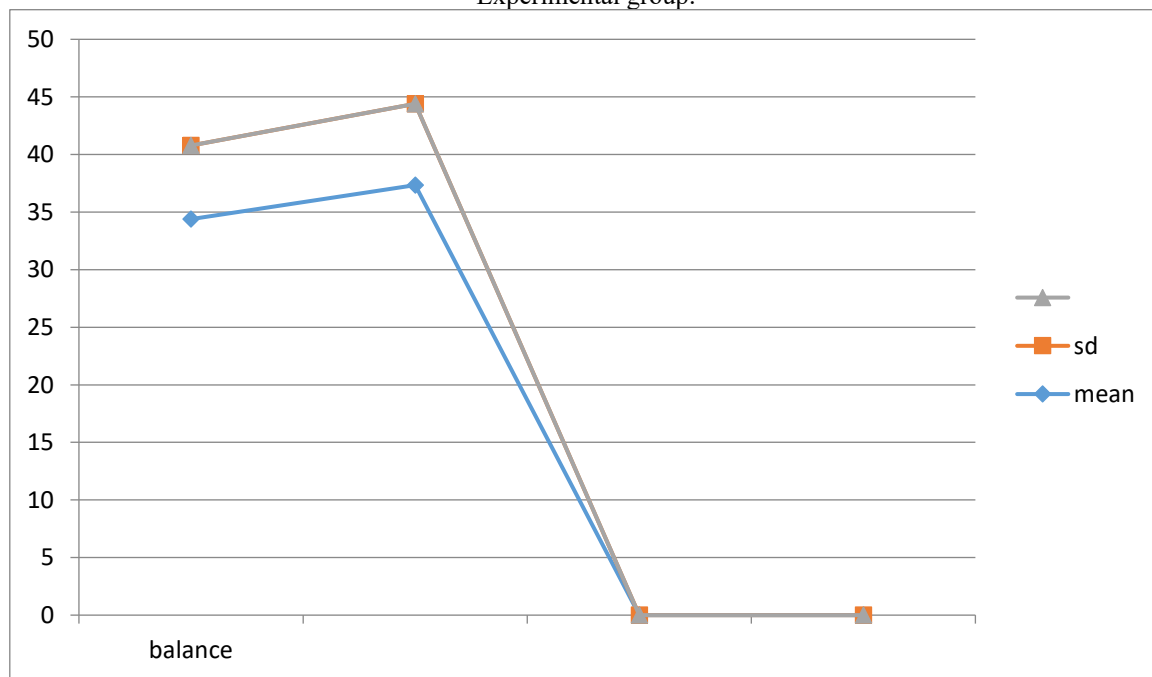


Table-3
 Analysis of Covariance of effects of weight training on handball players with respect to Balance.

Source Variation	of	DF	Ssx	Ssy	Ssxy	Ssyx	Mssyx	F-ratio
Treatment group Mean	group	3	8.90	7.85	2.13	2.17	4.62	2.40NS
Errors group Mean	group	197	11.89	14.96	1.79	3.44	1.92	

Not Significant.

Table-3 presents the Analysis of Covariance (ANCOVA) of the effects of weight training on balance ability among handball players. The obtained F-ratio for the treatment group mean is 2.40, which is marked as not significant at the 0.05 level. This indicates that there is no statistically significant difference between the adjusted post-test means of the experimental and control groups. Although the experimental group showed improvement in balance performance, the variation was not sufficient to reach statistical significance. The error mean square value (1.92) reflects variability within

the groups. Hence, it can be concluded that weight training did not produce a significant effect on balance ability among handball players in this study. Therefore, the hypothesis regarding significant improvement in balance is not supported.

IV. DISCUSSION

The findings of the study indicate that weight training resulted in slight improvement in static balance among handball players in the experimental group. This improvement may be attributed to enhanced muscular strength and neuromuscular coordination, particularly in the lower limbs and core muscles, which are essential for maintaining postural stability.

However, the results were not statistically significant, suggesting that weight training alone may not be sufficient to produce substantial improvements in balance. Balance is a complex ability influenced by sensory input, proprioception, and coordination, which require specific balance-oriented exercises (Hrysonmallis, 2011).

The control group showed no improvement, highlighting the importance of structured training interventions. According to Singh S.K. (2018), effective balance development requires targeted and sport-specific training methods.

Thus, it can be concluded that while weight training contributes to balance improvement, incorporating balance-specific exercises such as stability training may yield better results.

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