Incentivizing Physical Activity to Improve Mental Health During Covid-19 Disruptions in the United States

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Sector(s): Education

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Location: San Diego, California and Pittsburg, Pennsylvania, United States of America

Sample: 205 college students

Target group: Youth

AEA RCT registration number: AEARCTR-0003235

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Research Papers: Lifestyle and mental health disruptions during COVID-19

Partner organization(s): University of Pittsburgh

Covid-19 has wrought unprecedented lifestyle changes in the United States, altering patterns of physical and social activity. Using a longitudinal dataset linking biometric and survey data, researchers documented that physical activity declined by more than half during the pandemic, while the proportion of participants at risk for depression nearly doubled. To better understand the association between physical activity and mental health, researchers conducted a randomized intervention to measure the impact of financial incentives for reaching daily step goals on physical activity and depression risk. Program participants significantly increased their daily steps relative to the comparison group, though this difference dissipated when researchers removed incentives. Despite the suggested link between physical and mental health, the intervention group saw no significant improvement in their mental well-being.

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The Covid-19 pandemic has brought unprecedented changes to people's lives in the United States, altering how we all live, work, and interact with one another. These disruptions come with significant consequences for both physical and mental health. The Centers for Disease Control and Prevention estimated that in June 2020, almost one-third of all adults were suffering from anxiety or depression, with rates especially high among young adults. Nearly two-thirds of 18 to 24-year-olds were estimated to be at risk for anxiety and depression, while a quarter had contemplated suicide in the 30 days prior. These rates of anxiety and depression represent a threefold increase from the year before, highlighting an urgent need to address mental health issues that have emerged from the pandemic. Can financial incentives for daily activity restore physical and mental health in the unique context of the pandemic?

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Beginning in the spring of 2019, researchers undertook a wellness study which tracked physical activity, time use, and mental health of students at the University of Pittsburgh. Researchers provided Fitbit devices to participants to collect data on physical activity and assessed clinical concern for depression. The study continued into the spring semester of 2020, during which the university transitioned to remote learning due to the Covid-19 pandemic.

Prior to the transition, students in the spring 2020 cohort are statistically indistinguishable from the students in the spring 2019 cohort along all measures. However, after the transition, large differences between the two cohorts emerged. The spring 2020 cohort saw a ten times larger decrease in physical activity during this period compared to the spring 2019 cohort. This period was also associated with a 29 percentage point increase in the risk of depression among the spring 2020 cohort, compared with a 6 percentage point increase for the spring 2019 cohort. Given the increase in depression in a short time period, and this potential link between physical activity and mental well-being, the researchers designed a short-term intervention to restore physical activity among the spring 2020 cohort.



A man wearing a fitbit and mask goes for a run in the United States.

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In this study, researchers evaluated the impact of incentivizing taking steps on physical activity and mental health. Researchers randomly assigned some participants to receive $5 every day they walked at least 10,000 steps for 14 days. Over the course of the study, they tracked daily step counts among both the intervention and comparison group using Fitbit devices to measure the impact of the incentive on physical activity. At the end of the 14 days, the researchers administered the Epidemiological Studies

Depression Scale (CES-D) to measure depression among participants and estimate the impact of the intervention on mental health. Following the 14-day intervention, researchers continued to track daily steps for a month and administered the CES-D again to assess if any impact would persist.

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The intervention significantly increased physical activity during the 14-day study period. The intervention group increased their daily active minutes by over 30 minutes and their daily step count by approximately 2,300 steps relative to the comparison group, reaching their step goal on 50 percent of days (compared to just 16 percent for the comparison group). However, despite the intervention's ability to increase physical activity, it had no impact on mental health as there was no statistically significant decrease in CES-D scores among the intervention group relative to the comparison group. In addition, the increase in physical activity did not last. A week after the incentives ended, the gap between the intervention and comparison groups diminished, with the intervention group only taking an additional 1,200 steps. When examining the month post-intervention, no significant differences in step counts exists between the two groups.

These results suggest that policymakers interested in improving physical activity and well-being during Covid-19 may need longer-term, more intensive interventions tailored to the unique social context of a pandemic. While the lockdown caused deteriorations in physical and mental health in a short time period, interventions to restore activity and well-being may require a longer timeframe. Whereas this intervention lasted two weeks, previous work has generally focused on interventions lasting months. Previous interventions have also involved more intensive physical activity, while this study sought to increase small, daily activities. It is also important to note that physical activity is often a social activity. Due to social distancing and the transition to remote learning, participants were unable to interact with their peers. It is also difficult to account for the significant changes to daily life caused by the pandemic, which may have also played a role in the reported mental health of study participants.