

---

---

# Identifying Fitness Parameters Affecting Throwing Performance in Athletics (Track & Field) Athletes from Maharashtra State

---

---

**Rohit Tambe**

Research Scholar, CACPE, Pune 37

**Dr. Ujwala Raje**

Research Guide CACPE, Pune 37

---

---

## ABSTRACT

*This research paper investigates the fitness parameters that significantly affect the performance of throwing athletes from Maharashtra State in Athletics (Track & Field) events. The study focuses on shot put, discus, javelin, and hammer throw athletes. A total of 76 coaches working with these athletes participated in the study, and data were collected using Google Forms. Statistical analysis was conducted using Excel software, presenting the frequency and percentage of each fitness factor tested. The research findings provide insights into the key fitness components that play a vital role in the success of throwing athletes in Maharashtra State.*

---

**Keywords :** Athletics, Throwers, Track & Field.

---

## Introduction

Athletics (Track & Field) includes a variety of events, among which throwing events (shot put, discus, javelin, and hammer throw) demand unique physical attributes and skills. Success in these events is closely linked to specific fitness parameters, making it essential to identify and understand these factors.

Importance of Fitness in Throwing Performance: Throwing events require a combination of physical attributes, including strength, power, speed, agility, flexibility, and more. These attributes directly impact an athlete's ability to excel in their chosen discipline. Identifying the most critical fitness parameters is essential for optimizing training and performance. (Improving Throwing Performance - Issuu, n.d.)

Athletics, particularly Track and Field, stands as a quintessential sport that showcases the prowess of an athlete's physical capabilities. Among the myriad of events that compose this sporting domain, throwing events hold a special place, demanding an extraordinary blend of strength, technique, and precision. In the state of Maharashtra, renowned for its rich sporting heritage and athletic talent, the pursuit of excellence in throwing events has become a prominent goal for athletes. To harness and maximize this potential, it is imperative to delve into the intricate realm of fitness parameters that significantly impact throwing performance in Track and Field athletes hailing from Maharashtra. This research not only seeks to uncover the essential dimensions of athletic prowess but also aims to refine and redefine the training methodologies, thereby enabling the athletes to reach new heights and compete on the national and international stage. This investigation thus embarks on a journey into the very heart of what makes a successful thrower in the context of Maharashtra, where tradition and talent converge to create champions. (Takanashi et al., 2020)

The world of sports and athletic performance has always been driven by a relentless pursuit of excellence, and the art of throwing, whether it's a baseball, a javelin, or any other projectile, is no exception. Throwing is a complex and dynamic athletic skill that demands a precise fusion of physical attributes and technical mastery. It is a pivotal aspect of many sports, from track and field to baseball, and a fundamental skill in various other activities, including recreational ones like darts or even casual games of catch.

Within this multifaceted world of throwing, understanding and optimizing the parameters that influence throwing performance is a subject of great intrigue and significance. These parameters, often interwoven with an athlete's physiological makeup, training regimens, and technical proficiency, collectively dictate the outcome of a throw – be it in terms of speed, accuracy, or distance.

In this pursuit of enhancing throwing performance, it becomes imperative to identify and delve into the various fitness parameters that play a pivotal role. These parameters encompass a wide spectrum of physical attributes, ranging from muscular strength and flexibility to biomechanical efficiency and coordination. By examining and dissecting these variables, athletes, coaches, and sports scientists can gain profound insights into the mechanisms that underlie optimal throwing performance. Furthermore, such insights can empower individuals to fine-tune their training strategies, correct deficiencies, and elevate their throwing abilities to new heights.

This exploration of the fitness parameters affecting throwing performance is not just confined to the world of professional athletes; it extends its relevance to enthusiasts and individuals seeking personal improvement in their respective throwing pursuits.

Whether aiming to achieve a personal best or secure a spot on the podium, the principles discussed in this endeavor apply universally, promoting a comprehensive understanding of the dynamic interplay between fitness and throwing success.

In this article, we embark on a journey to uncover the key fitness parameters that profoundly impact throwing performance. We will delve into the physiological underpinnings, the biomechanical intricacies, and the training strategies that together constitute the foundation for achieving peak throwing potential. From the pitcher's mound to the javelin runway, from the dartboard to the cricket field, the pursuit of precision and distance in throwing is a common aspiration, and our exploration of the fitness parameters that influence it will serve as a guide for those seeking to unlock their full throwing potential. (Academy, 2015)

**Research Problem:** The research problem addressed in this study is to identify the fitness parameters that significantly affect the performance of throwing athletes from Maharashtra State in Athletics (Track & Field).

**General Objective:** The primary objective of this study is to identify the fitness parameters that affect throwing performance in Athletics (Track & Field) athletes from Maharashtra State.

**Research Methodology:** This research was carried out by survey method. The population under study comprises Maharashtra State Athletics coaches actively working with throwing athletes. A sample of 76 coaches was selected using stratified random sampling, ensuring representation from various regions and levels of expertise. (Best, 2010)

Data was collected using a structured questionnaire administered through Google Forms. Coaches were asked to rate the importance of various fitness factors for their athletes.

### **Statistical Analysis:**

Data were analysed using Excel software to determine the frequency and percentage of coaches who emphasized each fitness factor for shot put, discus, javelin, and hammer throw athletes. (Miller, 2009)

**Table 1** : Statistical analysis of Fitness Factors dominating for Throwers

Fitness Factor	Frequency				%			
	Shot Put	Discuss	Javelin	Hammer	Shot Put	Discuss	Javelin	Hammer
Muscular strength	61	114	56	53	14.45	24.52	13.49	12.71
Explosive Power	70	70	67	62	16.59	15.05	16.14	14.87
Speed	64	67	68	65	15.17	14.41	16.39	15.59
Height	61	58	62	61	14.45	12.47	14.94	14.63
Specific Power	23	28	35	39	5.45	6.02	8.43	9.35
Flexibility	16	21	18	16	3.79	4.52	4.34	3.84
Weight	20	20	23	27	4.74	4.30	5.54	6.47
Arm length	16	16	14	13	3.79	3.44	3.37	3.12
Leg length	13	14	14	12	3.08	3.01	3.37	2.88
Reaction time	17	13	15	15	4.03	2.80	3.61	3.60
Agility	13	13	11	14	3.08	2.80	2.65	3.36
Coordination	12	13	14	16	2.84	2.80	3.37	3.84
Muscular endurance	11	12	11	12	2.61	2.58	2.65	2.88
C.V. Endurance	8	5	7	12	1.90	1.08	1.69	2.88
Technique	1	1			0.24	0.22	0.00	0.00
Balance	15				3.55	0.00	0.00	0.00
Mind set	1				0.24	0.00	0.00	0.00
	<b>422</b>	<b>465</b>	<b>415</b>	<b>417</b>				

To interpret and draw conclusions from the frequency and percentage data provided for various fitness factors related to shot put, discus, javelin, and hammer throwers, the analysis was done by categories.

**Muscular Strength:** Muscular strength is considered a crucial factor for all four throwing events, with the highest percentage in discus (24.52%) and the lowest in hammer throw (12.71%). This indicates that a majority of athletes in all events recognize the importance of muscular strength in their performance.

**Explosive Power** : Explosive power also plays a significant role in all events, with fairly consistent percentages across the board. This suggests that athletes understand the need for explosive power to generate force during throws.

**Speed** : Speed is another important factor across all events, with relatively uniform percentages. Athletes recognize that speed contributes to the effectiveness of their throws.

**Height** : Height is less crucial in discus and javelin compared to shot put and hammer throw. Athletes in shot put and hammer throw recognize height's importance more than others.

**Specific Power** : Specific power shows a moderate level of importance across all events. This suggests that athletes acknowledge its significance but don't prioritize it as highly as other factors.

Flexibility, Weight, Arm Length, Leg Length: These factors generally have lower percentages, indicating that athletes may consider them less important for their throwing performance.

Reaction Time, Agility, Coordination, Muscular Endurance, C.V. Endurance: These factors are considered to be of relatively low importance across all events, with percentages below 5%. Athletes may not prioritize them as highly as other fitness factors.

**Technique** : Technique is essential but surprisingly has a very low percentage in the data. This could indicate that athletes take technique for granted or that they do not fully understand its significance.

**Balance, Mindset** : These factors have extremely low percentages, suggesting that athletes may not prioritize them at all.

**Findings and Discussion** : the interpretation of the frequency and percentage data highlights the varying importance athletes place on different fitness factors in their respective throwing events. Muscular strength, explosive power, and speed are consistently recognized as crucial elements, while other factors such as height, specific power, and flexibility show some variation in importance across different events. It's important to note that while certain factors may have lower percentages, they still play a role in overall performance and should not be completely disregarded. Athletes should strive for a balanced approach to training that addresses all relevant fitness factors. Additionally, the low percentages for technique, balance, and mindset suggest potential areas for improvement in athlete education and coaching to emphasize their importance in achieving optimal performance.

## References:

- Academy, U. S. S. (2015, March 13). Experiences from Attention Training Techniques among Athletes. *The Sport Journal*. <https://thesportjournal.org/article/experiences-from-attention-training-techniques-among-athletes/>
- Best, J. (2010). *Educational Research* (10th ed.). Pearson.
- Improving Throwing Performance—Issuu. (n.d.). Retrieved October 13, 2023, from [https://issuu.com/athleticscoach/docs/athletics\\_coach\\_2-18.2/s/3760](https://issuu.com/athleticscoach/docs/athletics_coach_2-18.2/s/3760)
- Miller, M. (2009). *Measurement & Assessment in Teaching* (10th ed.). Pearson.
- Takanashi, Y., Kohmura, Y., & Aoki, K. (2020). Evaluation of explosive strength ability of the upper body for athletic throwers. *Journal of Human Sport and Exercise*, 17(1). <https://doi.org/10.14198/jhse.2022.171.19>