Quantitative Assessment Of Physical Fitness And Phychological Traits Of Male Badminton Players Of Different Socioeconomic Status

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Abstract: This study investigates the quantitative differences in physical fitness and psychological traits among male badminton players from varying socioeconomic statuses (SES). A sample of 90 players aged 18–25, stratified into high, middle, and low SES groups, was evaluated using standardized physical fitness tests (endurance, strength, agility, flexibility) and psychological scales (motivation, stress, self-esteem). The results indicated significant variations in both physical and psychological metrics across SES levels. Players from high SES backgrounds demonstrated superior agility, cardiovascular endurance, and psychological resilience, while those from lower SES showed higher stress levels and lower self-esteem. These findings suggest the need for inclusive training programs that address both physical and mental aspects for athletes from disadvantaged backgrounds.

I. INTRODUCTION

Badminton, a physically demanding sport, requires a combination of speed, endurance, agility, and mental toughness. While physical training is crucial, psychological resilience often determines an athlete's long-term success. Moreover, socioeconomic status (SES) is a known determinant of access to quality training, nutrition, and psychological support systems, which can influence both physical and mental development in athletes.

Prior research has established correlations between SES and health or educational outcomes, but limited data exist linking SES to holistic athletic development in sports like badminton. This study aims to fill this gap by quantitatively assessing physical fitness parameters and psychological traits in male badminton players across SES backgrounds.

2. Methods

2.1 Participants

A total of 90 male badminton players aged 18–25 years participated in the study. They were categorized into three groups based on SES using a validated socioeconomic index that considers parental income, education, and occupation:

- **High SES (n = 30)**
- **Middle SES (n = 30)**
- **Low SES (n = 30)**

2.2 Instruments and Measures

- **Physical Fitness Tests:**
    - o **Cardiovascular Endurance:** 12-minute Cooper Test
    - o **Muscular Strength:** Handgrip dynamometer
    - o **Agility:** Illinois Agility Test
    - o **Flexibility:** Sit-and-Reach Test
- **Psychological Assessments:**
    - o **Self-Esteem:** Rosenberg Self-Esteem Scale
    - o **Motivation:** Sport Motivation Scale (SMS-II)
    - o **Stress:** Perceived Stress Scale (PSS)

2.3 Procedure

Participants were tested over a 3-day period. All tests were administered in a controlled environment with standardized instructions. Questionnaires were administered in quiet rooms to minimize distractions. Ethical clearance was obtained, and informed consent was secured from all participants.

2.4 Data Analysis

Data were analyzed using SPSS. ANOVA was conducted to compare differences across SES groups, followed by post hoc Tukey tests where necessary. A significance level of $p < 0.05$ was used.

3. Results

3.1 Physical Fitness

Test	High SES (Mean ± SD)	Middle SES	Low SES	ANOVA p Value
Cooper Test (meters)	2700 ± 150	2550 ± 170	2400 ± 200	< 0.01
Handgrip (kg)	45.2 ± 3.6	42.1 ± 4.0	39.5 ± 4.5	< 0.01
Agility (seconds)	15.4 ± 1.0	16.1 ± 1.1	17.2 ± 1.2	< 0.01
Sit-and-Reach (cm)	31.2 ± 3.5	29.0 ± 3.8	27.1 ± 4.1	< 0.05

3.2 Psychological Traits

Scale	High SES (Mean ± SD)	Middle SES	Low SES	ANOVA p Value
Self-Esteem	23.8 ± 2.5	21.4 ± 3.0	19.7 ± 3.1	< 0.01
Motivation Score	5.8 ± 0.6	5.4 ± 0.7	5.0 ± 0.8	< 0.05
Perceived Stress	11.2 ± 2.0	13.5 ± 2.2	15.9 ± 2.5	< 0.01

4. Discussion

The results show a clear gradient of performance and psychological robustness aligned with SES. High SES players had better access to professional coaching, nutrition, and support systems, explaining superior fitness and self-esteem. In contrast, low SES athletes, despite showing commendable motivation, scored lower on most physical and psychological scales—likely due to limited resources and greater life stressors.

The lower agility and endurance scores in low SES players may impact game performance directly, while higher stress and lower self-esteem could reduce consistency and increase burnout risk. The findings align with social determinants of health literature and emphasize the multidimensional nature of athletic development.

This research highlights the need for targeted support systems (scholarships, counseling, inclusive coaching) for athletes from underprivileged backgrounds to level the playing field.

5. Conclusion

Socioeconomic status significantly influences both physical fitness and psychological traits among male badminton players. To promote equal opportunities and maximize national sports potential, interventions addressing SES disparities in training environments and psychological support are essential.

References

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