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THE PHYSICAL FITNESS AMONG COLLEGE STUDENTS: AN OVERVIEW OF REGION AND AGE WISE DIFFERENCE

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Abstract

Physical fitness parameters play a considerable role in performing the fitness of college students. To encourage students to feel more optimistic about a range of leisure activities will make them more likely to be physically active. The purpose of the study was to compare and assess physical fitness parameters (agility and balance) among college students (19, 20 and 21 years) of Jammu and Kashmir. To achieve the purpose, 1200 male college students of age group 19 to 21 years, were randomly selected from two regions (Jammu region and Kashmir region) of union territory of Jammu and Kashmir. The physical fitness parameters selected for this study were agility and balance and were measured by Shuttle run and stork stand test. The collected data on selected criterion variables were statistically analyzed by using 2×3 factorial ANOVA to find out the significant difference, whenever the interaction effect was found to be significant the simple effect and then least significant difference (LSD) post hoc test was applied to find out the paired mean difference. In all the cases 0.05 level of confidence was fixed to test the hypothesis. Findings disclose that significant difference in agility while as insignificant

difference was found between the interaction of region and age. The data will serve as an advocacy tool to promote physical activity among college students. The study concludes with recommendations for an appropriate evaluative measures and early intervention programmes for college students.

Introduction

Physical fitness is a multidimensional concept that evolves with age and involves muscles, skeleton, heart and mind related activities that improve physical, intellectual, psychological, emotional and social development [3, 8, 9]. However, today's growing reliance on mechanical devices in everyday life and reduction in work – related and leisure – time physical activities is rendering life style of both males and females sedentary. Less participation in physical activities has led to an increase in obesity and other health issues in the population over all age groups and genders [10].

Physical fitness represents a set of attributes regarding how well one carries out physical activity. It is the combination of health and skill-related aspects of physical fitness which is imperative in shaping individuals in sports and games [2]. Regular involvement in moderate and intense levels of physical activity increases physical fitness and reduces obesity in children [15]. Realizing that diseases are related to lack of fitness, there is a need to combat sedentary lifestyles with scheduled physical activity through sports and formal exercise. This has contributed to the development of minimum fitness requirements in public schools in the USA [20].

Physical fitness is not only one of the vital keys to a balanced body, but also the basis of dynamic and creative activity. Physical fitness helps you feel more mentally relaxed and better able to handle the demands of daily life [11].We are getting acquainted with the modern amenities at a very rapid rate in our region. So, we are neglecting physical activities that are normal. The current attractive education system has helped to improve the educational standards. But, the non-active, stressful and sedentary life has made the youth physically unfit. Now, the time has come to consider about the physical fitness and exercise in the adolescent age group. Realizing this fact, educationalists have recommended minimal physical exercise in the curriculum [16]. Between 12 and 16 years of age, the physique changes; during this growth phase, height, weight and maximum aerobic capacity will reach to their peak. So, to achieve good fitness in children, sports programmes should be arranged. There are many benefits of physical fitness, such as improved levels of intelligence, tolerance, activity and social behaviour [14]. Promoting physical activity among college students may be an important strategy to ensure that they develop regular physical activity habits which they can continue throughout their adult life. Physical activity is seen to influence the improvement of fitness parameters among college students.

Agility and balance are essential physical fitness parameters that determine the physical status of an individual. Agility is "a rapid whole body

movement in response to a stimulus, with a change of running direction [18]. Agility involves moving the upper body segments in order to change the running direction quickly without losing the balance [1]. Performance in agility run (shuttle run) depends upon factors like speed of movement, acceleration ability, stride length and the ability to change direction quickly in the shortest possible time [6]. Athlete from various sports needs balance control to boost their performance, depending on the type of game they play. It may be necessary to consider performance differences when recommending balance exercises for athletes in various sports [12]. Maintaining balance in both static and dynamic postures is crucial for the performance of fundamental motor skills and is therefore a vital element in children's daily lives. Balance skill and agility are motor abilities that are more easily acquired and improved with specific training at early ages and at the required age levels. Improvement of these abilities is only possible through regular and systematic physical training and through participation in multidimensional physical activities of different games and sports.

To date, surprisingly, limited research is available on physical fitness among college students of Jammu and Kashmir. The data from this study will provide a basis for further research related to assessing and monitoring college student fitness in the Jammu and Kashmir population. It could also lend a foundation for comparing and contrasting youth fitness testing practices across both the regions (Jammu region and Kashmir region) to shed new light on how fitness testing could be implemented to promote a healthy lifestyle among college students. The present investigation is intended to assess physical fitness parameters (agility and balance) among college students of Jammu and Kashmir.

Materials and Methods

Subjects

1200 male college students of age group 19 to 21 years were selected as subjects for this study. The sample frame was male college students of age group 19 to 21 years who were enrolled in different Government degree colleges in respective regions in the union territory of Jammu and Kashmir during the year 2019-2020. The stratified random sampling technique was used to attain the objectives of the study. All the subjects after having been informed about the objectives and protocol of the study gave their consent and volunteered to participate in this study.

Study Design

Cross-sectional study design was used. The participants of the study were tested the field tests at twice to assess the selected physical fitness components (agility & balance). All testing was conducted under the direct supervision of college principles and physical teaching instructors of respective colleges. Prior to data sessions, subjects completed a supervised warm-up and were permitted

to practice the tests being administered by the researcher. Subjects were measured for their performance in selected physical fitness parameters through respective standard tests, which include shuttle run (for agility) and stork stand test (for balance). Each test used in this fitness test battery is valid and reliable based on its use in previous studies and can be found in fitness assessment manuals. Each of these motor fitness parameters was assessed to determine the fitness level of college students.

Variables and tests

Agility (Shuttle Run)

The agility of the subjects in running and changing direction was measured by 4×10 meters shuttle run. The subjects stand behind the starting line, which is drawn parallel to another line on the ground at a distance of 10 meters. There were two wooden blocks positioned on one of the sides. The subjects position his front foot behind the line on the "ready" signal. The subject's sprints on the "go" signal to the opposite line, picks up a wooden block, returns and positions it on or behind the starting line. The timekeeper stopped the watch as soon as the block was set on the ground and recorded the time. Two trails with an interval during which another pair of subjects were tested. The final score of the test will be reported as the maximum time taken by the subjects to position both blocks behind the starting line.

Balance (Stork Stand Test)

The performer is asked to stand on the foot of the dominant leg and to place the ball of the other foot on the inside of the supporting knee. The subject is instructed to place the hands on the respective sides of the waist. The subject is informed that he will have to stand on the ball of the foot by raising his heel from the floor on the signal "start". The tester then announces, Ready, Steady, Start!. On the signal 'Start', the subject raises the heel from the floor to maintain the balance. As long as possible without moving the ball of the foot from its initial position, and the tester starts the stopwatch. The performer is also encouraged to maintain balance with his best efforts and not to let the heel to touch the floor for the longest duration. As soon as the subject looses the balance, indicated either by touching heel to the floor or by the movement of the foot from initial position, the tester stops the stopwatch. The score is given by the time in seconds for the duration of the maintenance of the balance on the ball of foot as described above in test administration. This test is easy to administer and most practicable method of testing static balance. To economize time, the subjects may be tested in pairs or groups depending upon the availability of stopwatches and trained helpers to administer the test.

Statistical Analysis

The collected data on selected criterion variables (agility and balance) of male college students were statistically analyzed by using 2×3 factorial ANOVA to find out the significant difference, whenever the interaction effect was found to be significant; the simple effect and then least significant difference (LSD) post hoc test was applied to find out the paired mean difference. In all the cases 0.05 level of confidence was fixed to test the hypothesis.

Results

Agility

The Descriptive Statistics on Agility among male college students of Jammu and Kashmir region are presented in table 1.

Table 1: Descriptive Statistics On Agility Among College Students Of Jammu And Kashmir Region.

Age		Jammu Region	Kashmir Region
19 yrs	Mean	11.00	10.63
	S.D.	0.59	0.52
20 yrs	Mean	10.74	11.07
	S.D.	0.67	0.59
21 yrs	Mean	10.81	11.08
	S.D.	0.68	0.51

Table 1, reflects the descriptive values of male college students of age group 19, 20 and 21 years on agility, which shows the mean and standard deviation of college students of Jammu and Kashmir region.

The statistical analysis among male college students from Jammu and Kashmir region on agility are presented in table 2.

Table 2: Summary of ANOVA (2×3) Factorial Design on Agility

Tests of Between –Subjects Effects					
Dependant Variable : Agility					
Source of Variation	Sum of Square (SS)	df	MS	F	Sig
Between Ss					
Factor A (Region)	1.682	1	1.682	4.652	0.031
Factor B (Age)	3.760	2	1.880	5.199	0.006
Interaction (Region × Age)	30.275	2	15.137	41.859	0.000
Error	431.787	1194	0.362		

Significant at 0.05 level
(Table value required for significance at 0.05 level of confidence with df of 1 and 1194 & 2 and 1194 are 3.84 & 2.99 respectively)

It is clear from the table 2 that agility measured between Jammu and Kashmir regions reveals a significant difference, irrespective of age as the obtained F ratio of 4.652 is greater than the required table value of 3.84 at α = 0.05 for the df of 1 and 1194. Further, the findings disclose that there is also significant difference on agility between ages irrespective of regions, since the obtained F ratio of 5.199 is greater than the required table value of 2.99 at α = 0.05 for the df of 2 and 1194.

Moreover, the findings disclose that significant difference in agility was found between the interaction of region and age as the obtained F ratio of 41.859 is greater than the required table value of 2.99 at α = 0.05 for the df of 2 and 1194. Since, the interaction between region and age is significant simple effect and post hoc test was applied and presented in table 3.

Table 3: Simple Effect On Region And Age Wise On Agility.

Source of Variance		SS	df	MS	F	Sig.
Difference between Jammu and Kashmir region college students of age group 19 years.		13.917	1	13.917	38.483	0.000
Difference between Jammu and Kashmir region college students of age group 20 years.		10.804	1	10.804	29.877	0.000
Difference between Jammu and Kashmir region college students of age group 21 years.		7.236	1	7.236	20.010	0.000
Difference on Jammu region with respect to age groups	19 years 20 years 21 years	7.291	2	3.646	10.081	0.000
Difference on Kashmir region with respect to age groups	19 years 20 years 21 years	26.744	2	13.372	36.977	0.000
Error		431.787	1194	0.362		

From the table 3, it is clear that there is significant difference between Jammu and Kashmir region male college students of age 19 years in agility since the obtained F ratio is 38.483 greater than the table value of 3.84 at α = 0.05 for the df of 1 and 1194. Similarly, there is significant difference between Jammu and Kashmir region male college students of age 20 years in agility since the obtained F ratio 29.877 is greater than the table value of 3.84 at α = 0.05 for the df of 1 and 1194. Also, there is significant difference between Jammu and Kashmir region male college students of age 21 years in agility since the obtained F ratio 20.010 is greater than the table value of 3.84 at α = 0.05 for the df of 1 and 1194.

Table 3 clearly shows that there is significant difference in agility between different age groups I.e. 19, 20 & 21 years in Jammu region male college students, since the obtained F ratio is 10.081 greater than the table value of 2.99 at α = 0.05 for the df of 2 and 1194. Further, from the results it is clear that there is significant difference in agility between different age groups I.e. 19, 20 & 21 years in Kashmir region male college students, since the obtained F ratio is 36.977 greater than the table value of 2.99 at α = 0.05 for the df of 2 and 1194.

Table 4: Pair Wise Comparison Of Post Hoc Test On Region And Age Wise On Agility

Source of Variance		Post hoc test		95% of C.I	
		M.D	Sig.	L.B.	U.B.
Difference between Jammu and Kashmir region college students of age group 19 years.		0.373*	0.000	0.255	0.491
Difference between Jammu and Kashmir region college students of age group 20 years.		0.329*	0.000	0.447	0.211
Difference between Jammu and Kashmir region college students of age group 21 years		0.269*	0.000	0.387	0.151
. Difference on Jammu region with respect to age groups	19 years	0.263*	0.000	0.145	0.380
	20 years	0.076	0.204	0.194	0.042
	21 years	0.186*	0.002	0.304	0.068
Difference on Kashmir region with respect to age groups	19 years	0.439*	0.000	0.557	0.321
	20 years	0.017	0.781	0.135	0.101
	21 years	0.456*	0.000	0.338	0.574

Table 4 exhibits that statistically significant paired mean difference exists among male college students of Jammu and Kashmir region in the age groups 19, 20 and 21 years on agility as the obtained paired mean difference of 0.373 (p< 0.05), 0.329 (p<0.05), and 0.269 (p<0.05) were respectively obtained.

Table 4 exhibits that statistically significant paired mean difference exists among age groups 19 and 21 years in agility as the obtained paired mean difference of 0.263 (p < 0.05) and 0.186 (p<0.05) were respectively obtained. But insignificant difference exhibits between age group 20 years on agility as

the obtained paired mean difference of 0.076 (p<0.05) were respectively obtained.

Table 4 exhibits that statistically significant paired mean difference exists among age groups 19 and 21 years in agility as the obtained paired mean difference of 0..439 (p < 0.05) and 0.456 (p<0.05) were respectively obtained. But insignificant difference exhibits between age group 20 years on agility as the obtained paired mean difference of 0.017 (p<0.05) were respectively obtained.

Balance

The Descriptive Statistics on Balance among male college students of Jammu and Kashmir region are presented in table 5.

Table 5: Descriptive Statistics On Balance Among Male College Students Of Jammu And Kashmir Region.

Age		Jammu Region	Kashmir Region
19 yrs	Mean	27.16	30.24
	S.D.	6.64	7.57
20 yrs	Mean	28.27	30.30
	S.D.	7.39	6.43
21 yrs	Mean	29.31	30.92
	S.D.	6.70	7.16

Table 5, reflects the descriptive values of male college students of age group 19, 20 and 21 years on balance, which shows the mean and standard deviation of college students of Jammu and Kashmir region.

The statistical analysis among male college students from Jammu and Kashmir region on balance are presented in table 6.

Table 6: Summary Of ANOVA (2 × 3) Factorial Design On Balance

Tests of Between –Subjects Effects					
Dependant Variable : Balance					
Source of Variation	Sum of Square (SS)	df	MS	F	Sig
Between Ss					
Factor A (Region)	1506.557	1	1506.557	30.749	0.000
Factor B (Age)	404.479	2	202.240	4.128	0.016
Interaction (Region × Age)	114.285	2	57.143	1.166	0.312
Error	58499.838	1194	48.995		

Significant at 0.05 level
(Table value required for significance at 0.05 level of confidence with df of 1 and 1194 & 2 and 1194 are 3.84 & 2.99 respectively)

It is clear from the table 6 that balance measured between Jammu and Kashmir regions reveals a significant difference, irrespective of age as the obtained F ratio of 30.749 is greater than the required table value of 3.84 at α = 0.05 for the df of 1 and 1194. Further, the findings disclose that there is significant difference on balance between ages irrespective of regions, since the obtained F ratio of 4.128 is greater than the required table value of 2.99 at α = 0.05 for the df of 2 and 1194.

Moreover, the findings disclose that insignificant difference in balance was found between the interaction of region and age as the obtained F ration of 1.166 is less than the required table value of 2.99 at α = 0.05 for the df of 2 and 1194. Since, the interaction between region and age is insignificant; simple effect and post hoc test was not applied.

Discussion

The primary purpose of this study was to assess and compare physical fitness parameters (agility & balance) among college students by means of direct physical testing. The results of this study on physical fitness parameters of college students showed both significant and insignificant differences. The results show that the agility of Jammu and Kashmir regions were found significant as the interaction between region and age were found significant at the level of 0.05. Whereas the results showed that the balance of Jammu and Kashmir region were found insignificant as the interaction between the two sources I.e. region and age were found insignificant at the level of 0.05. These findings recognize several aspects of physical fitness parameters among college students that may need to improve in order to enhance their personal health as well as their performance. When compared to the criterion standards, the results of this study indicate that overall selected physical fitness parameters among college students falls in the category of average, as results suggests that this specific population of students maintain an adequate level of physical activity and sedentary life is prevalent among them. Nowadays, the effort to promote levels of physical fitness in the youth is necessary to be a priority. Several studies had reported that the level of physical fitness in the children of today has diminished whereas others do not show differences [13, 17]. However, numbers of researchers have reported that a maximum of university students are not actively engaged in adequate PA hours [5, 7]. Even, studies conducted by Deng Xiaofen and colleagues [4] have shown that university students follow the same PA level trend as their years of college education have advanced. Researchers show that daily involvement in adequate PA improves physical and psychological health of an individual [18]. The research has provided early information to help the students to understand their performance level or their physical fitness. It will encourage them to engage in

sports. The role of teachers is extremely important in implementing interventions or carrying out an activity, as they should be encouraging towards children and patient and flexible in terms of providing rich stimuli and changing activities when needed. It is also very important that the teacher supports interventions to meet the different needs of their students using appropriate means [19]. The most important thing is that the programmes should be meaningful for children, who should not see them as tests, but engage primarily in the pleasure of participating in the activities. According to the results of the study, it was found that agility and balance are the important physical fitness parameters to perform various physical activities.

Conclusion

Based on the major findings of the study, it was concluded from the results of the study that Jammu region male college students of age group 20 and 21 years were better than the Kashmir region male college students in agility, however in the age group of 19 years Kashmir region male college students were superior in agility than the Jammu region male college students. In balance, Kashmir region male college students of age group 19, 20 and 21 years were better than the Jammu region male college students. Physical fitness parameters play a considerable role in performing the fitness of college students. The data of this study will enable to establish the fitness management information system covering physical fitness parameters of college students. Moreover it would facilitate the selection of youth for sports competitions and long term planning for nurturing talents.

Acknowledgement

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