

# Adolescents' Behaviors, Fitness, and Knowledge Related to Active Living before and during the COVID-19 Pandemic

COVID-19 Fitness Education Middle School Physical Activity Sedentary Behavior

Read the published, peer-reviewed paper here: <https://pubmed.ncbi.nlm.nih.gov/35270251/>

## Citation

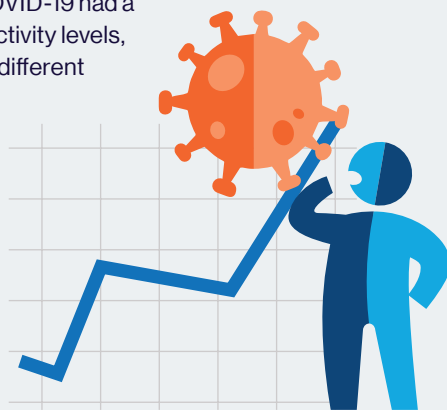
Chen S, Wang B, Imagbe S, Gu X, Androzzi J, Liu Y, Yli-Piipari SR, Hu G, Staiano AE. Adolescents' behaviors, fitness, and knowledge related to active living before and during the COVID-19 pandemic: a repeated cross-sectional analysis. *Int J Environ Res Public Health*. 2022;19(5):2560. doi:10.3390/ijerph19052560

## General Summary

When COVID-19 happened, almost all schools in the United States shut down and slowly started reopening afterward. School closings limited students' chances to be active. This study looked at how much physical activity students did at school and outside of school, how much time they spent on screens, their fitness, and what they knew about physical activity and fitness before and during the pandemic.

We found that students' physical activity and fitness changed over time. Kids were less active outside of school during the pandemic, but more active in school when they returned. They also spent less time on screens at the end of the study. This study shows that COVID-19 had a big impact on kids' activity levels, but the effects were different for different kids.

The good news is that kids got fitter as things returned to normal. This information can help us plan better ways to keep kids active during future health crises.



## What was unique about this study? How were patients given a voice in research?

We believe this is one of the first studies to look at how the COVID-19 pandemic changed how school-age students behave, how fit they are, and what they know about staying active. Another special thing about this study is that we looked at how these changes were different for boys and girls, students in different grades, and students of different races.

## What is the purpose of the study?

The purpose of this study was to answer the following questions: 1) How did student activity levels, screen time, fitness, and knowledge about health change before and during school closures for COVID-19? and 2) How did these changes happen differently for boys and girls, students in different grades, and students of different races?

## When did the study take place?

Information for this study was collected at three different time points: before the pandemic in January 2020, when schools partly reopened in February 2021, and when schools fully reopened in March 2021.

## Who was involved?

This study involved students from 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades at a public middle school in a suburb in the southeast region of the USA. This school gets money from the government to help low-income students. We had a different number of students each time we gathered information. The first time (January 2020), we had 405 students. The second time (February 2021), we had 412 students. The third time (March 2021), we had 450 students.

## How did we get the results and findings?

Since we collected information from middle school students at three different points in time: before the pandemic (January 2020), when schools slowly reopened (February 2021), and when schools were fully reopened (March 2021), we were able to look for changes over time. We used a special kind of research called a repeated cross-sectional design, which is a way to study things over time.



## How will the results help school-aged children and those who care for them?

Our findings may help create better programs to help school-aged kids get more exercise, especially during times when there are health problems that make it hard for people to go out and be active, like during the COVID-19 pandemic.



## What were participants asked to do during the study?

Middle school students completed online surveys that asked them about their behaviors and knowledge about active living, as well as their grade and gender.



They also took the PACER test, where they ran laps until they reached 75 laps max, and the Plank test (fitness exercise test). Students also completed a written test about their knowledge of fitness.

## Why is this research important to patients, clinicians, and other researchers?

Kids need to be active for a certain amount of time each day to stay healthy. Schools are a great place for kids to engage in the activity they need.



## Were there any limitations to the study?

This study only looked at one public middle school in a southern state in the USA. Our findings might only apply to 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> graders in schools like the one we studied. Another limitation is that we didn't keep track of the same kids over time. For example, kids who were in 8<sup>th</sup> grade at the beginning might have been in 9<sup>th</sup> grade later on. We only kept the data without names, so we couldn't match up the kids to see how they changed. It would have been better to follow the same kids over time, but that would mean we'd have fewer kids in the study. Also, other factors, like socioeconomic status, can affect activity behaviors, but we did not include these in this study. Future research should look at these factors and include them in the analysis.

## What's next?



In short, COVID-19 made it tough for some kids to get enough exercise, stay healthy, and learn. What we learned can help us create plans to get kids more active and sitting less. These plans should cover many things, like how the school is run, programs in our community, and how families and friends can help. The goal is to get kids moving more everywhere—at school and outside of school—so they can be healthier and do better in school.

## What did we learn?

We found that COVID-19 had different effects on how much kids moved, how healthy they were, and what they knew about health, depending on when we looked and what grade and gender the kids were. By looking at how things changed over time, we found that the COVID-19 pandemic affected how students stayed active in different ways.

- Between the first and second times we checked, the amount of time kids spent in planned activities (like sports) went down, but the amount of time they spent in unplanned activities (like playing in the yard) went up.
- Between the first and third times we checked, the amount of time kids spent sitting down decreased.
- Between the second and third times we checked, their overall health and fitness improved.



We also found that how much time kids spent sitting down changed differently depending on their grade, and how much they knew about staying active changed differently depending on whether they were a boy or a girl. We see something interesting with how much time students spent sitting down.

- 8<sup>th</sup> graders spent more time sitting down.
- 7<sup>th</sup> graders spent less time sitting down.
- 6<sup>th</sup> graders didn't really change how much time they spent sitting down.



We expected 8<sup>th</sup> graders to spend more time sitting down because other studies have shown that teenagers have more access to things like phones and computers during times like the pandemic. This shows us that we need to look carefully at how screen time changes for different ages, not just look at the overall change for everyone. Also, it looks like everyone, whether they were in 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade, spent less time sitting down between the second and third times we checked.

In general, girls knew more about staying healthy than boys. More importantly, girls kept this knowledge throughout the study, while boys showed that they knew less over time. These results match what other studies have found, which is that girls usually know more about health than boys.

The improvements in health and fitness, and how other things changed between the second and third times we checked, might be because of the special fitness program that was part of the study.

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