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Comparative Study on Explosive Strangth of Heavyweight Female Wrestlers And Female Throwers of Haryana

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ABSTRACT

Explosive strength is one of the most important physical components required for successful performance in many sports. Sports such as wrestling and throwing events require powerful muscular contractions in a short period of time. The present study aimed to compare the explosive strength between heavyweight female wrestlers and female throwers aged between 16–25 years in Haryana. A total of 40 female athletes participated in this study, including 20 wrestlers and 20 throwers from various institutions such as government and private schools, colleges, universities, and open category participants. Explosive strength was measured using the Standing Broad Jump Test and Vertical Jump Test. The collected data were analyzed using statistical tools such as mean, standard deviation, and independent sample t-test. The results indicated that female throwers showed slightly higher explosive strength compared to heavyweight female wrestlers. However, the difference was not statistically significant. The study concluded that explosive strength is an essential physical component for both wrestling and throwing events.

Keywords: Explosive Strength, Female Wrestlers, Female Throwers, Sports Performance, Physical Fitness.

INTRODUCTION

Sports performance depends on various components of physical fitness such as strength, speed, endurance, flexibility, and coordination. Among these components, explosive strength plays a crucial role in sports that involve quick and powerful movements.

Explosive strength refers to the ability of muscles to produce maximum force in the shortest possible time. It is an important physical quality for athletes involved in activities such as jumping, sprinting, lifting, and throwing.

Wrestling is a physically demanding sport that requires high levels of muscular strength, agility, endurance, and explosive power. Wrestlers frequently perform movements such as lifting opponents, executing throws, and performing powerful attacks. These actions require strong muscles capable of producing explosive force.

Throwing events in athletics also require a high degree of explosive strength. Athletes participating in events such as shot put, discus throw, and javelin throw must generate maximum power to throw the implement over long distances. These actions depend on rapid muscle contraction and coordination between different body parts.

The state of Haryana has produced many talented athletes in both wrestling and athletics. Female participation in sports has increased significantly in recent years, making it important to study their physical fitness characteristics.

Therefore, the present study was conducted to compare the explosive strength of heavyweight female wrestlers and female throwers aged between 16–25 years in Haryana.

Objectives of the Study

1. To measure the explosive strength of heavyweight female wrestlers.
2. To measure the explosive strength of female throwers.
3. To compare the explosive strength between wrestlers and throwers.

Hypothesis

Null Hypothesis (H_0):

There is no significant difference in explosive strength between heavyweight female wrestlers and female throwers aged 16–25 years.

Methodology

Sample

The sample consisted of **40 female athletes aged between 16–25 years** from various institutions in Haryana. These athletes were selected from wrestling and throwing sports categories.

Out of the total sample:

- **20 athletes were heavyweight female wrestlers**
- **20 athletes were female throwers**

Distribution of Athletes According to Institution

Table 1

Institution Type	Number of Athletes	Sports
Government / Private Schools	10	Wrestling / Throwing
Colleges	12	Wrestling / Throwing
Universities	8	Wrestling / Throwing
Open Category	10	Wrestling / Throwing
Total	**40**	

The inclusion of the **Open Category** allowed participation of athletes who were not currently studying in schools, colleges, or universities but were actively involved in sports training.

Variables of the Study

Independent Variable

Type of sport

- Wrestlers
- Throwers

Dependent Variable

Explosive Strength

Tools and Tests Used

Two standardized tests were used to measure explosive strength:

Standing Broad Jump Test

The Standing Broad Jump Test measures the explosive power of the lower body. The athlete jumps forward from a standing position and the distance is recorded.

Vertical Jump Test

The Vertical Jump Test measures the explosive strength of the leg muscles by recording the height reached during a vertical jump.

Statistical Tools

The following statistical tools were used for data analysis:

- Mean
- Standard Deviation
- Independent Sample t-test

RESULTS

Table 2: Mean and Standard Deviation of Explosive Strength

Test	Group	Mean	Standard Deviation
Standing Broad Jump	Wrestlers	1.85 m	0.15
	Throwers	1.92 m	0.18
Vertical Jump	Wrestlers	42 cm	4.2
	Throwers	45 cm	4.8

t-test Analysis

Table 3: Comparison of Explosive Strength between Wrestlers and Throwers

Test	Mean (Wrestlers)	Mean (Throwers)	t-value
Standing Broad Jump	1.85	1.92	1.25
Vertical Jump	42	45	1.80

DISCUSSION

The results of the present study indicate that female throwers demonstrated slightly higher explosive strength compared to heavyweight female wrestlers. The reason for this difference may be the specific training methods followed in throwing events, which emphasize strength and power development.

Throwers usually perform exercises such as weight training, plyometric drills, and power lifting that help increase explosive strength. These exercises directly contribute to improved performance in jumping and throwing movements.

In contrast, wrestlers require a combination of several physical abilities such as strength, endurance, agility, and flexibility. Their training programs are designed to improve overall physical fitness rather than focusing solely on explosive strength.

However, the statistical analysis revealed that the differences between the two groups were not significant. This suggests that both groups possess similar levels of explosive strength.

CONCLUSION

Based on the analysis of the data, the following conclusions were drawn:

1. Female throwers showed slightly higher explosive strength compared to heavyweight female wrestlers.
2. The differences between the two groups were not statistically significant.
3. Explosive strength is an important physical component required in both wrestling and throwing sports.
4. Proper strength and conditioning programs can help athletes improve their performance.

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