



CORRELATION OF HANDGRIP STRENGTH WITH WRIST GIRTH AMONG MALE VOLLEYBALL PLAYERS OF ANDHRA PRADESH

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ABSTRACT

Objective: To investigate the relationship between Dominant Hand Grip Strength and Wrist Girth among selected male volleyball players of Andhra Pradesh. **Methodology:** A total of 100 male selected volleyball players (N = 100) as subjects from Andhra Pradesh, aged 18–25 years, were selected using a purposive sampling method. The subjects were actively involved in organized volleyball training and competitive participation and were selected from colleges, universities, and sports academies of Andhra Pradesh. Data on Dominant Hand Grip Strength and Wrist Girth were collected using standardized measurement procedures. Dominant Hand Grip Strength was assessed in kilograms, while Wrist Girth was measured in centimeters. The collected data were analyzed using Pearson's Product-Moment Correlation to determine the degree and direction of relationship between Dominant Hand Grip Strength and Wrist Girth, with the level of significance set at 0.05. **Results:** The Pearson's Product-Moment Correlation analysis revealed a highly significant positive relationship between Dominant Hand Grip Strength and Wrist Girth ($r = 0.976$, $p < 0.05$). The obtained correlation coefficient indicates a extremely high positive association between the two variables. The results show that selected volleyball subjects with greater Wrist Girth generally demonstrated higher Dominant Hand Grip Strength. Therefore, Wrist Girth was found to be very strongly associated with Dominant Hand Grip Strength among the selected male volleyball players of Andhra Pradesh. **Keywords:** Dominant Hand Grip Strength, Wrist Girth, Anthropometric Variables, Volleyball Players, Pearson's Product-Moment Correlation etc



INTRODUCTION

Handgrip strength is an important component of upper-limb strength in volleyball, as players frequently perform actions such as serving, spiking, blocking, setting, and ball handling. It represents the maximum isometric force of the hand and forearm muscles and is widely used as an indicator of functional muscular strength.

Handgrip strength is influenced by structural characteristics of the upper limb. Among the selected anthropometric variables, Wrist Girth reflects an important structural dimension of the upper limb and may influence leverage and efficient transmission of muscular force during gripping actions.

Previous research has indicated positive associations between grip strength and upper-limb anthropometric characteristics. In volleyball, forearm dimensions may contribute to force transmission, mechanical leverage, stability, and control during technical movements.

However, limited research has specifically examined the relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players of Andhra Pradesh. Investigating this relationship may provide useful information for physical assessment and talent identification.

SIGNIFICANCE OF THE STUDY

Handgrip strength is an important component of upper-limb muscular strength in volleyball, as effective serving, spiking, blocking, setting, and ball handling require adequate force, stability, and control. Wrist Girth represents an important structural characteristic of the upper limb and may be associated with mechanical leverage and force transmission required during gripping



actions. Although previous research has examined relationships between handgrip strength and selected anthropometric characteristics, limited studies have specifically investigated the relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players in the Indian context, particularly of Andhra Pradesh . The present study aims to address this gap by examining the association between Dominant Hand Grip Strength and Wrist Girth among selected volleyball players aged 18–25 years. The findings are expected to provide useful information for coaches, physical education professionals, and sports scientists in physical assessment, talent identification, and evidence-based training programme planning.

AIM OF THE STUDY

The present study is designed to examine the relationship between Dominant Hand Grip Strength and Wrist Girth among selected male volleyball players aged 18–25 years from Andhra Pradesh.

HYPOTHESIS

1. There might not be any significant relationship between dominant handgrip strength and wrist girth among selected male volleyball players aged between 18–25 years from Andhra Pradesh.

METHODOLOGY

SELECTION OF SUBJECTS

A purposive sampling technique was adopted for the selection of subjects. A total of 100 selected state level male volleyball players, aged between 18 and 25 years, from colleges, universities, and sports academies of Andhra Pradesh , were selected for the study. The selected players were actively engaged in regular volleyball training and competition. The subjects were assessed for Dominant Hand Grip Strength and Wrist Girth using standardized measurement procedures. The obtained data were statistically analysed using Pearson's Product-Moment Correlation to determine the relationship between Dominant Hand Grip Strength and Wrist Girth.

TABLE SHOWING THE SAMPLE OF THE STUDY



S.No	Andhra Pradesh Volleyball Players	Group	No. of Players
1	Male Volleyball Players	Study Sample	100
		Total	100

SELECTION OF VARIABLES

The selection of variables for the present investigation was determined after an extensive examination of related research studies, consultation with subject experts, feasibility considerations, and their direct relevance to the purpose of the study. Dominant Hand Grip Strength was identified as the primary functional variable, while Wrist Girth was selected as the anthropometric variable. These variables were considered relevant to examine the relationship between handgrip strength and the structural characteristics of the forearm among male volleyball players.

RESEARCH DESIGN

1. A total of 100 selected state level male volleyball players, aged between 18 and 25 years, from colleges, universities, and sports academies of Andhra Pradesh were included in the study.
2. The study followed a descriptive correlational research design. A sample size of 100 subjects was selected using a purposive sampling technique, and no experimental training intervention was administered.



3. Dominant Hand Grip Strength and Wrist Girth were measured for all subjects using standardized measurement procedures under similar testing conditions.
4. The collected data were statistically analysed using Pearson's Product-Moment Correlation to determine the degree and direction of the relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players.

COLLECTION OF DATA

The data for the present study were collected from 100 selected state level male volleyball players aged between 18 and 25 years from colleges, universities, and sports academies of Andhra Pradesh . Dominant Hand Grip Strength and Wrist Girth were measured using standardized measurement procedures and appropriate instruments.

All measurements were conducted under similar testing conditions to ensure consistency and accuracy. The collected data were recorded systematically for statistical analysis to determine the relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players.

STATISTICAL TECHNIQUE

The collected data were statistically analyzed to determine the relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players. Pearson's Product-Moment Correlation coefficient was employed to examine the degree and direction of the relationship between the two variables. The level of significance was fixed at 0.05 to test the statistical significance of the obtained correlation coefficient.

RESULTS

Pearson's Product Moment Correlation between Dominant Hand Grip Strength and Wrist Girth

TABLE -4



Variables	N	Mean	SD	r	Sig.
Dominant Hand Grip Strength (DHGS)	100	50.42	1.603	0.976	0.000*
Wrist Girth (WG)	100	17.23	0.525		

Significant at 0.05 level of confidence.

Description, Results and Analysis

Table 4.4 presents Pearson's Product-Moment Correlation between Dominant Hand Grip Strength and Wrist Girth among the selected volleyball players. The analysis revealed a highly significant positive relationship between Dominant Hand Grip Strength and Wrist Girth ($r = 0.976$, $p < 0.05$). The obtained correlation coefficient indicates a extremely high positive association between the two variables. It may be inferred that subjects possessing greater wrist girth tend to exhibit higher dominant hand grip strength.

The obtained probability value ($p = 0.000$) was found to be lower than the predetermined level of significance (0.05), indicating that the relationship between Dominant Hand Grip Strength and Wrist Girth is statistically significant. Therefore, the null hypothesis stating that there is no significant relationship between Dominant Hand Grip Strength and Wrist Girth was rejected.



The findings indicate that Wrist Girth is significantly associated with dominant hand grip strength among the selected volleyball players. The positive nature of the relationship suggests that increases in wrist girth are associated with corresponding increases in handgrip strength.

Overall, the results demonstrate that Wrist Girth is an important anthropometric characteristic associated with Dominant Hand Grip Strength among the selected subjects.

Discussion

The findings of the present investigation revealed a highly significant positive relationship between Dominant Hand Grip Strength and Wrist Girth among the selected volleyball players. The correlation coefficient ($r = 0.976$) indicates that wrist girth is very strongly associated with grip strength performance. The forearm contains the principal muscles responsible for wrist and finger flexion, which are directly involved in gripping actions. Subjects possessing greater wrist girth generally exhibit better muscular development and improved biomechanical efficiency during force production. Consequently, longer forearm segments may contribute to greater grip strength through improved leverage and muscle function.

In volleyball, forearm strength and length are particularly important because several technical skills, such as serving, blocking, setting, spiking, and defensive ball control, require effective force transmission through the forearm. Adequate forearm dimensions, therefore, contribute not only to increased grip strength but also to enhanced technical efficiency during game situations.

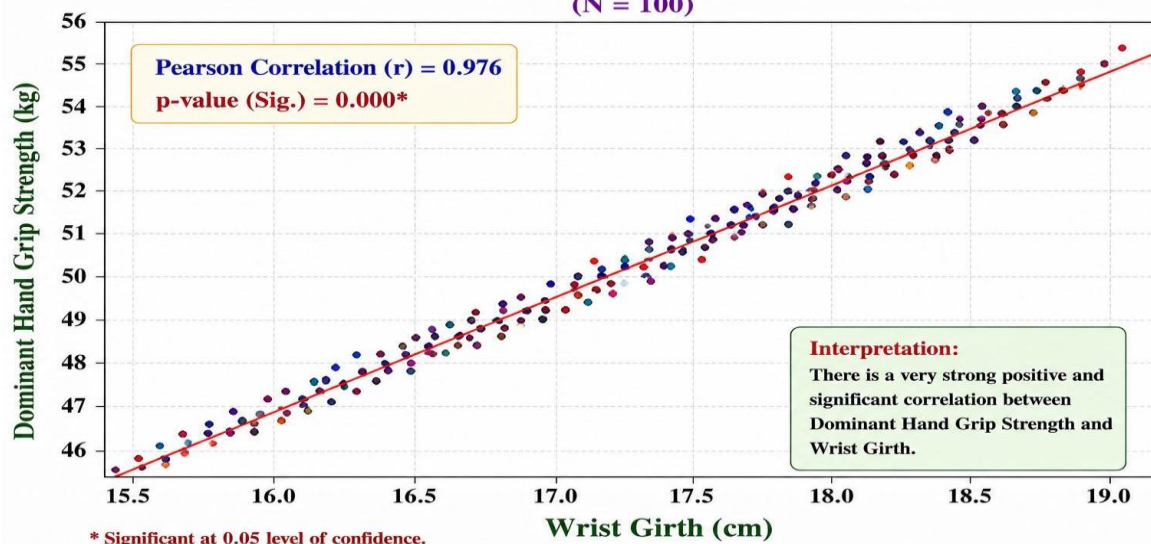
The positive relationship observed in the present investigation indicates that Wrist Girth is an important structural characteristic associated with upper-extremity strength. Therefore, measuring wrist girth may be useful in talent identification programmes and the scientific evaluation of volleyball players.

Overall, the findings suggest that Wrist Girth is an important anthropometric variable associated with Dominant Hand Grip Strength among the selected volleyball players.



Figure 8: Scatter Diagram Showing the Relationship between Dominant Hand Grip Strength and Wrist Girth

(N = 100)



CONCLUSION

The results of the present study revealed a statistically significant and extremely high positive relationship between Dominant Hand Grip Strength and Wrist Girth among male volleyball players of Andhra Pradesh. The obtained correlation coefficient ($r = 0.976$, $p < 0.05$) indicates that players with greater wrist girth generally demonstrated greater dominant handgrip strength. The findings further indicate that Wrist Girth is very strongly associated with Dominant Hand Grip Strength and may be considered an important anthropometric characteristic in the assessment of upper-extremity strength among volleyball players. Therefore, the null hypothesis stating that there would be no significant relationship between Dominant Hand Grip Strength and Wrist Girth was rejected. The study concludes that Wrist Girth may provide useful information

for physical assessment, talent identification, and training programme planning among male volleyball players.

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