Comparative Study On Explosive Power Among University Level Football, Handball And Volleyball Players Of Andhra Pradesh.

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ABSTRACT

The purpose of this study was to conduct a comparative analysis of explosive power among university-level Football, Handball, and Volleyball players of Andhra Pradesh. A total of 300 male players (100 each from Football, Handball, and Volleyball), who had participated in Inter-University tournaments during 2011–12, were selected as subjects. Explosive power was assessed through standard tests, and the results were analyzed using Analysis of Variance (ANOVA) and Scheffe's Post Hoc Test. The mean scores of explosive power were Football (1.954 m), Handball (2.093 m), and Volleyball (2.000 m), with standard deviations of 0.022, 0.054, and 0.033 respectively. The obtained *F*-ratio of 341.34 was significantly higher than the table value of 3.03 at the 0.05 level of confidence, indicating significant differences among the groups. Post Hoc analysis showed significant mean differences between Football & Handball (MD=0.139), Handball & Volleyball (MD=0.093), and Football & Volleyball (MD=0.046), confirming that Handball players exhibited superior explosive power compared to Football and Volleyball players. The findings highlight the influence of sport-specific demands on explosive power and suggest the importance of tailored training programs to optimize performance.

Keywords: Explosive Power, Physical Fitness, Football, Handball and Volleyball, University Players

INTRODUCTION

Sports and games in modern society have become an integral part of human life, not only as a means of recreation but also as a platform for professional excellence and international recognition. The scientific approach to training has transformed sports into a structured and competitive field where physical fitness plays a central role in determining performance outcomes. Among the various components of fitness, explosive power holds particular importance, as it directly influences speed, agility, strength, and overall athletic efficiency. Explosive power enables athletes to perform sudden, forceful movements with maximum intensity in the shortest possible time, a quality that is indispensable in most competitive games.

Explosive power is crucial in team games like Football, Handball, and Volleyball, where quick movements, jumps, and sudden accelerations often decide the success of performance. In Football, players require explosive leg power for sprinting, tackling, and shooting, while in Handball, athletes depend on rapid bursts of speed and powerful throws to outmaneuver opponents. Similarly, Volleyball players rely heavily on explosive power for spiking, blocking, and serving. Thus, the development and assessment of explosive power provide valuable insights into the physiological readiness of players and the impact of sport-specific training.

Although explosive power is a common requirement across different team sports, the type and frequency of its application vary based on the nature of the game. Football emphasizes repeated sprinting and leg-dominant explosive actions, Handball demands upper and lower body power in short bursts, and Volleyball relies more on vertical jumping ability. Comparative studies help in identifying sport-specific demands and the relative superiority of athletes in different disciplines. Such information is useful not only for coaches and trainers but also for designing targeted conditioning programs that enhance performance in each game.

In Andhra Pradesh, university-level sports have gained prominence, with a large number of students actively participating in Inter-University tournaments. However, despite the rising interest and talent pool, limited scientific studies have been conducted to compare the physical fitness components of players from different team sports. Specifically, research on explosive power among Football, Handball, and Volleyball players is scarce, leaving a gap in understanding how sport-specific training influences this vital fitness variable at the university level. Addressing this gap will contribute to improving training methodologies and player performance in these disciplines.

Considering the significance of explosive power in team sports, the present study aims to conduct a comparative analysis of explosive power among university-level Football, Handball, and Volleyball players of Andhra Pradesh. By assessing and comparing the explosive power levels of athletes from these three disciplines, the study seeks to determine whether significant differences exist and to identify which group of players demonstrates superior explosive power. The findings of this research are expected to provide valuable implications for coaches, sports scientists, and physical educators in enhancing sport-specific training programs and optimizing player performance.

EXPERMENTAL DESIGN

The purpose of the present study is to Comparative study on Explosive power among university level Football, Handball and Volleyball players of Andhra Pradesh. To achieve the purpose of the study, one hundred male players were selected at random from each category of Football, Handball and Volleyball players, a total of 300 players in Andhra Pradesh state, India, who had their credit in participating inter university tournaments during the academic year 2011-12 in their respective games. The subjects were selected from the following universities in Andhra Pradesh namely, 1. Sri. Venkateshwara University, Tirupathi 2. Srikirshnadevaraya University, Ananthapur. 3. Osmaniya University, Hyderaad, 4. Acharya Nagarjuna University, Guntur and 5. Andhra University, Visakhapatnam.

The researcher explained the purpose and the significance of the study to all the selected players before conducting the tests to ensure maximum cooperation from the subjects. All the subjects agreed voluntarily to cooperate in the testing procedures explained to them and to put in their test efforts in the interest of the scientific research and in order to enhance their own performance and achievement standards. Though no special techniques were used to motivate the subjects to put in their best effort, the subjects were very enthusiastic and cooperative throughout the research work. They were free to withdraw as respondents in case they feel any difficulty or discomfort during the test. The researcher has taken sufficient care and caustion in the counseling the sample respondents about the utility of physical fitness for a healthy body and also the purpose of study. Because of this, no dropouts as respondents and all the selected subjects voluntarily cooperated well throughout the period of test.

RESULT ON EXPLOSIVE POWER

TABLE-I

ANALYSIS OF VARIANCE FOR THE DATA ON EXPLOSIVE POWER COMPONENT OF PHYSICAL FITNESS AMONG FOOTBALL, HANDBALL AND VOLLEYBALL PLAYERS

(Scores in meters)

Test	Players of Different Disciplines			Source of Variance	Sum of Squares	df	Mean Square	F Ratio
	Football	Handball	Volleyball					
Mean Scores	1.954	2.093	2.000	Between Groups	1.014	2	0.507	341.34*
Standard Deviation	0.022	0.054	0.033	Within Groups	0.441	297	0.001	

* Significant at 0.05 level of confidence, Table 'F Ratio' =3.03

The table-I shows the Explosive Power (in meters) mean scores component of physical fitness variable among football, handball and volleyball university players are 1.954, 2.093 and 2.000 respectively and the standard deviation are 0.022, 0.054 and 0.033 respectively. The table also shows that the obtained 'F' ratio of 341.34 for Explosive Power is greater than the table value of 3.03 for df '2 and 297' required for significance at 0.05 level of confidence.

The results of the study indicated that "there is a significant difference in the Explosive Power component of Physical Fitness variable among university players of different disciplines (football, handball and volleyball games). To determine the significant difference in the Explosive Power among the three paired means, the 'Scheffe's test was applied as Post hoc analysis and the results are presented in Table-II.

TABLE-II

SCHEFFE'S POST HOC TEST FOR SIGNIFICANT DIFFERENCE IN THE EXPLOSIVE POWER MEAN SCORES (IN METERS) AMONG FOOTBALL, HANDBALL AND VOLLEYBALL PLAYERS

Players of Different Disciplines			Mean Difference and Sig. Level	Critical Difference
Football	Handball	Volleyball		
1.954	2.093	×	0.139*	0.011
×	2.093	2.000	0.093*	
1.954	×	2.000	0.046*	

*Significant at 0.05 level of confidence

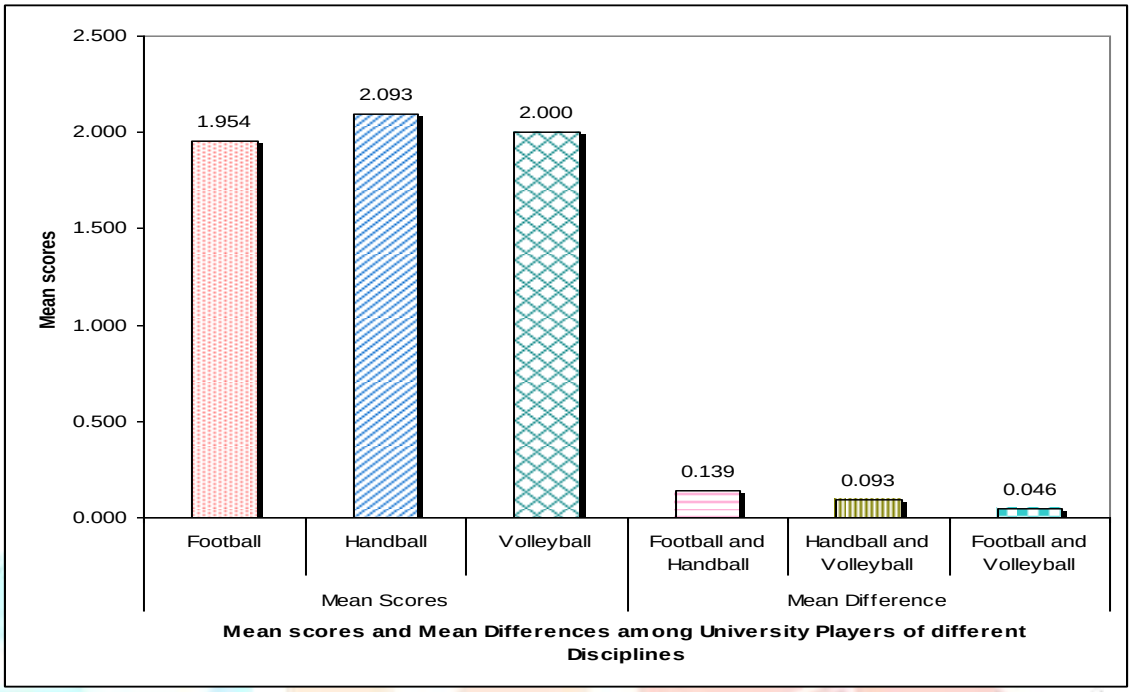
Table-II shows significant paired mean differences on Explosive Power between football & handball players; handball & volleyball players and football & volleyball players and the values are 0.139, 0.093 and 0.046 respectively which are greater than the critical difference value 0.011 at 0.05 level of confidence. It concludes that "there is a significant difference exists in Explosive Power between football & handball players; handball & volleyball players and football & volleyball players.

It may be concluded from the results that significant difference exists on Explosive Power between football & handball players; handball & volleyball players and football & volleyball players. The handball players have greater explosive power than volleyball and football players.

The mean values on Explosive Power of football, handball and volleyball players are graphically depicted in Fig.I.

FIG.I

BAR DIAGRAM SHOWS THE COMPARISON OF EXPLOSIVE POWER MEAN SCORES AMONG UNIVERSITY PLAYERS OF DIFFERENT DISCIPLINES (FOOTBALL, HANDBALL AND VOLLEYBALL).



DISCUSSION OF RESULTS ON EXPLOSIVE POWER

The findings of the present investigation clearly demonstrated that there was a significant difference in the explosive power component of physical fitness among Football, Handball, and Volleyball players of Andhra Pradesh universities. The ANOVA results revealed a highly significant *F*-ratio of 341.34, which was greater than the required table value of 3.03 at the 0.05 level of significance. This statistical evidence confirms that the nature of the game and its specific training demands play a decisive role in shaping the explosive power of athletes.

The post hoc analysis further highlighted that Handball players exhibited superior explosive power (Mean = 2.093 m) compared to both Volleyball (Mean = 2.000 m) and Football players (Mean = 1.954 m). The mean differences between Football & Handball (MD = 0.139), Handball & Volleyball (MD = 0.093), and Football & Volleyball (MD = 0.046) were all greater than the critical difference of 0.011, establishing that each pair of sports showed significant differences in explosive power. These results underline that Handball players are relatively more powerful in explosive movements than their Football and Volleyball counterparts.

CONCLUSION

There was a significant difference in the Explosive Power among university players of different disciplines (football, handball and volleyball ('F'=341.34; P<0.05). Further significant paired mean difference exists on Explosive Power between football & handball players (MD=0.139); handball & volleyball players (MD=0.093) and football & volleyball players (MD=0.046). The football players have more jumping ability than volleyball and football players.

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