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Analysis of fitness components in COVID 19 effected and unaffected persons

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Abstract

Purpose: The current study's objective was to see the impact of covid 19 on the motor fitness of school going students.

Methodology: Total 60 students (30 effected) (30 unaffected) age ranging 22 to 26 years and the weight category between 57 to 68 kilograms from Gwalior (M.P.) served as the subjects for the study. The data was collected from AAHPER Youth Fitness Test Battery (1976). To compare these two groups motor fitness independent 't' test was employed. The comparisons were made on each of the six items mentioned in the AAHPER youth fitness test

Findings: The findings of the study clearly indicate that in flexed arm hang, sit ups, shuttle run and 600 yard run the unaffected subjects performed better which was statistically significant as compared to covid effected subjects. Similarly in standing broad jump and 50 yards run the covid effected subjects performed better than the covid unaffected subjects.

Results: The finding of the study revealed that there was significant effect of covid 19 on motor components of the students.

Conclusion: Based on the analysis and within the limitations of the present study, it was inferred that all selected strength variables namely flexed arm hang, sit ups and standing long jump, shuttle run, 50 Yards dash and 600 yards Run/Walk has shown significant difference among covid effected and covid unaffected person in all motor fitness components except 50-meter dash and standing broad jump.

Keywords: COVID 19, fitness components, physical fitness

Introduction

Restrictions imposed by COVID-19, such closing parks and schools, cancelling youth sports programs, and cancelling exercise lessons, may hinder children in India from meeting required levels of physical activity (PA). The World Health Organization (WHO) establishes that health is the "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Cabello-Manrique *et al.*, 2022) [2]. This study examined the effects of the COVID-19 pandemic on motor fitness of school students. The global public health disaster brought on by the development of COVID-19 is unprecedented (Chaturvedi *et al.*, 2021) [3]. Since the beginning of the pandemic, COVID-19 treatment has quickly changed and currently mostly consists of antiviral and immunomodulatory agents.

The COVID-19 pandemic has posed hitherto unheard-of difficulties for economies, society, and healthcare systems worldwide. In reply, there has been a surge in research efforts aimed at leveraging artificial intelligence (AI) and machine learning (ML) technologies to address various aspects of the pandemic (Husnain, 2024) [6]. Arbanti 1983 established physical fitness norms for Brazilian school children. In the physical fitness test battery, he included sit and reach test, modified sit ups test, nine-minute run, 12-minute run, 50 metre dash and standing long jump. The tests were administrated to 2,342 school boys and girls. Games and sports have become vital to humanity and have been ingrained in society (Kumar *et al.*, 2022) [1]. The focal Warning Leading group of Actual Training has given an intense idea to it and have suggested that actual instruction should be presented at all degrees of school training. A subcommittee on actual instruction of CABE proposed a schedule to be presented at essential, center and optional school level.

The syllabi emphasized the development of fundamental skills in primary school and specific sports skills in middle and secondary school, ultimately leading to the child's higher specialization in a particular sport. The suggestions of this panel have been acknowledged by different states and are being carried out in a staged way. The trouble, notwithstanding, is felt in implementation this programme because of the lack of vital statistics with respect to the status of children, the 10 socio-economic backgrounds, the facilities, and finances available in the schools and the present status of the children in the schools in respect to their physical, nutritional, and social status. The muscle is rapidly extended and then immediately constricted during a plyometric activity. The neural system is preparing to respond more quickly to the stretching and shortening cycle (Kumar *et al.*, 2023) [7]. Physical fitness plays an important role in a normal individual as well as in an individual who is participating in some kind of sports event. There are different kinds of sports and games which (Dhillon & Malik, 2023) [5]. Therefore, the successful implementation of any physical education program or sports promotion program will fail if these essential conditions are not met. Despite the fact that previous researchers have made some efforts to investigate fitness-related issues. One such logical endeavour to form public standards was embraced by the AAHPER (The American Relationship for wellbeing, actual training, and diversion). In 1957, a particular committee of the AAHPER developed a test battery. After some changes, a six-item youth fitness test for boys and girls between the ages of 10 and 17 was made, and college men and women took it. After being compared to the accomplishments of youth in other nations, including Great Britain, Japan, and others, these standards were revised and made more valid and reliable. (AAHPER, 1962). Pre-convention instructor training workshops for Physical Best, Fitness gram, and Fitness for Life were funded by AAHPERD in the 1990s (Corbin, 2021) [4]. Entire a few climate, the association of an invigorating school day or week and the foundation of such educator student relationship that give a protected, sterile and ideal environment for the best improvement of instructor understudy relationship (Singh Bisht and Tiwari, 2020) [11]. Understudies' psychological wellness is incredibly impacted when confronted with a general wellbeing crisis, and they need consideration, help, and backing from the local area, family, and tertiary organizations. It is suggested that the public authority and schools ought to team up to tackle this issue to give emergency situated mental administrations that are of excellent and ideal awful person to understudies (Pragholapati, 2020) [10]. The respiratory and cardiovascular frameworks experience the most. An individual will be upset by: windedness, which increments with actual effort; incessant dazedness; dry hack; chest torment; expanding shortcoming; diminished execution (Munira Alisherovna & Diyora Djamshevdovna, 2024) [9]. Prepared physical fitness norms for high school boys of Punjab state. The test managed comprised of eight things i.e., standing wide leaps, sit and arrive at test, readiness run, twisted knee sit ups in one moment, 50 meters run, and 600metres run/walk. The percentile standards for actual wellness tests were viewed as substantial and reasonable to evaluate the actual wellness level of the great school young men matured 12 to 15 years. Singh Ajmer 1986 [11] undertook a study to prepare norms for college students of Punjab University, Chandigarh. Data was collected on four thousand students. Fleishman's test battery

was used on 17 to 22 years old students. The foundational requirements for good health are reflected in physical fitness. Young people's physical fitness differs from older people's (Mittal, 2022) [8]. He found that actual wellness worked on directly as per the age, and the understudies having a place with the provincial region were essentially prevalent in their presentation on various things. The physical fitness test's percentile norms were valid and appropriate for assessing college students' fitness levels.

Methodology

Total of 60 students (30 effected) (30 unaffected) ranging between the ages of 22 to 26 years, and the weight category between 57 to 68 kilograms from Gwalior (M.P.) served as the subjects for the study. The data was collected in the year of 2021 -2022 in master degree dissertation.

Selection of Variables: Each participant underwent assessment of AAHPER youth fitness test battery (1976) which was used to measure motor fitness components of the subjects. Flexed Arm Hang for measuring arms and shoulder strength, Sit-Ups for measuring abdominal strength and muscular endurance, Shuttle Run for measuring agility, Standing Long Jump for measuring power of the leg-extensors, 50 Yards Dash for measuring running speed, 600 Yards Run/walk for measuring cardio-vascular endurance.

Equipment: To measure arm and shoulder strength flexed arm hang test was used. A metal or wooden bar for both the groups was placed at subjects' height. It was adjusted at approximately standard height of the subjects. The subject grasped the bar with an overhand grip. To measure the speed and agility shuttle run test was administered. Two lines parallel to each other were placed on the floor 30 feet apart. Two blocks of wood 2" x 2" x 4" inches and a stop watch were needed to conduct the test. For standing broad jump a measuring tape and space for jumping pit was needed for conducting this test. To measure the speed 50 yards dash was conducted. One starting line and one finish line at 50 yards were marked. Two stop watches were needed. To measure the endurance 600 yards run /walk test was conducted. A track or an area of the size of a football field was used. Stop watches were needed to record the time.

Statistical Techniques: In order compare between covid and non-covid subject's motor fitness independent 't' test was employed. The comparisons were made on each of the six items of AAHPER youth fitness test. A significance level of 0.05 was adopted to interpret the findings. The processing and analysis of data were executed utilizing the MS Excel Data Analysis tool suite, ensuring precision and reliability in the results.

Table 1: Descriptive statistics and independent T-test of flexed arm hang between covid and non-covid person

Group	No. of subject	Mean	S. D	SIG [2-Tailed]
COVID	30	17.600	5.420	.00
Non COVID	30	25.800	7.06	

It is evident from table 4.1 that the mean score of covid subjects in flexed arm hang was 17.600, and standard deviation 5.420. Mean of non-covid subjects was 25.800 and standard deviation 7.06 respectively. It was clear that non covid subjects had much higher mean values than covid

subjects. To find out significance of differences between the two groups 't' test was applied. It is evident from the above table the p-value obtained was .00 which was significant at .05 level of confidence.

Table 2: Descriptive statistics and independent T-test of sit up between covid and non-covid person

Group	No of subject	Means	S. D	SIG [2-Tailed]
COVID	30	16.30	4.49	.05
Non COVID	30	19.80	2.89	

It is evident from Table 4.2 that the mean score of covid subjects in sit ups was 16.30 and standard deviation 4.49 and mean and standard deviation of non-covid subjects was 19.80 and 2.89 respectively. It was clear that non covid subjects had higher mean value than covid subjects. To find out significance of differences between the two groups t-test was applied. It is evident from the above table p -value obtained was .05 which was no significant at .05 level of confidence.

Table 3: Descriptive statistics and independent T-test of Shuttle Run between covid and non-covid person

Group	Subject	means	SD	SIG [2 Tailed]
COVID	30	14.75	1.40	.01
Non COVID	30	12.87	1.56	

It is evident from Table 4.3 that the mean score of covid subjects in shuttle run was 14.75 and standard deviation 1.40 and mean and standard deviation of non-covid subjects was 12.87 and 1.56 respectively. It was evident that covid subjects had higher mean value being a time score than non-covid subjects. To find out significance of differences between the two groups. The 't' test was applied. The p-value obtained was .01 which was less than .05. therefore, there was significant difference found.

Table 4: Descriptive statistics and independent T-test of standing broad jump between covid and non-covid person

Group	Subject	Means	SD	SIG [2-Tailed]
COVID	30	1.399	.275	.45
Non COVID	30	1.474	.137	

It is evident from Table 4.4 that the mean score of covid subjects in standing long jump was 1.399 and standard deviation .275 and non-covid subjects mean and standard deviation was 1.474 and .138 respectively. It was evident that non-covid subjects had higher mean value than covid subjects. To find out significance of difference between two groups 't' test was applied. And it was found insignificant. As the p-value was .451 which was greater than .05.

Table 5: Table 4.3 descriptive statistics and independent T-test of 50 Yards Dash between covid and non-covid person

Group	Subject	Means	SD	SIG [2-TALLED]
COVID	30	11.1920	1.727	.13
Non COVID	30	12.205	1.063	

It is evident from Table 4.5 that the mean score of covid subjects in 50 yards dash was 11.1920 and standard deviation 1.727. Mean and standard deviation of non-covid subjects was 12.205 and 1.064 respectively. It was clear that non covid subjects had much higher mean value being a time score than covid subjects. To find out significance of differences

between the two groups 't' test was applied. As is evident from the above table that the p-value obtained was .132 which was no significant .05 level of confidence.

Table 6: Descriptive statistics and independent T-test 600 Yards Run/Walk (Score in minutes) between covid and non-covid persons

Group	Subject	Means	SD	SIG [2-Tailed]
COVID	30	2.658	.074	.00
Non COVID	30	3.453	.0340	

It is evident from Table 4.6 that the mean score of covid subjects in 600 yards run/walk was 2.658 and standard deviation .074 and non-covid subjects mean and standard deviation was 3.453 and .0340 respectively. It was clear that non covid subjects had higher mean value being a time score than covid subjects. To find out significance of differences between the two groups 't' test was applied. As is evident from the above table p-value obtained was .00 which was statistically significant at .05 level of confidence.

Discussion

The findings of the study clearly indicate that in flexed arm hang, sit ups and shuttle run, 600 yard run the non-covid subjects were superior in performance which was statistically significant as compared to covid subjects. Similarly in standing long jump, 50 yards, the covid subjects were superior to non-covid subjects. The result of the study shows a clear trend in favour of non-covid subjects for all items where performance is based on strength, speed, Agility and endurance components. The probable reason of non-covid subjects dominating in performance in flexed arm hang, sit ups and standing long jump, shuttle run, 50 Yards dash and 600 yards Run/Walk may be due to physical activities. Because of the student who had not suffered for covid they involve in physical activities as compared to covid subject.

Conclusion

It was deduced from the analysis that all of the selected strength variables-flexed arm hang, sit ups, standing long jump, shuttle run, 50-yard dash, and 600-yard run/walk—were present within the limitations of the current study. shown significant difference among covid and non-covid person in all motor fitness components accept 50-meter dash and standing broad jump. In this manner, it could be reasoned that the Coronavirus and non-Coronavirus subject were contrast reference to the flexed arm hang, sit ups, transport run, 600 yards Run/Walk. But in case of 50 Yards dash and standing long jump there were no significant difference observed.

The results of the study revealed that there was significant effect of covid 19 on motor components.

In the light of conclusions drawn from the study it is recommended.

- A study may be conducted on the more sample size for the better understanding.
- A study may be conducted on the different age groups and different gender.
- The finding of the present study may be helpful to know the present condition of an individual.

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