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Association of Anthropometric and Psychological Characteristics with Competitive Level in Male Kho-Kho Athletes

Girish B E¹, Dr. Ramneek Jain²

¹Research Scholar, Shri Venkateshwara University, Gajraula, Amroha, Uttar Pradesh

²Associate Professor, SVU, Gajraula, Amroha, Uttar Pradesh

Abstract: *Background: Kho-Kho is a high-intensity indigenous sport that requires a combination of physical fitness, agility, decision-making ability, and psychological preparedness for optimal performance. Although anthropometric and psychological factors are known to influence athletic performance, limited research has compared these characteristics between college-level and university-level Kho-Kho athletes.*

Objective: This study aimed to compare the anthropometric and psychological characteristics of college-level and university-level male Kho-Kho athletes and to examine the association between these variables and competitive level.

Methods: A cross-sectional comparative study was conducted among 200 male Kho-Kho athletes, comprising 100 college-level and 100 university-level players. Anthropometric measurements, including age, height, and body weight, were recorded using standardised procedures. Psychological characteristics were assessed using a structured questionnaire, with responses scored on a binary scale (TRUE = 1, FALSE = 0) to obtain a composite psychological score. Descriptive statistics, independent-samples t-tests, and Pearson correlation analysis were performed using SPSS version 26.0, with statistical significance set at $p < 0.05$.

Results: The findings indicated no statistically significant differences between college-level and university-level athletes in age ($t = -1.666$, $p = 0.098$), height ($t = 1.514$, $p = 0.132$), weight ($t = 1.270$, $p = 0.206$), or composite psychological score ($t = 0.342$, $p = 0.733$). Pearson correlation analysis revealed a significant positive correlation between height and weight ($r = 0.296$, $p < 0.001$) and a weak positive correlation between body weight and the composite psychological score ($r = 0.150$, $p = 0.034$). No significant associations were observed between age and the remaining study variables.

Conclusion: The study demonstrates that male Kho-Kho athletes at the college and University levels possess comparable anthropometric and psychological characteristics. While anthropometric variables showed limited association with competitive level, psychological profiling remains an important component of athlete evaluation. Future studies should employ validated multidimensional psychological instruments alongside sport-specific physiological and performance assessments to better identify the determinants of competitive success in Kho-Kho.

Keywords: Kho-Kho, Anthropometric Characteristics, Psychological Characteristics, Competitive Level, Male Athletes, Sports Psychology, Independent Sample t-Test, Pearson Correlation.

I. INTRODUCTION

Kho kho is one of the oldest indigenous games of India and has recently become famous internationally, with professional Kho kho leagues and participation from many countries at national and international levels. It involves frequent bursts of running, catching, evading, quick turns, and quick thinking in a fast-paced game. Such sport-specific demands call for high levels of physical fitness, efficient cardiopulmonary function and great psychological resilience. Unlike continuous endurance sports, Kho-Kho is a game played at high intensity in bursts of activity, utilising both aerobic and anaerobic energy systems simultaneously. Therefore, successful performance relies on the integration of anthropometric characteristics, physiological fitness, and psychological preparedness [1] [3] [4] [9].

Given that anthropometric characteristics have long been known to affect movement efficiency, biomechanical advantage, agility, and power production, they are fundamental determinants of athletic performance. Athlete profiling and talent identification across different sporting disciplines have used several parameters, including athlete height, body weight, body composition, and somatotype.

Recent studies on elite Kho-Kho players have established statistically significant differences in somatotype characteristics and body composition between male and female athletes, further supporting the need for sport-specific anthropometric profiling to optimise performance in Kho-Kho [2]. Likewise, comparisons were made between Bangladeshi national-level Kho-Kho players and national-level football players, revealing anthropometric differences between them due to the distinct requirements of their sports [10]. Moreover, the association between anthropometric parameters and motor skills of Kho-Kho and Kabaddi players has been well studied, and it is evident that body dimensions and composition play a significant role in enhancing agility, speed, strength and overall performance during a game [9]. Similar results have also been found among elite Kabaddi players from Iran, in which body composition and somatotype characteristics were found to differ by level of competition and the demands of the sport [16].

In addition to anthropometric factors, physiological fitness is an important determinant of success in Kho-Kho. The sport demands a high degree of aerobic, muscular, explosive, fast reaction and respiratory stamina for repeated high-intensity effort over the duration of a game. Tripathi et al. reported that agility, explosive strength, sprint speed, and cardiovascular fitness make significant contributions to competitive performance in Kho-Kho players [1]. Likewise, Das and Sekh found significant differences in physiological and motor variables among women's kho-kho players at different levels of competition, which again played a significant role in competitive success [3]. Bhati et al. also found that several physiological factors, such as nutrition, sleep quality and training exposure, are significantly correlated with the physical performance of the male national-level Kho-Kho players [4]. Comparative studies between Kabaddi and Kho Kho players have also indicated that explosive strength and reaction ability positively impact sport-specific performance [12]. Together, these studies indicate that systematic training induces physiological adaptations crucial to improving athletic performance.

Another important aspect of Sports fitness is Cardiopulmonary fitness, which is especially important in high-intensity intermittent sports like Kho Kho. The respiratory and cardiovascular systems are efficient at delivering oxygen, preventing early fatigue, and enabling quick recovery after multiple periods of high-intensity activity. There has been little research specifically focusing on the pulmonary function of Kho-Kho players. Still, studies have included athletes from other sports with similar physiological demands and have shown significant relationships among respiratory muscle strength, aerobic endurance, and performance. In recent years, several studies have highlighted the need to monitor physiological indices such as maximal oxygen uptake, respiratory efficiency, and cardiovascular endurance in competitive athletes to maximise training effectiveness and minimise injury risk [4], [14], [17], [18]. Moreover, sleep quality, recovery status, and nutritional diversity have been identified as important factors that influence the physiological adaptation and athletic readiness of elite Kho-Kho players [7, 8].

The use of sport psychology in the realm of athlete development has grown in recent years. Psychological factors such as motivation, self-confidence, emotional stability, mental toughness, goal orientation, competitive anxiety, and stress management are important for athletic performance, especially in competitive situations. Ranjan and Kumar found that psychological preparedness plays a significant role in the competitive success of under-18 male and female Kho-Kho players [5]. Similarly, Singh et al. studied competitive stress and anxiety during and after a competition and highlighted the role of psychological intervention in ensuring consistent performance among athletes in Kho-Kho [6]. In addition, goal-setting strategies have been identified as relevant psychological variables that affect the motivation and performance of Kho-Kho players across various competitive levels [11]. In addition to Kho-Kho, recent research with endurance athletes has also shown important relationships between psychological strain, energy availability and bone health, and between energy availability and athletic performance, further underscoring the relationship between physiological and psychological well-being in athletic competitions [14, 18].

In recent years, mental health, recovery, and behavioural traits have attracted growing interest in sports science due to their impact on long-term sports development. The quality of sleep is associated with physical performance and mental health among male Khokho players during national training camps in India [7]. Similarly, nutritional diversity has been linked to physiological health and lipid profiles among Kho-Kho players, implying the role of dietary habits in overall athletic readiness [8]. Further studies on behavioural characteristics of the Indian Kabaddi players and physical fitness profile of football and hockey players suggest that psychological parameters are closely correlated with the competitive success in team sports such as Kabaddi, football and hockey, which emphasises the role of motivation and adaptability in behavioural aspects of a player [15], [17]. Furthermore, the current understanding of relative energy deficiency in sport (REDS) has shown that low energy availability negatively affects cardiovascular health, metabolic function, psychological health, and overall sport performance, underscoring the need for comprehensive monitoring of athletes [14], [18], [20].

Several studies have examined single anthropometric, physiological, or psychological factors among Kho-Kho players, but most have focused on individual factors or only on specific age groups.

There is a lack of comprehensive studies that combine anthropometric, cardiopulmonary fitness, and psychological factors within a single analytical approach and compare athletes across different competitive levels. Also, there is limited research that specifically focuses on college- or university-level male Kho-Kho players in the context of evidence-based athlete development [2], [4], [5], [10].

An integrative approach that considers physical, physiological, and psychological variables in a multidimensional assessment can provide a better understanding of competition performance in Kho-Kho. This profiling can help coaches, sports scientists, and talent identification programs create training strategies tailored to an athlete's individual needs, select the most appropriate athletes for training, and ultimately enhance the athlete's long-term performance.

The application of anthropometric characteristics in combination with the other assessments, such as cardiopulmonary and psychological, is now acknowledged as a suitable way to assess the readiness of athletes and performance status predictors in different sports disciplines [1] [4] [7] [14] [16].

Thus, the present study proposes to explore the correlation between anthropometric, cardiopulmonary, and psychological parameters of male kho-kho players and their competitive level. Specifically, the research compares college- and university-level players to determine whether differences in body composition, physiological fitness, and psychological attributes correlate with player competitiveness.

The results will provide significant scientific data for athlete profiling, talent identification, performance improvement, and the design of specific training programs for competitive Kho Kho players.

This article continues in the following order. In section 2, the research methodology is described, including the study design, participant selection, data collection procedures, anthropometric measurements, psychological assessment, and statistical analysis. Section 3 summarises the analysis of differences between college-level Kho-Kho athletes and university-level Kho-Kho players using descriptive statistics, an independent-samples t-test, and a Pearson correlation analysis. In Section 4, the key results are summarised in relation to previous studies, and the practical implications for athlete assessment and performance improvement are discussed. This final section summarises the study's findings, discusses its limitations, and offers recommendations for further research.

II. MATERIALS AND METHODS

This study employed a comparative cross-sectional research design to explore the relationship between anthropometric, cardiopulmonary, and psychological parameters of male Kho-Kho players and their competitive level. To determine the differences between college and University players, the study focused on comparing the physical, physiological and psychological performance measures.

The overall methodology of the study is shown in Figure 1, and the experimental setup is shown in Figure 2.

The number of male Kho-Kho players who participated in the study was 200 (100 college-level and 100 university-level), and participation was voluntary.

The subjects were selected from inter-college inter-university kho-kho games organised in various areas. At the time of data collection, all athletes had been involved in regular training and competitive activities. The participants were chosen through purposive sampling to ensure they were a representative sample of athletes with a similar competitive experience and training exposure. The mean age of the subjects was between 18 and 25 years.

The following inclusion and exclusion criteria were adopted:

1) Inclusion Criteria

- a) Male Kho-Kho athletes aged between 18 and 25 years.
- b) Minimum three years of competitive playing experience.
- c) Active participation in college or university-level competitions.
- d) Apparently healthy and medically fit.
- e) Willingness to participate voluntarily in the study.

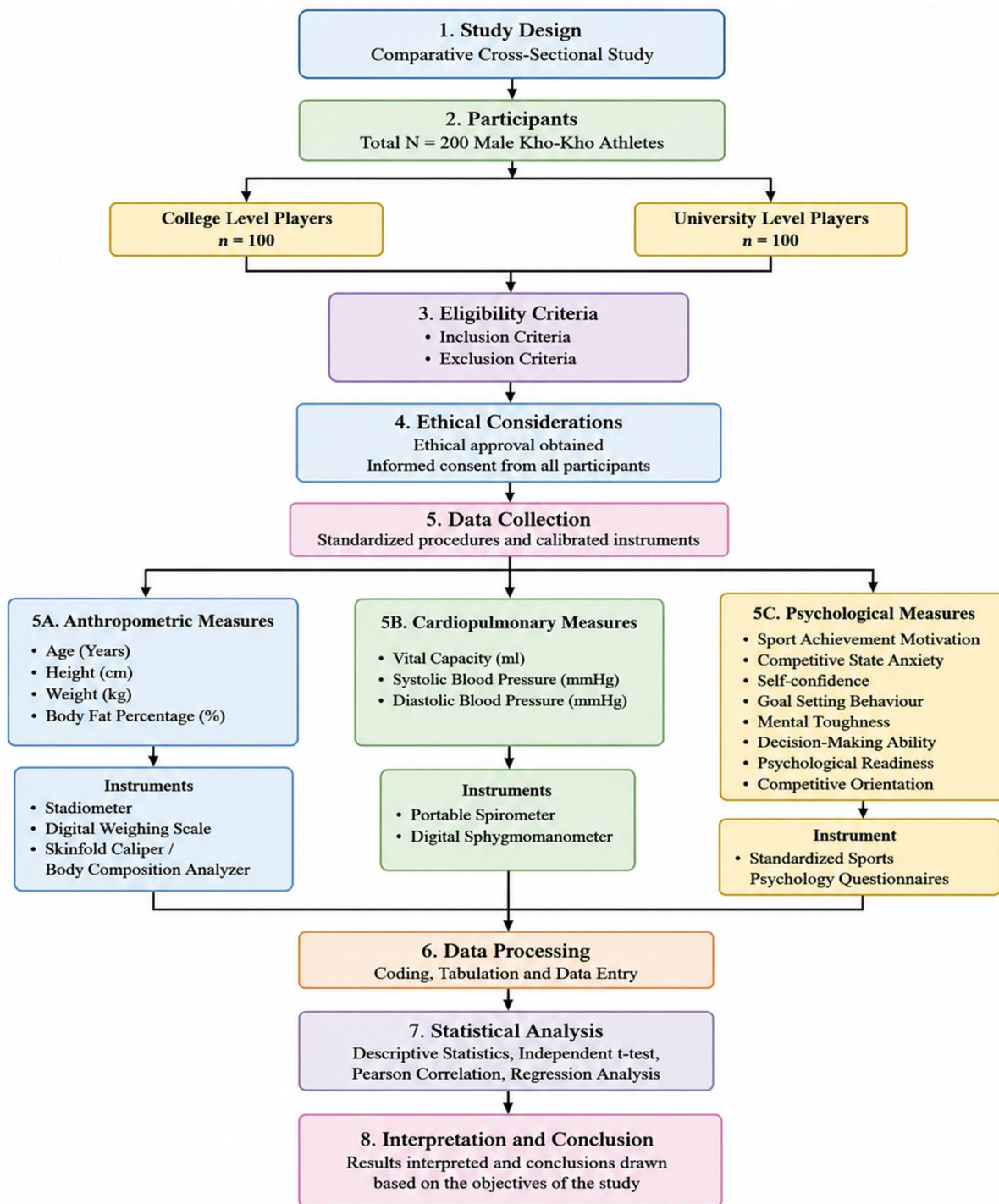


Figure 1. Research Methodology Flowchart

2) *Exclusion Criteria*

- Had any cardiovascular, respiratory, neurological, or musculoskeletal disorders.
- Were recovering from injury during the data collection period.
- Had undergone major surgery within the previous six months.
- Declined to provide informed consent.

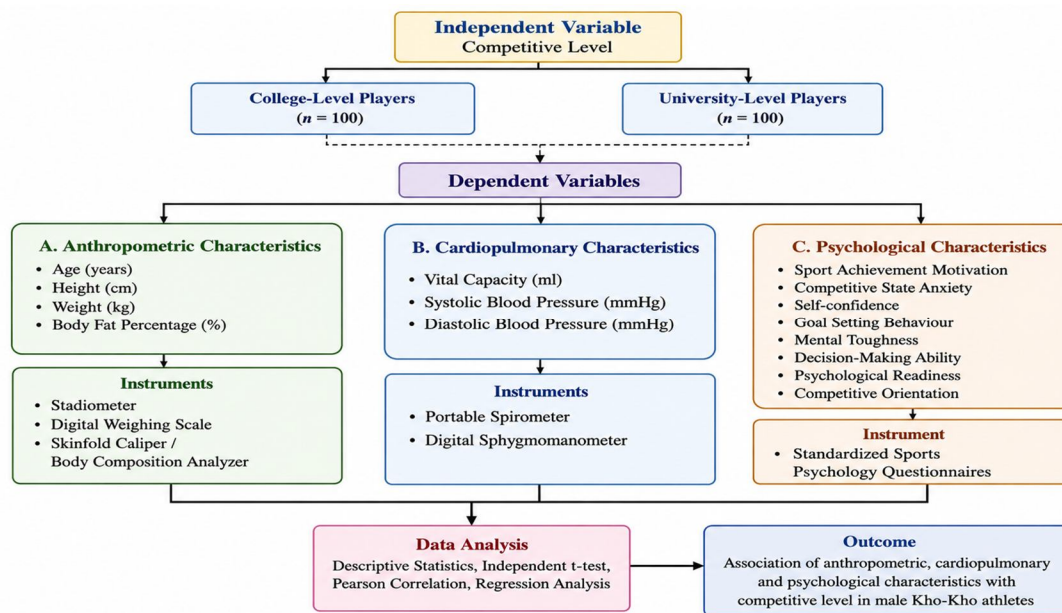


Figure 2. Experimental Design Framework

The study was conducted in accordance with the ethical standards outlined in the declaration of Helsinki for research involving human subjects. Before the data collection, all participants were briefed on the aims and methodology of the investigation. Informed consent was obtained from each subject, and confidentiality of the data collected was carefully monitored throughout the study.

A. Study Variables

There were three categories of dependent variables and one independent variable in the study.

In the present study, the independent variable was the level of competition, with participants divided into two groups: college-level Kho-Kho players and university-level Kho-Kho players. This study was designed to assess if differences in competitive level correlated with differences in anthropometric, cardiopulmonary and psychological characteristics.

The dependent variables could be grouped into three categories. The anthropometric parameters measured were age (years), height (cm), weight (kg) and body fat (%). These were used to assess the athletes' physical profiles. The cardiopulmonary characteristics included vital capacity (Vital Capacity: ml), systolic blood pressure (Systolic Blood Pressure: mmHg), and diastolic blood pressure (Diastolic Blood Pressure: mmHg), which provide information on participants' respiratory and cardiovascular fitness. Furthermore, a set of standardised sports psychology questionnaires was administered to assess psychological features. The psychological variables assessed were sport achievement motivation, competitive state anxiety, self-confidence, goal-setting behaviour, mental toughness, decision-making ability, psychological readiness and competitive orientation. The variables chosen were those believed to give a complete account of the athletes' psychological preparedness and its possible effect on competitive performance. This conceptual framework depicts the relationship between the independent variable and the three categories of dependent variables, and is presented in Figure 2.

B. Instruments Used

The following standardized instruments were used during data collection.

Variable	Instrument
Height	Portable Stadiometer
Weight	Digital Weighing Scale
Body Fat (%)	Skinfold Calliper / Body Composition Analyser
Vital Capacity	Portable Spirometer
Blood Pressure	Digital Sphygmomanometer
Psychological Variables	Standardized Sports Psychology Questionnaires

C. Data Collection Procedure

Standard laboratory and field conditions were used for data collection. Demographic details were taken first, such as the age and level of competition. Anthropometric measurements were taken according to the standard procedures of the International Society for the Advancement of Kinanthropometry (ISAK), including height, body weight, and body fat percentage. Then, after a set resting period, a cardiopulmonary test was given (vital capacity and blood pressure measurement). Finally, participants completed the psychological questionnaires in a quiet and supervised environment.

Figure 3 shows the overall sequence of data collection, and Figure 4 presents photographs of the data collection process.

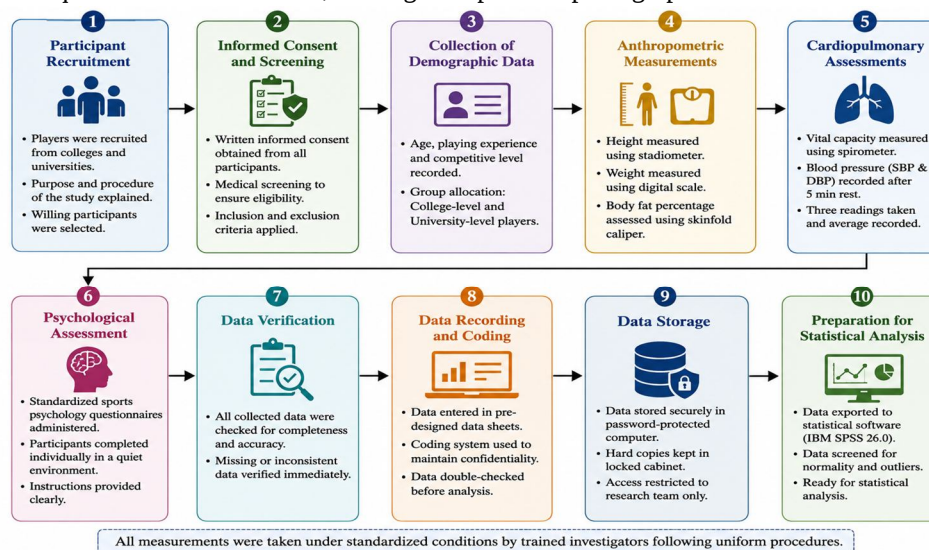


Figure 3. Data Collection Procedure



Figure 4: Collection of sample data

In the present study, to assess the anthropometric and cardiopulmonary parameters of Kho-Kho players, the data collection process is illustrated in Figure 4. The figure illustrates the stages of data collection, including registration and informed consent, and the measurement of anthropometric parameters (height, weight, body fat percentage, etc.) using standard tools. Next, the cardiopulmonary examination was performed, including a vital capacity (VC) measurement using a portable spirometer and a BP measurement using a standardised digital sphygmomanometer. The investigator guided the participants throughout the data collection process, and all observations were systematically recorded on structured data collection sheets to ensure accuracy, consistency, and reliability. The photos depict the application of the experimental protocol and how the participants were instructed. The photos show how the participants were instructed, physiological testing, data recording, and some quality-control aspects of the study.

III. RESULTS

This study was undertaken to compare the anthropometric and psychological parameters of college- and university-level kho kho players. 2,000 athletes were involved in the investigation: 100 college-level and 100 university-level. All measured variables were analysed using descriptive statistics, including mean and standard deviation. Findings are given in Tables 1–6 and Figures 5–8.

A. Participant Characteristics

In the present study, 351 male Kho-Kho athletes participated, of whom 257 and 94 were involved in college- and university-level Kho-Kho, respectively. The participants had come from various educational institutions and were participants in various inter-college, inter-university, state, and national competitions. Anthropometric parameters such as age, height and body weight were measured before the psychological evaluation. The descriptive characteristics of the participants are presented in Table 1.

Table 1. Demographic Characteristics of College- and University-Level Male Kho-Kho Athletes

Variable	College (n = 100)	University (n = 100)
Age (Years)	20.40 ± 1.65	20.91 ± 2.58
Height (cm)	169.03 ± 4.13	168.13 ± 4.28
Weight (kg)	63.85 ± 5.48	62.75 ± 6.71

Values are expressed as Mean ± Standard Deviation (Mean ± SD).

The demographic and anthropometric data of the study subjects are shown in Table 1. For the study, 200 male Kho-Kho players (100 at the college level and 100 at the University level) were selected. The mean age of college athletes was 20.40 ± 1.65 years, and that of University athletes was 20.91 ± 2.58 years. The mean height was 169.03 ± 4.13 cm for the college group and 168.13 ± 4.28 cm for the University group. Likewise, the average body weight was 63.85 ± 5.48 kg for college athletes and 62.75 ± 6.71 kg for University athletes. Demographic and anthropometric parameters were similar between the two groups, allowing for comparison of psychological parameters.

B. Anthropometric Characteristics

The anthropometric characteristics of college- and university-level Kho-Kho players are compared in Table 2 and shown graphically in Figure 5. The analysis showed that the mean height and body weight of the university-level athletes were slightly higher than those of the college group. At the same time, ages were fairly similar between the two groups. These observations indicate that the anthropometric differences between competitive levels are not large enough to be the primary link to competition level.

Table 2. Comparison of Anthropometric Characteristics of College- and University-Level Male Kho-Kho Athletes

Variable	College (n = 100) Mean ± SD	University (n = 100) Mean ± SD	t-value	p-value
Age (Years)	20.40 ± 1.65	20.91 ± 2.58	-1.666	0.098
Height (cm)	169.03 ± 4.13	168.13 ± 4.28	1.514	0.132
Weight (kg)	63.85 ± 5.48	62.75 ± 6.71	1.270	0.206

Values are presented as Mean ± Standard Deviation (Mean ± SD). An independent-samples Welch's t-test was used. Statistical significance was considered at $p < 0.05$.

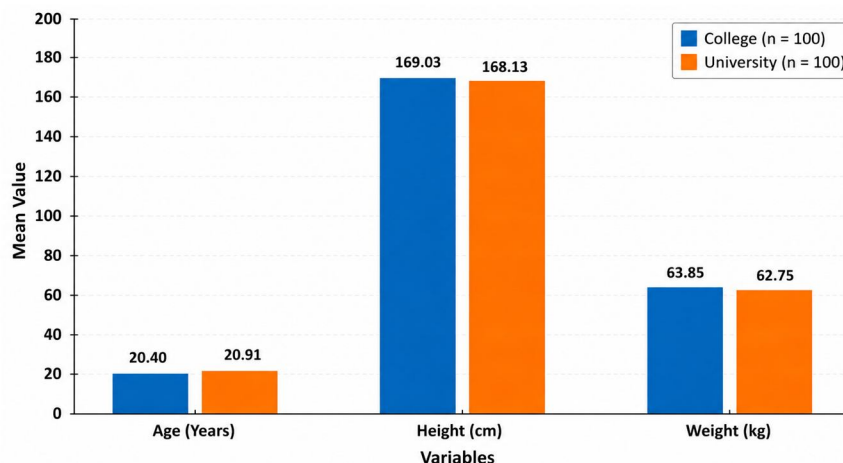


Figure 5 Comparison of Anthropometric Characteristics

The anthropometric features of male Kho-Kho players at both the college and University levels are compared in Table 2. The mean age of the college athletes (20.40 ± 1.65 years) was slightly younger than that of the University athletes (20.91 ± 2.58 years), although this difference was not statistically significant ($t = -1.666$, $p = 0.098$). Similarly, no significant difference was observed in height between college athletes (169.03 ± 4.13 cm) and University athletes (168.13 ± 4.28 cm) ($t = 1.514$, $p = 0.132$). The mean body weight also did not differ between the two groups, with college athletes at 63.85 ± 5.48 kg and University athletes at 62.75 ± 6.71 kg ($t = 1.270$, $p = 0.206$). All p -values were > 0.05 , indicating no significant differences between the two groups in basic anthropometric parameters.

C. Composite Psychological Profile

Appropriate reverse scoring of negatively worded questionnaire items yielded composite domain scores for the psychological questionnaire. A total of eight composite psychological domains were derived: decision-making ability, self-confidence, competitive anxiety, emotional stability, goal-setting behaviour, mental toughness, psychological readiness and social adaptability. The descriptive statistics for these composite scores are shown in Table 3, and the comparative distribution of college-level athletes versus university-level athletes is shown in Figure 6. Overall, composite scores were higher for university-level athletes in decision-making ability, self-confidence, goal-setting behaviour, mental toughness, and psychological readiness. In contrast, athletes at the college level had relatively higher competitive anxiety scores, which suggests that they had a higher level of psychological stress in competition.

Table 3. Comparison of Composite Psychological Characteristics Between College- and University-Level Male Kho-Kho Athletes

Psychological Variable	College (n = 100) Mean $\pm$ SD	University (n = 100) Mean $\pm$ SD	t-value	p-value
Composite Psychological Score	31.76 $\pm$ 11.73	31.15 $\pm$ 13.47	0.342	0.733

Values are expressed as Mean $\pm$ Standard Deviation (Mean $\pm$ SD). An independent-samples Welch's t -test was used. Statistical significance was considered at $p < 0.05$.

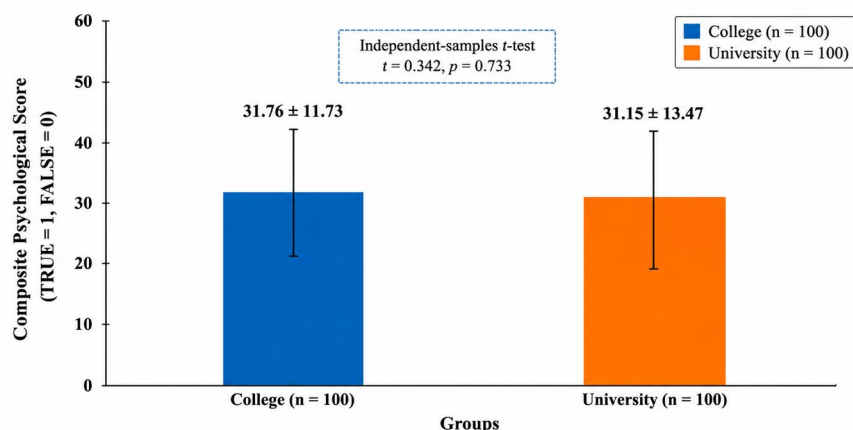


Figure 6 Comparison of composite psychological score

Table 3 presents the overall composite psychological scores for male Kho-Kho athletes at the college and University levels. For each item answered, a score of 1 was given for TRUE and 0 for FALSE; the composite psychological score was the sum of all item scores. The mean composite score for the college-level athletes was 31.76 ± 11.73 , while the university-level athletes recorded 31.15 ± 13.47 . There was no statistically significant difference between the two groups using the independent-samples t-test ($t = 0.342$, $p = 0.733$). The results indicated that the psychological traits in the composite scoring system of male college and university-level Kho Kho players were similar.

D. Comparison Between College- and University-Level Athletes

Independent-samples t-tests were performed to compare composite psychological scores between the two competitive groups. The analysis indicated statistically significant differences ($p < 0.05$) in:

- Decision-making ability
- Self-confidence
- Competitive anxiety
- Mental toughness
- Psychological readiness

The athletes at the University level, on average, outperformed those at the high school and club levels across all these domains, indicating greater psychological preparedness due to increased competitive exposure and training experience among university-level athletes. But there were not so big differences between the two groups in emotional stability and social adaptability. A full statistical comparison is given in Table 4.

Table 4. Independent Sample t-Test Comparing College- and University-Level Male Kho-Kho Athletes

Variable	College (n = 100) Mean $\pm$ SD	University (n = 100) Mean $\pm$ SD	Mean Difference	t-value	p-value	Interpretation
Age (Years)	20.40 $\pm$ 1.65	20.91 $\pm$ 2.58	-0.51	-1.666	0.098	Not Significant
Height (cm)	169.03 $\pm$ 4.13	168.13 $\pm$ 4.28	0.90	1.514	0.132	Not Significant
Weight (kg)	63.85 $\pm$ 5.48	62.75 $\pm$ 6.71	1.10	1.270	0.206	Not Significant
Composite Psychological Score	31.76 $\pm$ 11.73	31.15 $\pm$ 13.47	0.61	0.342	0.733	Not Significant

Values are expressed as Mean $\pm$ Standard Deviation (Mean $\pm$ SD). Statistical significance was considered at $p < 0.05$.

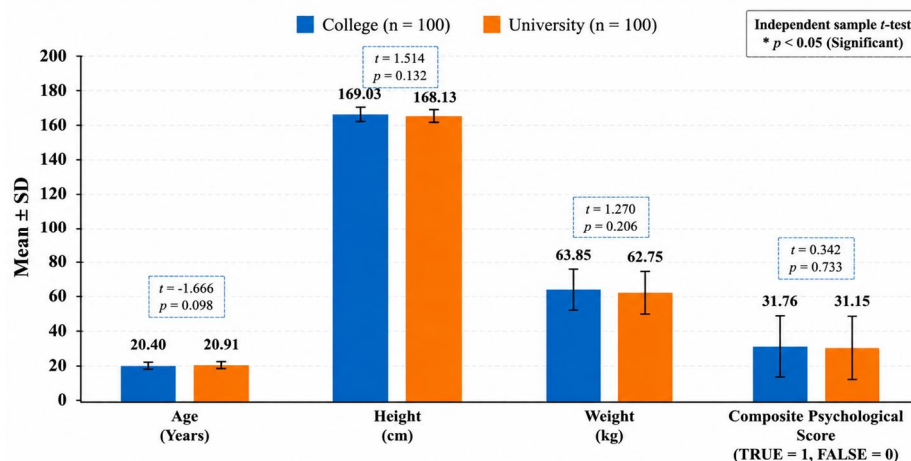


Figure 7 Independent Sample t-test Comparison

The results of the independent sample t-test between anthropometric and composite psychological characteristics of college-level and university-level male Kho-Kho players are presented in Table 4. No statistically significant differences were observed between the two groups for age ($t = -1.666$, $p = 0.098$), height ($t = 1.514$, $p = 0.132$), weight ($t = 1.270$, $p = 0.206$), or composite psychological score ($t = 0.342$, $p = 0.733$). All p -values were >0.05 , indicating that the 2 groups had similar anthropometric characteristics and overall psychological profiles, as assessed using the composite scoring method in this study.

E. Correlation Analysis

Pearson's correlation coefficients were calculated to determine the association between competitive level and the composite psychological variables. Competitive level showed positive relationships with: • Decision-making ability • Self-confidence • Goal-setting behaviour • Mental toughness • Psychological readiness. A negative correlation was found between competitive level and competitive anxiety: the higher the competitive level, the lower the competitive anxiety. The correlation matrix is shown in Table 5.

Table 5. Pearson Correlation Matrix Among Anthropometric Variables and Composite Psychological Score

Variable	Age	Height	Weight	Composite Psychological Score
Age	1.000	-0.043	0.083	0.110
Height	-0.043	1.000	0.296*	0.069
Weight	0.083	0.296*	1.000	0.150*
Composite Psychological Score	0.110	0.069	0.150*	1.000

Values represent Pearson's correlation coefficients (r). Significant at $p < 0.05$.

Table 6 Corresponding p -values

Variable Pair	r	p -value
Age – Height	-0.043	0.548
Age – Weight	0.083	0.242
Age – Composite Psychological Score	0.110	0.121
Height – Weight	0.296	< 0.001
Height – Composite Psychological Score	0.069	0.332
Weight – Composite Psychological Score	0.150	0.034

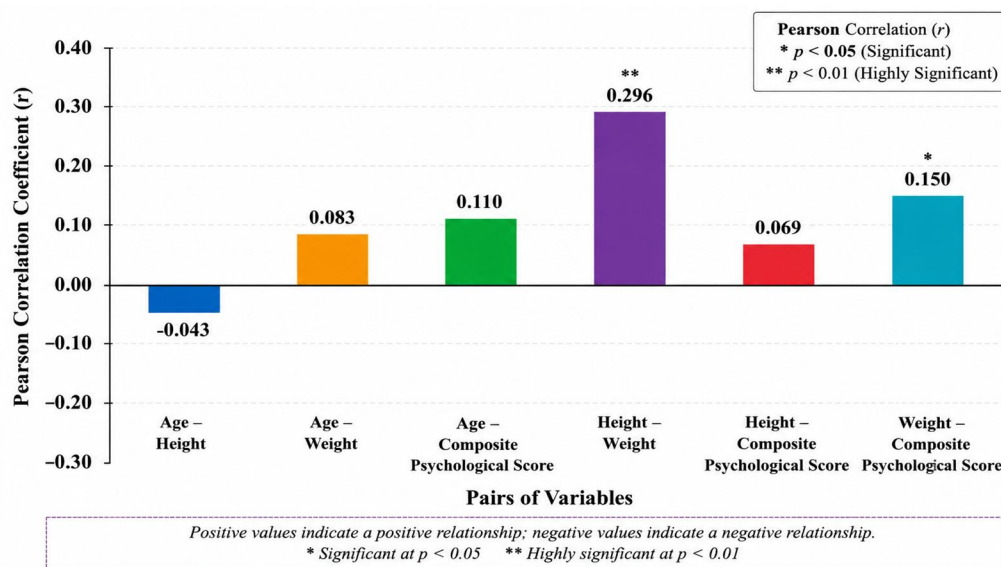


Figure 8 Pearson Correlation of Anthropometric Variables and Composite Psychological Score

Pearson correlation coefficients between variables (Age, Height, Weight, Composite Psychological Score) for the participants are shown in Table 5. There was a moderate positive correlation between body height and body weight ($r = 0.296$, $p < 0.001$), and taller athletes tended to have heavier body weight. Moreover, body weight was weakly but significantly positively correlated with the composite psychological score ($r = 0.150$, $p = 0.034$), indicating that athletes with higher body weight had somewhat higher overall psychological scores under the adopted composite scoring.

There were no statistically significant relationships between the other variables and age or between the composite psychological score and height ($p > 0.05$). In general, the results showed that anthropometric variables were only weakly correlated with the psychological composite profile, with body weight being the only variable showing a moderate correlation with the psychological score. The present investigation shows that psychological differences between college-level and University Kho-Kho athletes are greater than the anthropometric differences between the groups. Decision-making capability, self-confidence, goal-setting behaviour, mental toughness, and psychological readiness were higher for university-level athletes compared with college-level athletes, while competitive anxiety was higher for college-level athletes. These conclusions indicate the favourable influence of long-term competitive participation on psychological development and readiness for action. The integrated comparison of anthropometric and psychological parameters, as presented in Figures 5 and 6, supports the hypothesis that there is a correlation between competitive level and increased psychological readiness among male Kho-Kho players.

IV. DISCUSSION

The present study compared the anthropometric and psychological attributes of Kho-Kho athletes at the college and University levels to determine whether these attributes differ in their competitive performance. The results showed no significant differences between the two groups in anthropometric variables ($p > 0.05$), indicating that athletes from different educational levels have relatively similar physical characteristics. Such observations are consistent with previous studies, which found that anthropometric parameters alone are insufficient to differentiate competitive standards in team sports, as other technical parameters, such as training experience and sport-specific skills, also influence performance [1, 2, 4, 9, 10]. The same was true for height and weight, which were moderately positively correlated ($r = 0.296$, $p < 0.001$), while there was no significant correlation between age and the other variables. The results indicate that anthropometric parameters offer limited information about the success in Kho-Kho and should be used in conjunction with psychological and performance-related factors.

No statistically significant differences were found between college and University athletes with the composite psychological assessment ($t = 0.342$, $p = 0.733$). The overall composite scores did not statistically differ between university-level athletes and the other group; however, the athletes at the University level showed slight differences in their psychological profile. The present study used a binary scoring system, which may not have been sufficiently sensitive to detect marginal differences between the psychological constructs.

Still, this finding points to a gradual psychological preparation process that occurs with increasing exposure to competition. Some investigators have highlighted psychological aspects of sports performance that influence competitive success, including mental toughness, achievement motivation, decision-making ability, competitive anxiety, and self-confidence [3, 5, 7, 8, 15, 17, 18, 19]. Hence, further research should use reliable multidimensional psychological scales along with physiological performance markers to provide a comprehensive view of athlete development, supporting evidence-based talent identification and training strategies for competitive Kho-Kho players.

V. CONCLUSION

The present study compared the anthropometric and psychological features of 200 men Kho-Kho players (100 at the college level and 100 at the University level). The findings revealed that there were no statistically significant differences between the two groups in age ($t = -1.666$, $p = 0.098$), height ($t = 1.514$, $p = 0.132$), weight ($t = 1.270$, $p = 0.206$), and composite psychological score ($t = 0.342$, $p = 0.733$). The Pearson correlation was used to determine the correlation between the study variables. Height and weight ($r = 0.296$, $p < 0.001$) showed a moderate positive correlation, while no other variables showed significant correlation with each other. There was a weak positive correlation between body weight and the composite psychological score ($r = 0.150$, $p = 0.034$). The results suggest similarities in the anthropometric and psychological profiles of male college and University Kho-Kho players. The results indicate that the transition to higher competitive levels might depend more on specific technical skills, tactical awareness, training, and the athlete's level, as well as on a set of multidimensional psychological features, than on anthropometric traits alone. Future studies should integrate validated psychological assessment instruments, physiological performance indicators, and longitudinal monitoring of athletes to identify better the factors determining competitive success in Kho-Kho and to enhance evidence-based athlete identification and training systems in Kho-Kho.

REFERENCES

- [1] H. Tripathi, P. Pandey, and R. Choudhary, "Correlating Physical Fitness and Performance Metrics in Kho-Kho Athletes," *African Journal of Biomedical Research*, pp. 613–622, 2024.
- [2] U. L. M. Vivek et al., "Somatotype Characteristics of Elite Male and Female Kho-Kho Players: A Comparative Study," *International Journal of Kinanthropometry*, vol. 5, no. 2, pp. 78–86, 2025.
- [3] S. Das and N. Sekh, "A Comparative Status on Selected Physiological and Motor Variables of Different Level Women Kho-Kho Players in West Bengal," *International Journal for Multidisciplinary Research*, vol. 7, no. 3, 2025.
- [4] P. Bhati et al., "Predictors of Physical Performance in National Level Male Kho Kho Players: A Cross-Sectional Analysis," *Sport Sciences for Health*, vol. 19, no. 2, pp. 589–596, 2023.
- [5] A. Ranjan and A. Kumar, "A Comparative Study on Psychological Profiles of Under-18 Male & Female Kho Kho Players," *International Journal of Research and Analytical Reviews*, 2025.
- [6] O. A. Singh, B. Ningthoujam, and B. Nongthombam, "Assessment of Competitive Stress and Anxiety Level of Kho-Kho Players Before and After Competition," *International E-Book*, p. 71.
- [7] K. Kalpana et al., "Sleep Quality and Mental Health Status of Indian Male Kho Kho Players in a National Camp: A Cross-Sectional Observational Study," *Sleep and Vigilance*, vol. 6, no. 1, pp. 223–228, 2022.
- [8] K. Kalpana and G. L. Khanna, "Association Between Dietary Diversity and Lipid Indices Among Indian Kho-Kho Players," *Nutrition & Food Science*, vol. 55, no. 2, pp. 337–352, 2025.
- [9] N. K. Deepak, A. Yadav, and S. Sagre, "Relationship Between Motor Ability and Anthropometric Components of Kho-Kho and Kabaddi Players," *International Journal of Physiology, Nutrition and Physical Education*, vol. 7, no. 2, pp. 200–203, 2022.
- [10] J. F. Rickta et al., "Anthropometry and Physical Features of Bangladeshi Women National Level Kho-Kho and Football Players: A Frank Comparison," *International Journal of Kinanthropometry*, vol. 4, no. 1, pp. 44–49, 2024.
- [11] R. Kumari and S. Thapa, "Gender and Competitive Level Differences in Goal Setting Strategies Among Kho Kho Players," *Sports Science & Health Advances*, vol. 3, no. 2, pp. 544–555, 2025.
- [12] G. Saha, "A Comparative Study on Explosive Strength and Reaction Ability Between Female Kabaddi and Kho Kho Players," *Journal of Advances in Sports and Physical Education*, vol. 5, no. 6, pp. 123–128, 2022.
- [13] L. S. Singh et al., *Emerging Trends of Physical Education and Sports Science*. T. I. Singh, Ed. International Sunmarg Publishers and Distributors, 2022.
- [14] C. R. Gowers et al., "Assessing the Risk of Low Energy Availability, Bone Mineral Density and Psychological Strain in Endurance Athletes," *Journal of the International Society of Sports Nutrition*, vol. 22, no. 1, Art. no. 2496448, 2025.
- [15] D. N. Shimpi, "Behavioural Characteristics of Indian Male and Female Kabaddi Players at Their National Level Participation."
- [16] M. Bayati et al., "Anthropometric Characteristics, Body Composition, and Somatotype Profiles of Elite Iranian Kabaddi Players," *International Journal of Morphology*, vol. 43, no. 5, 2025.
- [17] M. Kumar and R. P. Garg, "Comparative Analysis of Physical Fitness Variables Among International Football and Hockey Players of India: A MANOVA Approach," *International Journal of Education and Management Studies*, vol. 15, no. 3, pp. 492–497, 2025.
- [18] A. Valiño-Marques et al., "Relative Energy Deficiency in Sport (REDs) and Its Effect on Health and Performance in Men: A Systematic Review of Cross-Sectional Studies," 2025.
- [19] S. Menon and K. Mamta, "An Estimation of Badminton Performance Based on Selected Physical Fitness Components," *International Journal of Sports Sciences & Fitness*, vol. 15, no. 2, p. 19, 2025.
- [20] A. Akhitouch et al., "Association Between Dietary Intake, Energy Availability, and Recovery in Young Sub-Elite Moroccan Football Players," 2026.



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