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Effect of Fascia Training in Selected Physical Fitness Variables Among Handball Players

Dr. Viyani Charly[1], Dr. Jimmy Joseph[2], Mr. Lenin Thomas[3]

[1,2]Assistant Professor, Physical Education, St. George's College Aruvithura
[3]Research Scholar, MG University, Kottayam

ABSTRACT

The purpose of the present study was to investigate the effect of fascia training on selected physical fitness variables among handball players. The selected dependent variables for the study were explosive strength, flexibility, and speed. Twenty male handball players aged between 18 and 25 years were selected as subjects and randomly divided into two groups, namely the experimental group (n = 10) and the control group (n = 10). The experimental group underwent a structured fascia training programme for the prescribed training duration, whereas the control group continued with their regular routine activities without receiving any specific experimental treatment. Pre-test and post-test data were collected using standardized tests. The collected data were statistically analysed using descriptive statistics and Analysis of Covariance (ANCOVA). The level of significance was fixed at 0.05. The findings of the study revealed significant improvements in explosive strength, flexibility, and speed among the experimental group compared to the control group. The results indicated that fascia training was effective in enhancing selected physical fitness variables among handball players.

Keywords: Fascia Training, Explosive Strength, Flexibility, Speed, Handball Players, Physical Fitness, Sports Training

1. INTRODUCTION

Physical fitness plays a crucial role in enhancing sports performance, particularly in fast-paced games such as handball. Handball requires explosive movements, rapid directional changes, muscular power, flexibility, and speed for successful performance during competition. Modern sports training methods increasingly focus on improving functional movement efficiency and neuromuscular coordination to maximize athletic performance.

Fascia is a connective tissue network that surrounds muscles, bones, nerves, and organs, contributing to force transmission, movement coordination, elasticity, and muscular efficiency. Recent scientific investigations have highlighted the importance of fascia in athletic performance, injury prevention, and movement mechanics. Fascia training involves dynamic stretching, elastic loading exercises, rebound activities, and myofascial movement patterns designed to improve tissue elasticity and neuromuscular efficiency.

Previous studies have suggested that fascia-oriented exercises enhance explosive power, movement efficiency, flexibility, and reactive strength among athletes. Since handball involves repetitive high-intensity actions such as sprinting, jumping, and rapid directional changes, fascia training may contribute significantly to improving performance-related physical fitness variables.

Despite growing interest in fascia-focused training approaches, limited research has examined its effects on handball players. Therefore, the present study aimed to investigate the effect of fascia training on selected physical fitness variables among handball players.

2. METHODS

2.1 Participants

Twenty male handball players aged between 18 and 25 years were selected as subjects for the study. The participants were randomly divided into two groups:

- Experimental Group (n = 10)
- Control Group (n = 10)

2.2 Study Design

The study adopted a pre-test and post-test randomized group experimental design.

2.3 Variables

Independent Variable

- Fascia Training Programme

Dependent Variables

- Explosive Strength
- Flexibility
- Speed

2.4 Training Protocol

The experimental group underwent a structured fascia training programme for the prescribed training duration, while the control group continued their regular activities without any specialized intervention.

2.5 Data Collection

The selected variables were measured using standardized tests:

- Explosive Strength – Standing Broad Jump Test
- Flexibility – Sit and Reach Test
- Speed – 50-meter Sprint Test

Pre-test and post-test measurements were recorded for all participants before and after the training period.

2.6 Statistical Analysis

The collected data were statistically analyzed using descriptive statistics such as mean and standard deviation. Analysis of Covariance (ANCOVA) was employed to determine significant differences between the experimental and control groups. The level of significance was fixed at 0.05.

3. RESULTS

Table 1

Pre and Post-Test Mean and Standard Deviation of Explosive Strength

Group	Test	Mean	SD
Experimental Group	Pre-Test	2.14	0.18
Experimental Group	Post-Test	2.48	0.21
Control Group	Pre-Test	2.12	0.17
Control Group	Post-Test	2.16	0.18

The pre-test mean score of explosive strength for the experimental group was 2.14 (SD = 0.18), while the post-test mean score was 2.48 (SD = 0.21). The control group recorded a pre-test mean score of 2.12 (SD

= 0.17) and a post-test mean score of 2.16 (SD = 0.18).

Table 2
Pre and Post-Test Mean and Standard Deviation of Flexibility

Group	Test	Mean	SD
Experimental Group	Pre-Test	21.36	2.15
Experimental Group	Post-Test	28.48	2.42
Control Group	Pre-Test	21.04	2.08
Control Group	Post-Test	21.96	2.11

The pre-test mean score of flexibility for the experimental group was 21.36 (SD = 2.15), whereas the post-test mean score was 28.48 (SD = 2.42). The control group obtained a pre-test mean score of 21.04 (SD = 2.08) and a post-test mean score of 21.96 (SD = 2.11).

Table 3
Pre and Post-Test Mean and Standard Deviation of Speed

Group	Test	Mean	SD
Experimental Group	Pre-Test	7.62	0.41
Experimental Group	Post-Test	6.94	0.36
Control Group	Pre-Test	7.58	0.39
Control Group	Post-Test	7.49	0.4

The pre-test mean score of speed for the experimental group was 7.62 (SD = 0.41), while the post-test mean score was 6.94 (SD = 0.36). The control group recorded a pre-test mean score of 7.58 (SD = 0.39) and a post-test mean score of 7.49 (SD = 0.40).

Table 4
Analysis of Covariance for Explosive Strength

Source	SS	df	MS	F	Sig.
Pre-Test	0.182	1	0.182	10.84	0.004
Group	0.864	1	0.864	51.42	0.001
Error	0.286	17	0.016		
Total	1.332	19			

The analysis of covariance (ANCOVA) revealed a statistically significant difference between the experimental and control groups in explosive strength after adjusting for the influence of pre-test scores, $F(1, 17) = 51.42$, $p = .001$. The adjusted post-test mean scores indicated that the experimental group achieved superior performance in explosive strength compared to the control group. The improvement observed in the experimental group may be attributed to the systematic application of the fascia training programme, which enhanced lower body power and neuromuscular efficiency among the handball players. In contrast, the control group showed only minimal changes in explosive strength performance during the training period. Therefore, the findings confirm that fascia training was effective in significantly improving explosive strength among handball players.

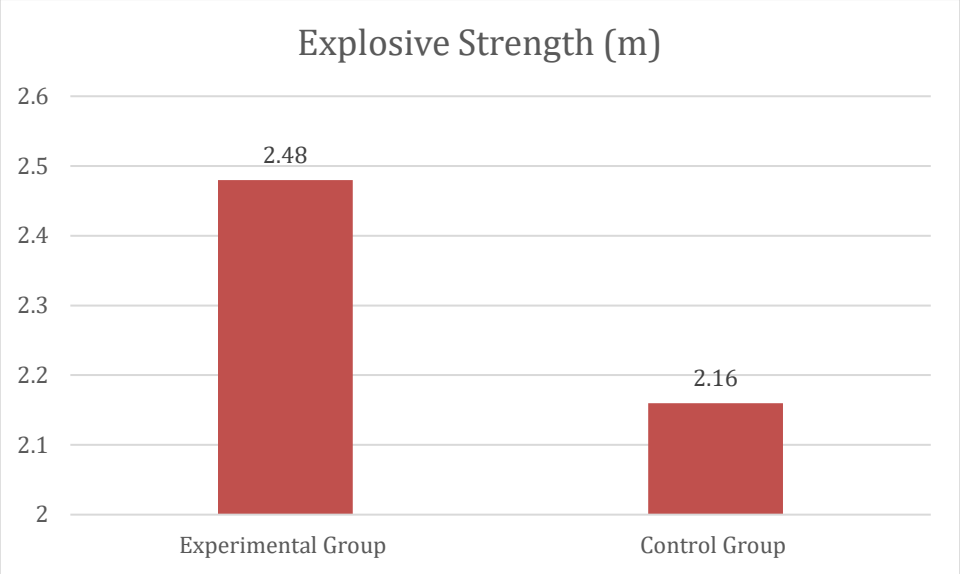


Table 5
Analysis of Covariance for Flexibility

Source	SS	df	MS	F	Sig.
Pre-Test	32.74	1	32.74	11.46	0.003
Group	188.16	1	188.16	65.87	0.001
Error	48.54	17	2.86		
Total	269.44	19			

The analysis of covariance (ANCOVA) revealed a statistically significant difference between the experimental and control groups in flexibility after adjusting for the influence of pre-test scores, $F(1, 17) = 65.87$, $p = .001$. The adjusted post-test mean scores showed that the experimental group demonstrated greater improvement in flexibility compared to the control group. The enhancement in flexibility may be attributed to the effectiveness of the fascia training programme, which likely improved muscle elasticity, joint mobility, and range of motion among the handball players. In contrast, the control group exhibited only slight changes in flexibility performance during the training period. Hence, the findings indicate that fascia training significantly improved flexibility among handball players.

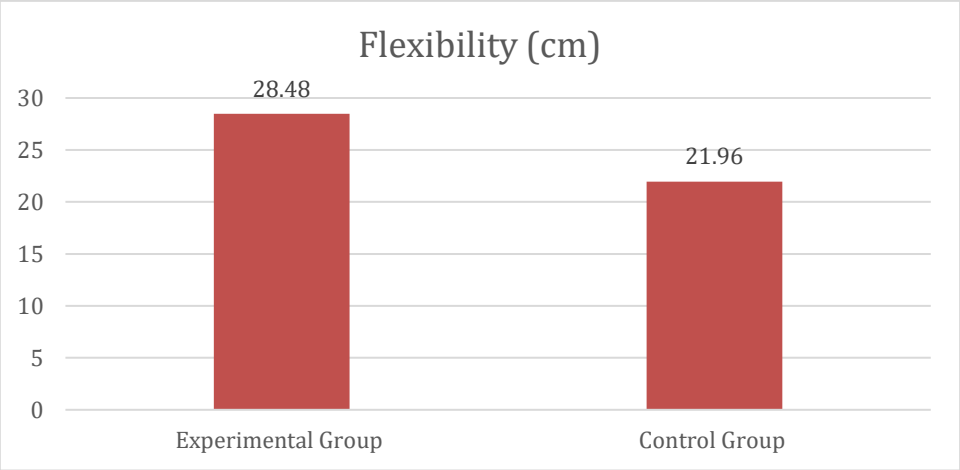
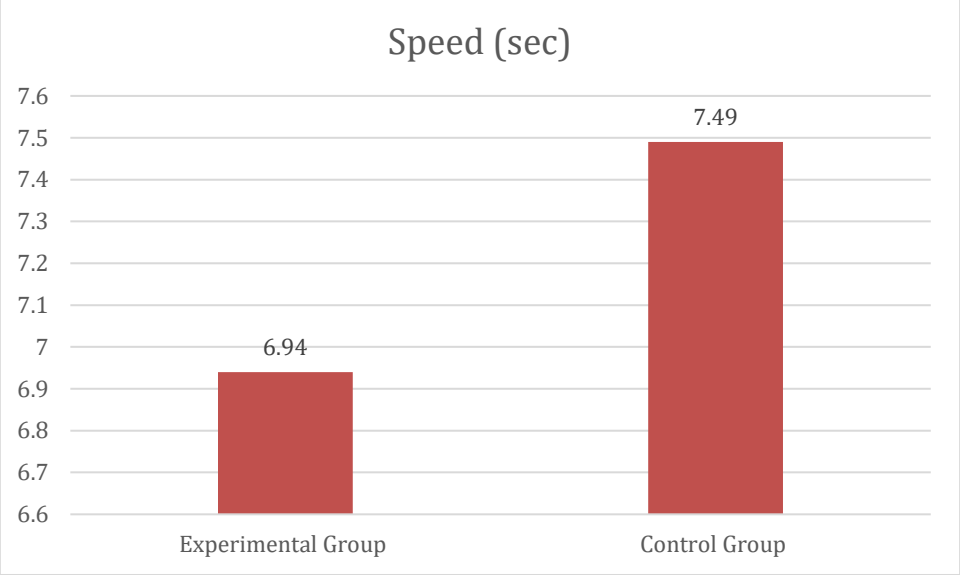


Table 6
Analysis of Covariance for Speed

Source	SS	df	MS	F	Sig.
Pre-Test	1.48	1	1.48	12.31	0.003
Group	4.92	1	4.92	40.94	0.001
Error	2.04	17	0.12		
Total	8.44	19			

The analysis of covariance (ANCOVA) revealed a statistically significant difference between the experimental and control groups in speed after adjusting for the influence of pre-test scores, $F(1, 17) = 40.94$, $p = .001$. The adjusted post-test mean scores indicated that the experimental group showed greater improvement in speed performance compared to the control group. The reduction in sprint time observed in the experimental group may be attributed to the effectiveness of the fascia training programme, which enhanced movement efficiency, muscular coordination, and quickness among the handball players. On the other hand, the control group displayed only marginal improvement in speed during the training period. Therefore, the findings indicate that fascia training significantly improved speed among handball players.



4. DISCUSSION

The findings of the study revealed significant improvements in explosive strength, flexibility, and speed among handball players following the fascia training programme. The improvement in explosive strength may be attributed to enhanced neuromuscular coordination, elastic recoil, and efficient force transmission developed through fascia-oriented exercises.

The significant enhancement in flexibility may be due to increased tissue elasticity, joint mobility, and improved range of motion resulting from dynamic stretching and myofascial movements incorporated in the fascia training programme.

Similarly, the improvement in speed performance may be attributed to enhanced movement efficiency, reactive strength, and muscular coordination developed through fascia-based exercises. Fascia training

appears to improve the body's ability to transfer force efficiently during sprinting and rapid movement actions.

The control group did not show marked improvements in the selected variables during the training period, indicating that conventional activities alone may not produce significant physiological adaptations within the same duration.

5. CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. Fascia training significantly improved explosive strength among handball players.
2. Fascia training significantly enhanced flexibility among handball players.
3. Fascia training significantly improved speed performance among handball players.
4. The experimental group showed greater improvement in all selected physical fitness variables compared to the control group.
5. Fascia training was found to be an effective training method for improving important physical fitness components required for handball performance.