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A comparative study of mental health and physical fitness factors among rural and urban rowers

[1]Namdev Ramesh Kakad and [2]Dr. Vishwasrao K Kadam

[1]Department of Physical Education, Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar, Maharashtra, India

[2]JBSP Mandal's Arts and Science College, Gadhi, Taluka Georai, Beed, Maharashtra, India

Corresponding Author: Namdev Ramesh Kakad

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Abstract
A comparative research method was adopted to verify the hypotheses formulated for the study titled "A Comparative Study of Mental Health and Physical Fitness Factors among Rural and Urban Rowing Athletes". A total of 60 male rowing athletes from rural and urban areas of Nashik district were selected using a random sampling method, this cohort comprised 30 athletes from the rural areas of Niphad Taluka and 30 athletes from Nashik city. All participants were athletes competing within Nashik District. The rural athletes selected for the study were undergoing regular training at the Saikheda Boating Club in Niphad, while the urban athletes were training at the K.T.H.M. College Boating Club in Nashik. In selecting the variables, the researcher conducted an in-depth review of available scientific literature, research articles, journals, magazines, and reference books. Based on their relevance, 'Mental Health' was selected as the psychological variable, while 'Cardiovascular Endurance and Muscular Endurance were selected as the physical fitness variables. To measure these variables, standardized tests were employed under the guidance of sports experts. The Arun Kumar Singh and Alpana Sen Gupta Mental Health Questionnaire, the Kenneth Cooper 12-Minute Run/Walk Test and Bent-Knee Sit-up Test. Rowing athletes from rural areas were undergoing regular training at the Saikheda Boating Club in Niphad, while those from urban Nashik were training at the K.T.H.M College Boating Club in Nashik. Permission was obtained in writing after meeting the managers and coaches of these clubs. Once permission was secured, the researcher briefed the athletes about the study and the tests involved. Data was collected between March 1 and March 10, 2026, during morning sessions scheduled according to the athletes' convenience using standardized questionnaires and tests. An independent sample t-test was employed to analyze the collected data. The findings revealed a significant difference in the test performance regarding physical fitness and mental health parameters between rural and urban rowing athletes. Furthermore, the findings indicate that the mental health of urban rowers is superior to that of rural rowers. Regarding physical fitness components, a significant difference was observed between the two groups in the 'circulatory endurance' variable (measured by the 12-minute run-walk test), where rural rowers outperformed urban rowers. Additionally, a significant difference was noted in 'muscular endurance' (assessed via the bent-knee sit-up test), with urban rowers outperforming rural rowers.

Keywords: Rowers, mental health, and physical fitness components

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Introduction

Rowing is a competitive sport where success depends on various factors such as aerobic and anaerobic capacities, mental skills, motor abilities, rowing technique, and strategy. Therefore, becoming a successful rower requires developing diverse physical, mental, and technical attributes and mastering essential skills. All these factors are directly linked to performance in the sport. A rower needs excellent physical fitness to generate high power during each stroke. Furthermore, maintaining this power throughout the race demands high levels of endurance as well as specific physical and strategic skills. As with other competitive sports, average speed is considered a primary performance objective in rowing. Achieving this speed requires not only the generation of high power but also excellent mental skills, mental stability, concentration, and decision-making ability enable the effective utilization of generated power to increase the boat's average speed. High levels of aerobic and anaerobic capacity are considered crucial in rowing. For a 2,000-meter race, approximately 65% to 75% of the total energy required is derived from aerobic processes, while 25% to 35% comes from anaerobic processes. Anaerobic power plays a particularly vital role during the rapid initial phase and the final stage of the race; in these phases, the anaerobic system meets about 20% to 30% of the total energy demand. Three main factors primarily influence the final performance in a rowing race. These components are: (1) the rower, (2) the equipment used for rowing (boat, oars, seat, etc.), and (3) various physical and mental attributes such as speed, flexibility, endurance, power, agility, and coordination. Among these, the rower is considered the most crucial and complex element, as the boat's speed depends not only on the athlete's physical capabilities but also on their technical skills and mental preparedness. The true challenge in a rowing race lies not merely in competing against

opponents, but in the struggle between the rower and the racecourse itself, while the contest may appear to be a race against time, it is, in reality, a battle between the rower and their own mind. Consequently, success in rowing relies heavily on the athlete's peak physical fitness, mental resilience, and the capacity to endure the oxygen deprivation, pain, and intense fatigue that arise during the competition.

Methods and Materials

A comparative research method was adopted to verify the hypotheses formulated for the study titled "A Comparative Study of Mental Health and Physical Fitness Factors among Rural and Urban Rowing Athletes". A total of 60 male rowing athletes from rural and urban areas of Nashik district were selected using a random sampling method; this group comprised 30 athletes from the rural areas of Niphad Taluka and 30 athletes from Nashik city. All participants were athletes competing within Nashik district. The rural athletes selected for the study were undergoing regular training at the Saikheda Boating Club in Niphad, while the urban athletes were training at the K.T.H.M College Boating Club in Nashik. In selecting the variables, the researcher conducted an in-depth review of available scientific literature, research articles, journals, magazines, and reference books. Based on their relevance, 'mental health' was selected as the psychological variable, while 'cardiovascular endurance', and 'muscular endurance were chosen as the physical fitness variables. To measure these variables, standardized tests were employed under the guidance of sports experts. The Arun Kumar Singh and Alpana Sen Gupta Mental Health Questionnaire, the Kenneth Cooper 12-Minute Run/Walk Test and Bent-Knee Sit-up Test. Rowing athletes from rural areas were regularly training at the Saikheda Boating Club in Niphad, while those from urban Nashik were training at the K.T.H.M College Boating Club in Nashik. Permission was obtained in writing after meeting the managers and coaches of these clubs. Once permission was secured, the researcher briefed the athletes on the research and the tests to be administered. Data was collected between March 1 and March 10, 2026, during morning sessions scheduled according to the athletes' convenience using standardized questionnaires and tests. The collected data was subsequently analyzed using statistical tools. The independent samples t-test was used to analyze the data collected during the research. Based on this, the mean and standard deviation were calculated for all the variables. Subsequently, the variables were compared using the t-test to determine if there were significant differences in the data obtained from the two groups, and conclusions were drawn accordingly. A significance level of 0.05 was selected for the study. SPSS software was used for the statistical analysis.

Analysis and interpretation of collected information

The following table presents the descriptive analysis including the mean, standard deviation, and standard error of the mean and the comparative analysis comprising the t-value, degrees of freedom, significance level, and difference between means based on data obtained through tests measuring mental health and physical fitness components among rowers from rural and urban areas of Nashik district.

Table 1: Statistical analysis of mental health variables among rural and urban rowers

Variable	Group	No	Mean	MD	'T' Value
Mental Health	Rowers of Rural Area	30	71.38	6.82	7.21
	Rowers of Urban Area	30	78.20		

Table 2: Statistical analysis of cardiovascular endurance variable among rural and urban rowers

Variable	Group	No	Mean	MD	'T' Value
Cardiovascular Endurance	Rowers of Rural Area	30	2417.53	465.83	13.07
	Rowers of Urban Area	30	1951.73		

Table 3: Statistical analysis of muscular endurance variable among rural and urban rowers

Variable	Group	No	Mean	MD	'T' Value
Muscular Endurance	Rowers of Rural Area	30	28.73	7.39	9.50
	Rowers of Urban Area	30	36.12		

Conclusion

In this study, the mental health of rural and urban rowing athletes was assessed using the 'Mental Health Questionnaire' developed by Arun Kumar Singh and Alpana Sen Gupta. Data analysis was conducted using the independent samples t-test, yielding a t-value of 7.21 (p=0.001). The results indicate that the obtained t-value is significant at the 0.05 level. Urban rowing athletes exhibit better mental health compared to their rural counterparts.

In this study, the cardiovascular endurance component of physical fitness among rural and urban rowers was measured using Dr. Kenneth Cooper's 12-minute run-walk test. Data analysis via the independent samples t-test yielded a t-value of 13.07 (p=0.001). The results indicated that the obtained t-value was significant at the 0.05 level of significance. It was concluded that the mental health of urban rowers is superior to that of rural rowers.

In this study, the muscular endurance of rural and urban rowers was measured using the Bent-Knee Sit-Ups test. Analysis of the data via an independent samples t-test yielded a t-value of 9.50 (p=0.001). The results indicated that this t-value was significant at the 0.05 level of significance. A significant difference was observed in the muscular endurance of urban rowers compared to rural rowers based on the Bent-Knee Sit-Ups test.

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