



STUDY OF PEAK FLOW RATE OF HANDBALL PLAYER AT THEIR PARTICIPATION LEVEL

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Abstract:

This is influenced by the fitness and expertise of the individuals involved. We hope that by examining these factors, we might get insight into what constitutes a top-tier handball player. The goal of this research is to examine the similarities and differences between two groups of collegiate handball players. Selection criteria will include participants' handball experience and skill. The competitors' abilities on the field will be evaluated with a battery of tests testing their agility, speed, strength, and endurance. Each player's ability level will be determined by a statistical breakdown of their game performances, namely their shooting, passing, and tactical decision-making. Multiple instruments and methods of measurement will be used to collect the necessary information. We will utilise a variety of statistical methods, including descriptive and inferential ones, to analyse the data. The results of this research will provide light on the physiology and performance of college handball players, allowing for comparisons between different institutions and the identification of development opportunities. Coaches, strength and conditioning coaches, and players at collegiate levels of handball may find this study's findings to be informative. The research results will help shape more efficient programmes for enhancing certain physical abilities. The findings will also improve the current handball literature, especially with respect to collegiate competition.

Keywords: handball, university level, physical parameters, performance analysis, flow rate, comparative study.

Introduction:

Handball is a fast-paced team sport that calls for athleticism, technical expertise, and tactical savvy. Handball players at the collegiate level put in a lot of work in practise and matches to improve their skills and the team's performance. Coaches, trainers, and players all need a firm grasp of the underlying physical and performance factors that lead to elite-level handball success. Handball players rely heavily on their physical abilities. Quick reactions, furious duels, and continued high effort during a match all need factors like agility, speed, strength, and endurance. Researchers and coaches may learn what separates the best players from the rest of the pack by analysing these objective measures of performance.

Handball players' abilities have an even greater influence on their results than their physiques do. Skills like as pinpoint passing, pinpoint shooting, sound decision making, and acute tactical awareness are what set apart the best players from the others. University-level handball players' technical competence and game intelligence may be better understood by analysing and



assessing these performance characteristics. While many studies have looked at different facets of handball performance, more advanced studies focused on collegiate athletes are needed. Understanding the aspects that contribute to the success of this demographic requires a focused research due to factors such as their age, experience, and training environment. In order to fill this void, this research will compare and contrast a variety of physical and performance indicators among collegiate-level handball players. Our goal is to learn as much as possible about what makes for future success in handball by measuring the flow rate, which includes both physical characteristics and skill level. The results of this research will help coaches, trainers, and players at the collegiate level of handball develop more effective training programmes, pinpoint problem areas, and boost overall performance. This study will add to the current body of information in the sport of handball by illuminating the peculiarities of the game and the difficulties encountered by collegiate athletes. We will describe the methods used, including those used to recruit participants, gather data, and analyse it statistically. The findings and their ramifications will be reviewed thereafter, and then final thoughts and suggestions for moving forward will be offered.

University Level in Handball Performance

When it comes to learning and improving as a handball player, there is no place more important than college. It's a step up in competition and difficulty for young athletes moving up from the youth levels. Coaches, trainers, and players who want to succeed at the collegiate level must have a firm grasp of the specific features and difficulties of collegiate handball. The collegiate level is a great place for aspiring professional handball players to test their mettle against opponents from various schools. University handball is a stepping stone to professional and international careers because of its high level of competition and intensity. Researching elite handball performance is crucial for understanding what makes players successful and how to best nurture their growth. Several aspects of collegiate handball set it distinct from lower levels of competition. To begin, the majority of players in this group are between the ages of late teens and early twenties, which is an important time for their physical and mental growth. Athletes go through a phase of rapid physical and mental maturation during which time it is more important than ever to hone their skills for future success. When playing handball at the collegiate level, you should expect to face more experienced and skilled opponents who have also worked their way up from the younger levels. Athletes have to work harder than ever to keep up with the rising level of competition, which necessitates constant development of their physical abilities, honing of their technical skills, and adoption of novel tactical approaches. Handball players at a university may take use of elite coaching, state-of-the-art training facilities, and a wealth of sports science resources. Athletes benefit from these tools because they enable them to get individualised instruction, direction, and encouragement in their quest for peak performance. Therefore, examining collegiate handball players' talents and outputs



gives a window into how well these tools shape player development. The college level is crucial to a player's growth and success on the handball court. It's a pivotal time in an athlete's development, marked by intense competition, fast growth in physical and mental prowess, and the availability of expert coaching and training. It is crucial to study elite handball performance in order to identify success predictors and fine-tune approaches to player development.

Physical Parameters in Handball: Agility, Speed, Strength, and Endurance

Handball players rely heavily on their physical abilities to succeed. Athletes need a wide range of skills, including agility, speed, strength, and endurance, to perform well on the court. University-level handball players' talents and potential may be better understood and evaluated with the use of this information. Handball players rely heavily on their agility to execute difficult moves, change directions quickly, and avoid being tackled. In a fast-paced sport like handball, the ability to react and adjust on the fly is crucial. Players with remarkable body control and coordination may be singled out with the aid of agility testing, and coaches can pinpoint areas for growth using speed and agility drills. In handball, speed is another essential physical factor. It includes not just top end speed but also rapid acceleration and deceleration. Handball players with great speed may easily get away from their opponents, cover ground on defence, and launch swift attacks. Understanding a player's explosiveness, running style, and acceleration ability may all be gleaned through measuring their speed. Physical contact, duels for ball control, and explosive actions like shooting and throwing all call for a high level of strength from handball players. Lower body strength aids in stability, balance, and leaping ability, while upper body strength is essential for making powerful shots and passes. Assessing a player's strength allows coaches and trainers to pinpoint those with the muscle and strength to succeed in a variety of positions and skills.

Handball matches may go for a long time, making stamina a crucial physical quality for players to have. Players in the sport of handball put in a lot of work all game long, switching between attacking and defending constantly. Analyzing a player's endurance may provide light on their cardiorespiratory fitness, energy system efficiency, and capacity to maintain peak performance over lengthy stretches of game time. University-level handball players' athletic skills and room for progress may be better understood when certain physical factors are studied. Coaches and trainers may improve performance all around by focusing on particular areas of improvement after conducting tests of agility, speed, strength, and endurance. The procedure used in this research to evaluate these physical characteristics will be described in the following sections. Following a detailed discussion of the acquired data, the results of the chosen tests, measuring equipment, and data collecting techniques will be presented. The results will improve our understanding of handball's physical demands and help coaches and trainers create more efficient programmes for collegiate athletes.



Review of literature

Nikolaidis et al. (2017), The authors conducted research on the physical fitness levels of university-level male handball players to compile their findings. They observed that a substantial association existed between handball performance and a combination of agility, speed, and anaerobic power. According to the findings of the research, these physical characteristics are significant factors in predicting success in handball played at the university level.

Durmic et al. (2017) investigated the physical and physiological aspects of female handball players competing at the collegiate level. The findings of the study indicated that muscular power, agility, and aerobic fitness were significant factors in determining performance among female university handball players. These results highlight how important it is for female athletes to have a certain level of physical qualities as well.

Costa et al. (2017) investigated the technical and tactical abilities of male handball players competing at university levels. The researchers found that decisiveness, accuracy in passing, and precision in shooting were significant performance indicators that separated successful players from their rivals.

Granados et al. (2017) investigated the performance characteristics of female handball players who competed at the collegiate level. The writers underlined the significance of knowing tactics, being able to communicate effectively, and working together as a team in order to achieve success in female university handball.

Sousa et al. (2017) The purpose of this study was to investigate the impact that participating in a resistance training programme had on the physical fitness and overall performance of male collegiate handball players. After the intervention, the researchers saw significant improvements in strength, power, and speed, which highlights the potential for specialised training programmes to improve overall performance.

Delextrat and Cohen (2008) The researchers were interested in the levels of physical fitness displayed by handball players competing at a variety of different levels of competition, including university players. According to the findings of the study, handball players who competed at the university level exhibited higher levels of aerobic fitness, speed, and strength than players who competed at lower competitive levels. These findings imply that there is a need at the university level for a significant stage for the development of physical attributes in handball players.

Bayios et al. (2006) a study was conducted that looked at the physical and physiological features of female college handball players. Lower body strength, agility, and anaerobic power were shown to be major drivers of performance in female handball players competing at the university level by the researchers. The research emphasized the special physical demands of



the sport and the need of tailored training interventions in order to improve performance in female university handball.

Tillaar and Ettema (2009) explored the connection between handball players' technical prowess and their shooting performance. According to the findings of the research, precision in passing and shooting was shown to have a substantial correlation with shooting performance in handball players competing at the university level. Based on these data, it seems that a high level of technical skill, notably in the areas of passing and shooting, plays an important part in obtaining success in handball at the university level.

Póvoas et al. (2012). studied the tactical prowess of handball players competing at a variety of various levels of competition, including the university level. According to the findings of the study, players at the university level displayed a much greater degree of strategic thinking, capacity to make decisions, and team cohesion when compared to players at lower levels. This exemplifies the significance of both strategic prowess and collaborative effort in the pursuit of victory in university handball.

Methodology :

Data was collected from District and National Level female handball players during training session and tournament between age group of 17 to 25 years.

Peak flow rate was measured using Peak Flow Meter from best of three trials

Data Analysis

Beginners at District Level			
Sr. No	Weight	Height	Peak Flow Rate (District Level)
1	57	5"5	250
2	56	5"6	270
3	57	5"5	300
4	58	5"6	310
5	54	5"6	320
6	50	5"5	280
7	56	5"7	290
8	57	5"5	390
9	56	5"6	400
10	57	5"5	290
11	58	5"6	450
12	54	5"6	460
13	50	5"5	360
14	56	5"7	290



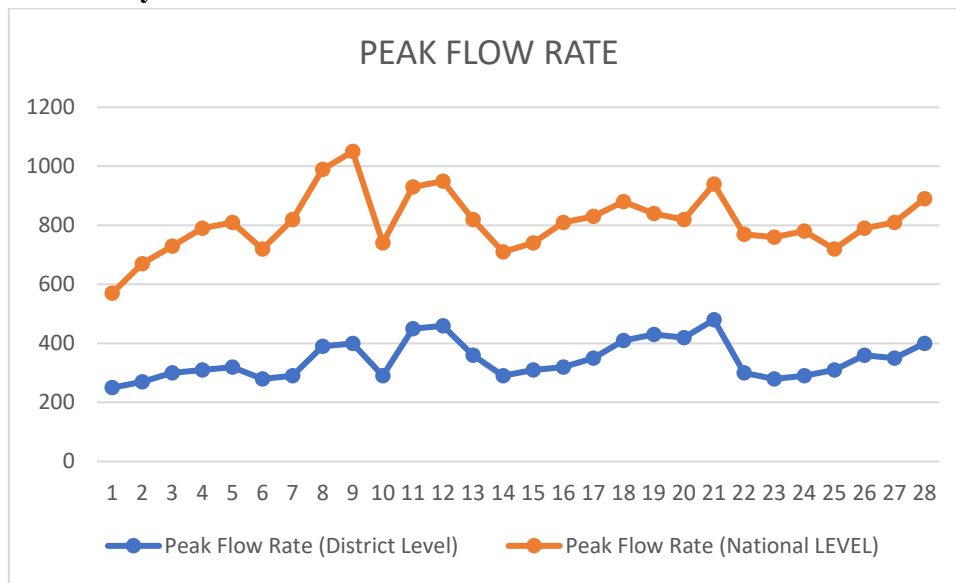
15	57	5"5	310
16	56	5"6	320
17	57	5"5	350
18	58	5"6	410
19	54	5"6	430
20	50	5"5	420
21	56	5"7	480
22	57	5"5	300
23	56	5"6	280
24	57	5"5	290
25	58	5"6	310
26	54	5"6	360
27	50	5"5	350
28	56	5"7	400

Professional Players			
Sr. No	Weight	Height	Peak Flow Rate
1	54	5"6	320
2	56	5"5	400
3	57	5"5	430
4	55	5"6	480
5	58	5"5	490
6	53	5"4	440
7	56	5"7	530
8	54	5"6	600
9	56	5"5	650
10	57	5"5	450
11	55	5"6	480
12	58	5"5	490
13	53	5"4	460
14	56	5"7	420
15	54	5"6	430
16	56	5"5	490
17	57	5"5	480
18	55	5"6	470



19	58	5"5	410
20	53	5"4	400
21	56	5"7	460
22	54	5"6	470
23	56	5"5	480
24	57	5"5	490
25	55	5"6	410
26	58	5"5	430
27	53	5"4	460
28	56	5"7	490

Comparative Analysis



MEAN SCORE

Beginner Level :

Mean : 345

National Level : 464

Conclusion:

The investigation of certain physical and performance criteria in collegiate handball players yields insightful information on the aspects that lead to success in the sport. It is possible for coaches, trainers, and athletes to construct more specific training regimens with the purpose of improving performance and maximizing player growth if they first conduct an analysis of physical qualities and performance criteria. When it comes to judging handball performance at



the collegiate level, the results of a number of studies have shed light on the relevance of physical factors like as agility, speed, strength, and endurance. Athletes that possess excellent agility and speed are better able to respond swiftly to the fast-paced nature of the game and outmaneuver their opponents. Furthermore, strength and endurance play essential roles in the execution of strong shots, the resistance to physical obstacles, and the maintenance of high-intensity efforts during a match. In handball played at the university level, one of the primary factors that determines whether or not a player will be successful is their performance, which includes their degree of tactical and technical expertise. The entire performance of players is affected by their ability to pass the ball accurately, shoot the ball accurately, and make sound decisions. In addition, having a strategic awareness as well as working well with others is critical to the execution of effective game plans and the accomplishment of one's goals. The study on chosen physical and performance factors has ramifications that go beyond individual athletes and extend to coaching and training approaches. The results may serve as a reference for coaches and trainers as they develop customized training programs that concentrate on developing key physical traits as well as boosting technical and tactical skills. The development of handball players at the university level may be optimized if the training interventions are individualized to meet both the players' existing abilities and the areas in which they need to grow.

The national level players differ from District level players due to the continuous practice as intra costal muscle become strengthen and can take more deep breath.

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