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The Impact of Covid-19 Pandemic on Mental Health and Attention with Physical Performance of School Aged Children

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ABSTRACT

Background: 8 to 12 years age is a time of dramatic change for both boys and girls. This age at which the physical changes of puberty and social changes begin varies widely. Children at this age needs physical activity to build strength, coordination, and confidence and to lay the groundwork for a healthy lifestyle. During the COVID pandemic, lockdowns and school closures brought about significant changes to children's opportunities to be active. Specifically, the effect has been on their physical and mental health while changing their daily life patterns. The normal routine has also been changed so drastically. This pandemic has forced us to be confined home, and this situation has reduced the opportunity for carrying the outdoor physical activities. So, here need arise to any effect of physical health on mental health and attention of children or not. Methods: 130 school going children 74 boys and 56 girls with mean age of 10.19 ± 1.27 (SD) years were selected based on inclusion criteria from various schools. Then strength difficulty questionary and swan scale were taken. After that all the children physical performance were measured. five different Physical performance tests conducted with different procedure. One minute curl up test, shuttle run test, run test, pull-ups, and sit and reach test. Results: Data were analysed by using SPSS software 26.00 by Spearmen Correlation Coefficient which showed Physical performance with mental health (r =-0.515) and physical performance with attention (r = -0.471). here, result showed moderately correlation between attention and mental health with physical performance. Conclusion: The result suggested that moderate correlation between physical performance with mental health and attention. Physical activity has been affected children attention and mental health.

KEYWORDS: *Attention, Mental health, Physical performance, School going children, Strength difficulty questionary*

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INTRODUCTION

Research on brain function in the field of physical activity and exercise science has increased in recent years.[1] Since the end of 2019, the unexpected threat of COVID-19 has had a significant impact on systems and people around the world. Specifically, the impact has been on their physical and mental health while changing their daily lifestyle.

8 to 12 years old is a time of great change for boys and girls. The age at which physical and social changes begin during this puberty varies greatly. An important part of growing up is also the ability to communicate and socialise with others. Between the ages of 8 and 12, children begin to value friendships and become more involved in activities such as sports or drawing.[1]The coronavirus disease 2019 (COVID-19) pandemic has threatened both physical and mental health of children.

Mental health is one of the most pressing issues of modern times. In a developing country like India, if young people and children are more prone to mental health issues, it can have a lasting impact on them. Mental health is the children reaching developmental

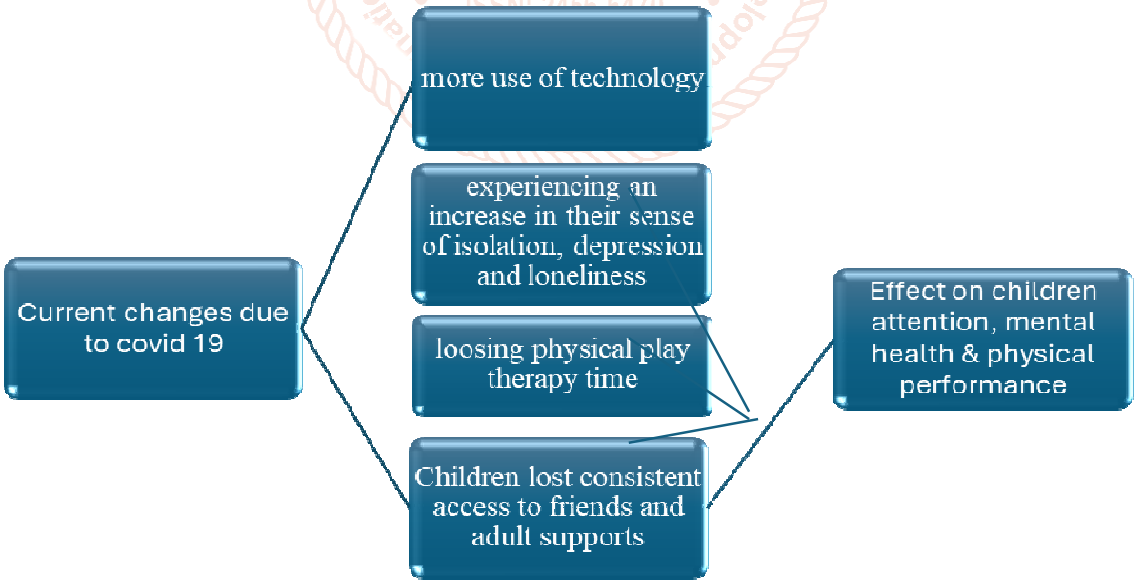
and emotional milestones and learning healthy social skills. It is the complete well-being and optimal development of a child in emotional, behavioural, social and cognitive manner. This covid 19 array has mental health repercussions for everyone grief, fear, uncertainty, social isolation, increase screen time, and parental fatigue and have negatively affected the mental health of children. The rate of mental health problems (MHPs) diagnosed among children has been increasing, and MHPs in children are becoming a global issue now a days. Physiotherapy in mental health aims to optimize well-being and empower the individual by promoting functional movement. to overcome this problem, physiotherapists who were working in mental health and psychiatry applied in 2011 for recognition as a subgroup within the world confederation of physical therapy. physiotherapy goals are based on SMART principles. Specific, measurable, acceptable, attainable, relevant, time bound.[2]

Attention is the capacity of the brain to process information from the environment. attention refers to time child can focus on particular activity. attention has great impact on education, relationship, day to day activities and careers. Learning is peers sitting in one classroom at school is totally different from learning in the home environment. learning has become more difficult for children with current situation as it is home based with lot of distractions.[3]

Åvitsland et al. (2021) conducted a study on the association between changes in physical health and the state of mental problems in Norwegian adolescents and concluded that the associations of different components of health depended on different moderators. This may indicate that the associations in different subpopulations are mediated by different mechanisms. Moderator associations should be addressed in future surveys.[4]

Physical activity help to build strong bones and muscles, and improve body fitness. Physical activity is more important to growing children for their normal health and overall development. The physical activity done in the play time at school and at home is reduced because of current pandemic restrictions and this has direct effect on physical fitness of the children.[5] Physical Fitness refers to the set of physical characteristics that people possess or can acquire through adaptive processes. In general, good physical shape allows physical effort without fatigue or endurance. Factors often measured in assessments include cardiorespiratory fitness, muscle strength, endurance, flexibility and body composition. **Woo Kyung Kim et al. (2021)** Examining the Relationship Between Physical Factors, Physical Activity, and Mental Health in Adult Women and Men: Korea's National Health and Nutrition Survey. In conclusion, these results suggest that promoting PA can lead to improvements in mental health.[6]

NEED OF THE STUDY



METHODOLOGY

Total 130 children were selected according to selecting criteria, child age and child have not any pathology or disease.

Study population: 8 to 12 years Children.

Sampling technique: Purposive sampling.

Study design: Cross sectional observational study

Sample size: Total 130 children were participated with age of 8 to 12 years.

(Sample size was calculated using G*Power version 3.1.9.6 formula with effect size 0.05,

power of 0.90) $\eta = [(Z1+Z2)] \wedge 2$

cr

Here, Z1=1.95, Z2=1.28, Cr=0.3

Following approval of the study by the ethics committee, 130 children were taken from primary schools who met the inclusion and exclusion criteria for the purposes of the study. School permission was obtained for study purposes.

ATTENTION:

It was assessed by **SWAN rating scale.** It is 30 items scale. The SWAN rating scale is taken from the children's teacher's scale and completed by the teacher(fig.4.7). Items included like,

- Sustain attention on tasks or play activities
- Give close attention to details and avoid mistakes
- Organize task and activities
- Ignore extraneous stimuli
- Sit still
- Remember daily activities
- Modulate motor activity
- Reflect on questions
- Await turn
- Keep track of things necessary for activities
- Engage in tasks that required sustained mental effort
- Play quietly[8]

MENTAL HEALTH:

It was assessed by strength and difficulty questionnaire. It is 25 items scales. The strength and difficulty tests of the scales for 8-, 9-, and 10-year-old children are taken from parents or teachers, and the scales for 11- and 12-year-old children are completed by themselves. Items include like,

- Many worriers or often seems worried
- Helpful if someone is hurt, upset or feeling ill
- Has a least one good friend
- Often unhappy, depressed
- Kind to younger children
- Often lies or cheats
- Often loses temper
- Think things out before acting
- Considerate of other people's feelings[9]

PHYSICAL PERFORMANCE:

Five different physical performance tests are performed with different procedures:

One-Minute curl up test

Test Procedure: Demonstrates correct testing position, supine with knees bent. The feet are not held or anchored. Arms stretched forward, fingers pointing towards the knees. The test children curl up and slowly moves their fingers up their legs until their fingertips touch their knees, then lowers them. Do as many as you can in a minute.

Shuttle Run test

Testing procedures: Testing Mark two parallel lines 30 feet apart and place two similar objects behind one of the lines after demonstrating and explaining the correct test to the children. Children start behind the line. On the signal "Ready? Go!" The children run to the blocks, picks one up, runs back to the starting line, places the block behind the line, runs back and picks up the second block and runs back across the starting line.

Run test

Testing procedures: first make a tack of one mile (1.6km). after explaining the task to the children. Children begin running on the count "Ready? Go!" Running may be interspersed with walking. However, the children

should be encouraged to cover the distance in as short a time as possible. Also, children should be given ample instruction on how to pace themselves and should be allowed to practise running this distance against time. Sufficient time should be allowed for warming up and cooling down before and after the test. Times are recorded in minutes and seconds.

Pull-ups

Testing procedures: Demonstrate the correct test position that is standing erect withhold pull ups bar, hangs from a horizontal bar with arms fully extended and feet free from floor, using either an overhand grasp (palms facing toward body). Children raises body until chin clears the bar and then lowers body to full-hang starting position. Children perform as many correct pullups as possible. Scoring only Pull-ups should be done smoothly. Do as many as you can in 30 sec. flat.

Sit and Reach test

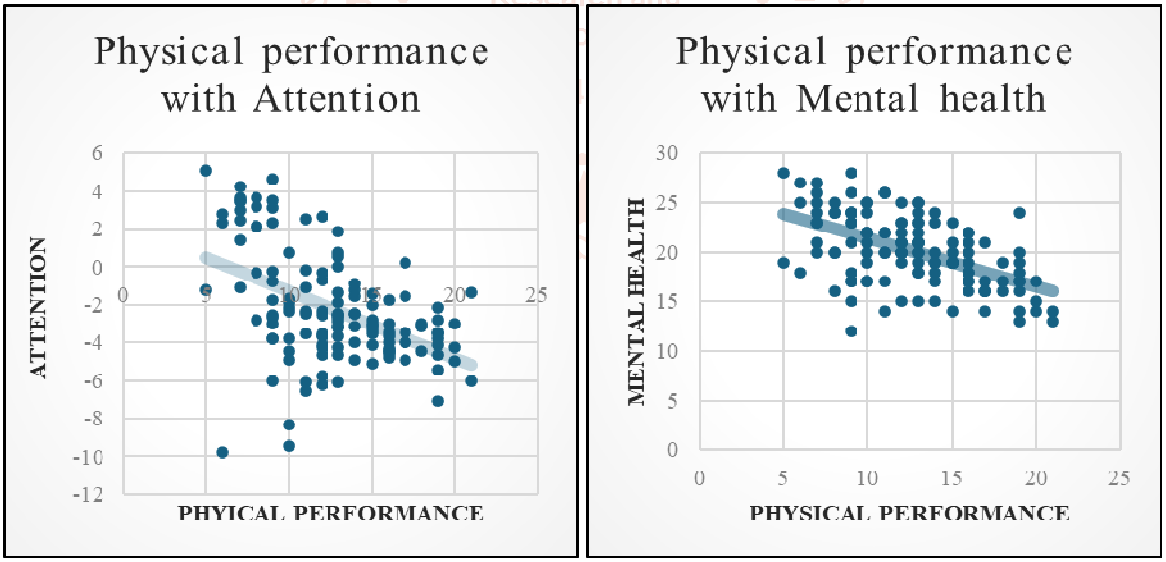
Testing procedures: Demonstrate the correct test position that is long setting front of sit and reach table. Children removes shoes and sits on the floor with knees fully extended, feet shoulder-width apart, and soles of the feet held flat against the end of the box. With hands on top of each other, palms down, and legs held flat, the children reach along the measuring line as far as possible. After three practice reaches, the fourth reach is held while the distance is recorded. legs must remain straight, soles of feet against the box, and fingertips of both hands should reach evenly along the measuring line. Scores are recorded to the nearest centimeter.[7]

RESULTS AND STASTETICAL ANALYSIS

All the statistical analysis was done by SPSS statistical software version 26.0 for windows.

Microsoft Excel was used to generate graphs and tables. Mean and standard deviation (SD) were calculated as measure of central tendency and measure of dispersion respectively. Normality of data was checked by using the Shapiro-Wilk test which showed that data is of non-parametric type.

In this study, a total of 130 school going children were included out of which 57% were boys and 43% were girls. The mean ages of children were 10.19 ± 1.27 years. Correlation between the physical performance Score with mental health **(r = -0.515),** and attention **(r = -0.471),** score was assessed by Spearman's correlation coefficient test. Level of significance (p value) was set as $p < 0.05$ level.



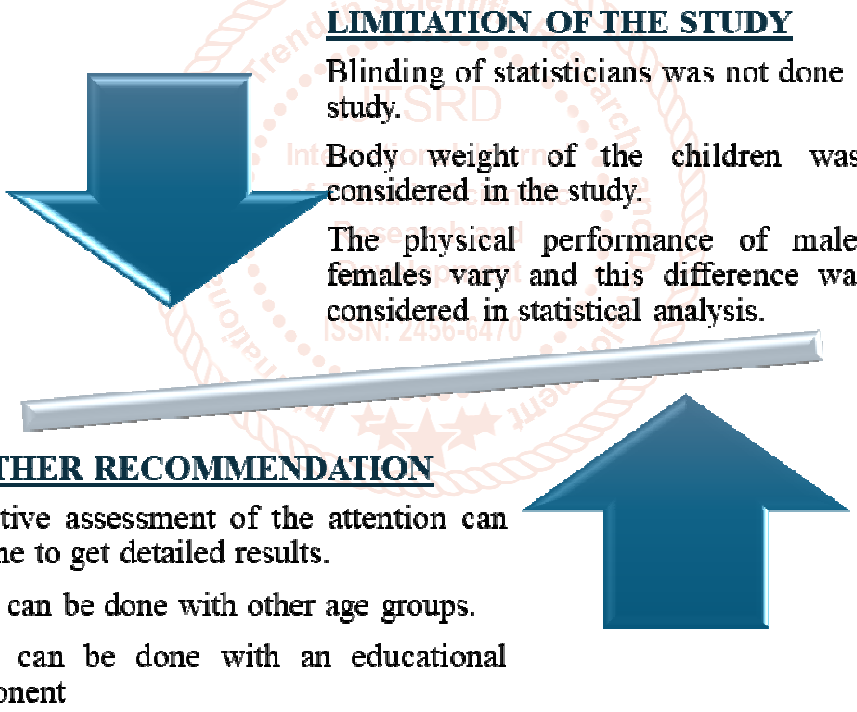
Graph:1 Result of Spearman's correlation coefficient showing correlation between physical performance with attention and mental health among school going children.

DISCUSSION

The main aim of the study was to find out the correlation of physical performance with mental health and attention among children. The study was conducted on 130 children with an age group of 8-12 years. The children were included with a purposive sampling method. The result of the present study showed that there was a moderate correlation between physical performance and mental health ($r = -0.515$, $p < 0.05$) and Physical performance and attention ($r = -0.471$, $p < 0.05$). Hence, the null hypothesis is rejected and the experimental hypothesis is accepted that there is a moderate correlation between physical performance and mental health among children.

Research suggests that increased physical activity of any kind, can improve depression symptoms experienced by people across the lifespan. Engaging in regular physical activity has also been shown to reduce the risk of developing depression in children and adults. Bridgette Do et al, conducted systematic review on Youth physical activity and the COVID-19 pandemic A systematic review Articles assessed both current physical activity during the pandemic and change in physical activity from before to during the pandemic. The review found overall physical activity decreased during the pandemic.[11] Some hypotheses consider that physical exercise promotes the activity of biomolecules such as the brain derived neurotrophic factor or the insulin like growth factor – 1, which promote changes in brain.[46] Thus, the structural and functional changes in the brain were previously caused by improvements in fitness levels. Esteban Cornejo et al. (2017), he observed that several factors of physical fitness, and similar to those analysed in this research, were related to the grey matter volume of some brain regions. Physical training generates cognitive demands that have an impact on the brain. Physiological process is implemented as increased levels of neurotrophic or hormonal factors that facilitate brain plasticity processes.[8]

Physical activity of the children was significantly impacted by the preventive strategies of COVID 19 pandemic, especially school closures, since youth spend a large portion of waking hours at school where there are ample opportunities for physical activity such as physical education (PE) class, recess, sports, and active transport to and from school. So, the current study suggests that due to reduction in physical activity of the children due to COVID 19 pandemic, the mental health and attention of the children would be affected and so the schools should focus on more on physical activity along with academics because physical activity improves the attention and mental health of the children along with the other health benefits and this ultimately would help improving the academic performance of the children.



CONCLUSION

From the present study it can be concluded that due to COVID 19 pandemic, physical activity was reduced due to lockdown and thus physical activity had mild correlation with mental health and attention. So, it can be concluded that covid pandemic had more impact on physical health and moderate impact on attention and mental health of children.

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