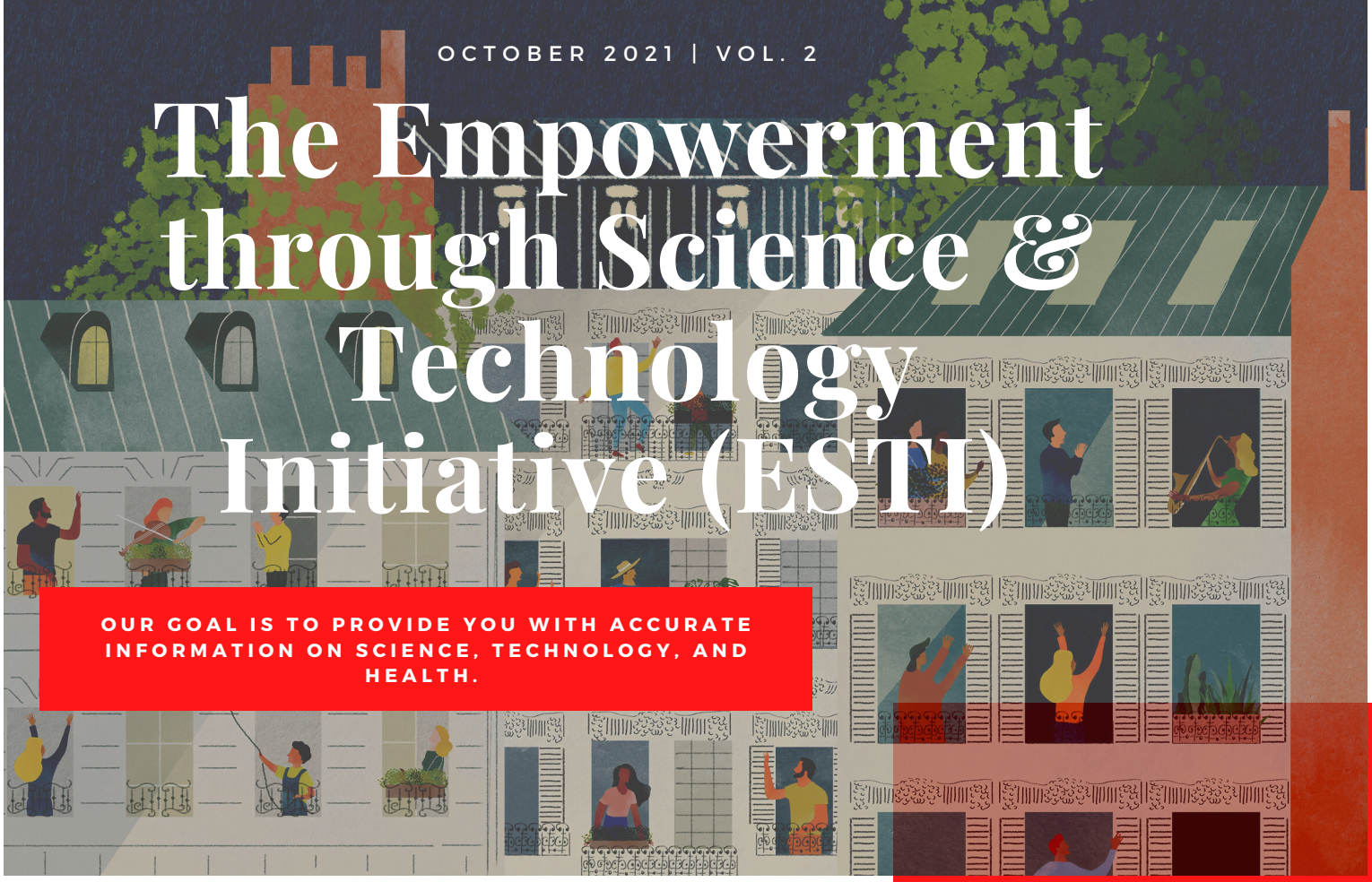
OCTOBER 2021 | VOL. 2

The Empowerment through Science & Technology Initiative (ESTI)



OUR GOAL IS TO PROVIDE YOU WITH ACCURATE INFORMATION ON SCIENCE, TECHNOLOGY, AND HEALTH.

Get In Touch

Are you interested in learning how to use your technology?

At ESTI, we're hoping to start online workshops on how to use specific technologies and get the most out of your products. If this is something you'd be interested please fill out this survey (https://cutt.ly/ESTI_survey)!

Participate in a study about how COVID-19 and the public health crisis impacts out behavior. Please visit this site (www.colelab.org/covid.html) for more information, and check out this infographic (https://cutt.ly/study_info) on how to sign up.

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TRUE: You Can Train Your Brain with Digital Media

MYTH BUSTERS

‘Brain training’, also known as “the quest for improved cognitive function through the regular use of computerized tests” (Owen A.M., et al. 2010), has become a popular intervention. From apps to educational games, ‘brain training’ has become a popular business venture. But how effective are these training games really?

Training your brain with digital media can improve cognitive function, but it depends on what kind of digital media you’re using. There is little to no evidence that educational games or ‘brain training’ games influence brain function. In a study (Owen A.M., et al. 2010), 11,430 participants signed up for a six-week online training task. Participants were randomly assigned to either two experimental groups, or a control group. They were asked to practice six training tasks for a minimum of 10 minutes a day, three times a week, with the difficulty increasing as the participants improved to continuously challenge their cognitive performance and maximize any benefits of training. Participants also completed a benchmarking test to compare after training. The tasks were designed to emphasize reasoning, planning and problem-solving, short-term memory, attention, visuospatial processing, and mathematics. Results showed that there was no significant improvement from the training after six weeks.

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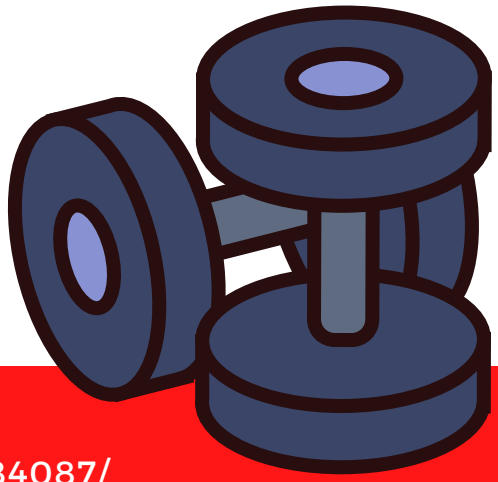


Sources:

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2884087/
2. https://www.nature.com/articles/mp2013120
3. http://www.educationalneuroscience.org.uk/resources/neuromyth-or-neurofact/you-can-train-your-brain-with-digital-media/

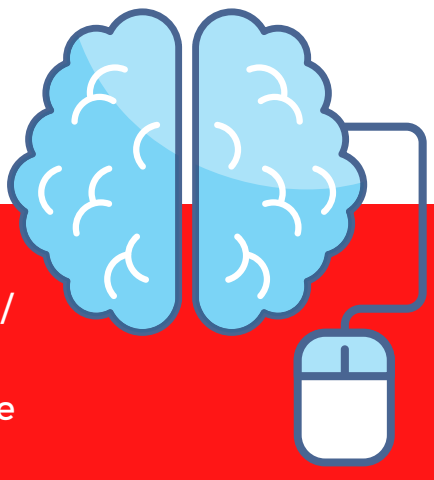
TRUE: You Can Train Your Brain with Digital Media

MYTH BUSTERS

However, entertaining games, that is, games or media that is made to be entertaining, can improve brain function. For example, in a study, participants, who reported playing little to no video games in the past six months, were asked to play a Super Mario game for at least 30 minutes every day for 2 months. The results showed a significant increase in the gray matter volume in the brain where these cognitive processes are supported (Kuhn S., et al. 2014).

Why are these video games so effective? They're typically very demanding of the cognitive systems in the brain. This includes a high level of hand-eye coordination, the control of multiple movements (mostly in parallel of each other), and the training is automatically individualized – everyone is playing at the limit of their current ability with the difficulty increasing as the user progresses. The benefits of the transfer effects (i.e., the improvements from playing these games aren't specific to the game only but also in other areas where those cognitive processes are needed) that playing action games provide suggests that they allow users to 'learn to learn' as the games necessitate constant change to new environments and new task demands.

It's important to remember, however, that while playing video games does have benefits, there are also possible setbacks. With almost everything in life (e.g., diet, exercise, etc.) it should be done in moderation and not in excess. Parents and teachers should still monitor how long their kids are playing video games and making sure it's an appropriate amount of time and the appropriate games for their child's age.



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Understanding & Treating OCD

Neuro News

Obsessive-compulsive disorder (OCD) is characterized by unreasonable thoughts and fears that lead to compulsive behaviors. One fear that affects nearly half of all OCD patients is excessive washing urges that stem from a fear of contamination (e.g., touching a doorknob).

Current nonpharmacological treatment involves having patients repeatedly touch objects that would trigger washing urges (e.g., touching a toilet seat), and then not wash their hands. However, about 40% of patients do no benefit from this kind of treatment because it causes too much stress and anxiety. Research has suggested that OCD patients have a different sense of self than others. In other words, OCD patients have a more flexible sense of self. For instance, in a study done with both OCD patients and healthy volunteers, participants watched as an experimenter used a paintbrush to stroke a rubber hand and the participants' hidden real hand in precise synchrony and out of sync. Healthy participants "felt" the paintbrush only when it was in sync. However, OCD patients "felt" the paintbrush whether the experimenter was in sync or not. This suggests that OCD patients are more likely to believe the fake hand is their real hand than other individuals.

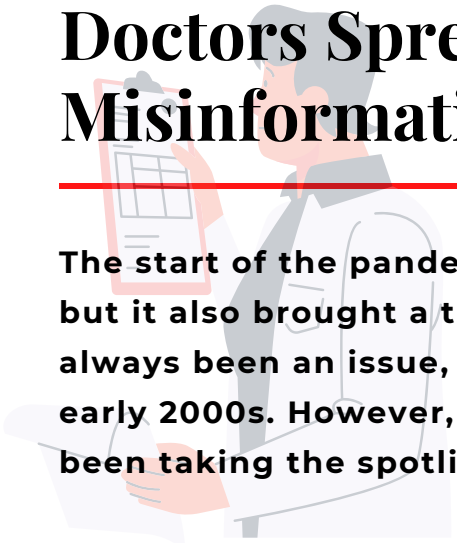
In a follow-up study, participants with and without OCD witnessed both the experimenter and them contaminate their hands with fake feces. Interestingly, those with OCD reported feeling relief from only watching the experimenter wash their hands. It was reported that feeling of disgust reduced by 22% which is equivalent to handwashing. Additionally, in another study, participants reported feeling relief from watching a video of themselves washing their hands. This has the potential to treat OCD patients with contamination fears and can also be an affordable treatment with minimal visits to a doctor.

Sources:

1. https://www.psychiatry.org/patients-families/ocd/what-is-obsessive-compulsive-disorder#:~:text=Obsessive%2Dcompulsive%20disorder%20(OCD)%20is%20a%20disorder%20in%20which,do%20something%20repetitively%20(compulsions).
2. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0139159
3. https://www.frontiersin.org/articles/10.3389/fnhum.2019.00414/full
4. https://www.scientificamerican.com/article/a-new-way-to-understand-and-possibly-treat-ocd/

Doctors Spreading Misinformation

Tech News



The start of the pandemic not only brought a deadly virus into our lives, but it also brought a tsunami of misinformation. Misinformation has always been an issue, especially when the internet really took off in the early 2000s. However, due to the novelty of COVID-19, misinformation has been taking the spotlight.

Doctors, scientists, universities, and many others have been trying to combat this by constantly addressing new concerns and reinforcing the facts that are known. But it's not only conspiracy theorists and anti-vaxxers spreading misinformation, it's also board-certified doctors. And now, there are growing calls to discipline doctors that continue to spread misinformation.

These doctors have also created their own group, America's Frontline Doctors. They continue to post videos and information concerning COVID-19 that are false and are not backed by science and research. Some states have suspended the licenses of doctors, but the fight continues.

If you're unsure about information you've received on COVID-19, please feel free to send us a message or contact a trusted healthcare provider.

Sources:

1. https://www.nytimes.com/2021/08/27/technology/doctors-virus-misinformation.html

The Fight on Climate Change

This Month in Science

As climate change continues to result in extreme weather, species going extinct, and many more environmental issues, lawyers and scientists are teaming up to support climate lawsuits. These lawsuits would hold governments and companies legally responsible for contributing to global warming.

In the past few decades, the number of climate suits have continued to increase with little success. However, climate modeler, Friederike Otto, and internal law scholar, Petra Minnerop, are using the latest science to help back up and give more concrete evidence to these growing lawsuits. Additionally, groups like ClientEarth, have been supporting people in poorer countries affected by climate change in their countries. For example, landslides in Uganda have been ravaging villagers with no help from the government, so lawyers have been taking the government to court for failure to protect those afflicted.

However, the continued support and effort from everyone around the world is needed to make a big enough change for our planet and all the species that inhabit it.

Sources:

1. https://www.nature.com/articles/d41586-021-02158-6

The Impact of COVID-19 on Other Diseases

Health

Chronic diseases such as diabetes, not only affect our physical conditions but also our mental conditions as well. Patients with chronic diseases typically must make major lifestyle changes that may seem intimidating and impossible to live a healthier life. Thus, many patients with chronic diseases also suffer from depression and anxiety, which leads to worsening physical conditions.

When patients are first diagnosed with a chronic disease, they experience two big emotions: helplessness and hopelessness. This stems from a pressure to manage/change your lifestyle habits and dealing with friends and family. When patients don't speak about those feelings, it's harder for them to practice a healthier lifestyle because of fear of the unknown.

To combat this, medical professionals should practice empathy, transparency, and promote an open dialogue with their patients. If medical professionals give a safe space for patients to talk about both their physical and mental struggles, it is more likely that patients will overcome those feelings of helplessness and hopelessness, and lead a happier and healthier life.

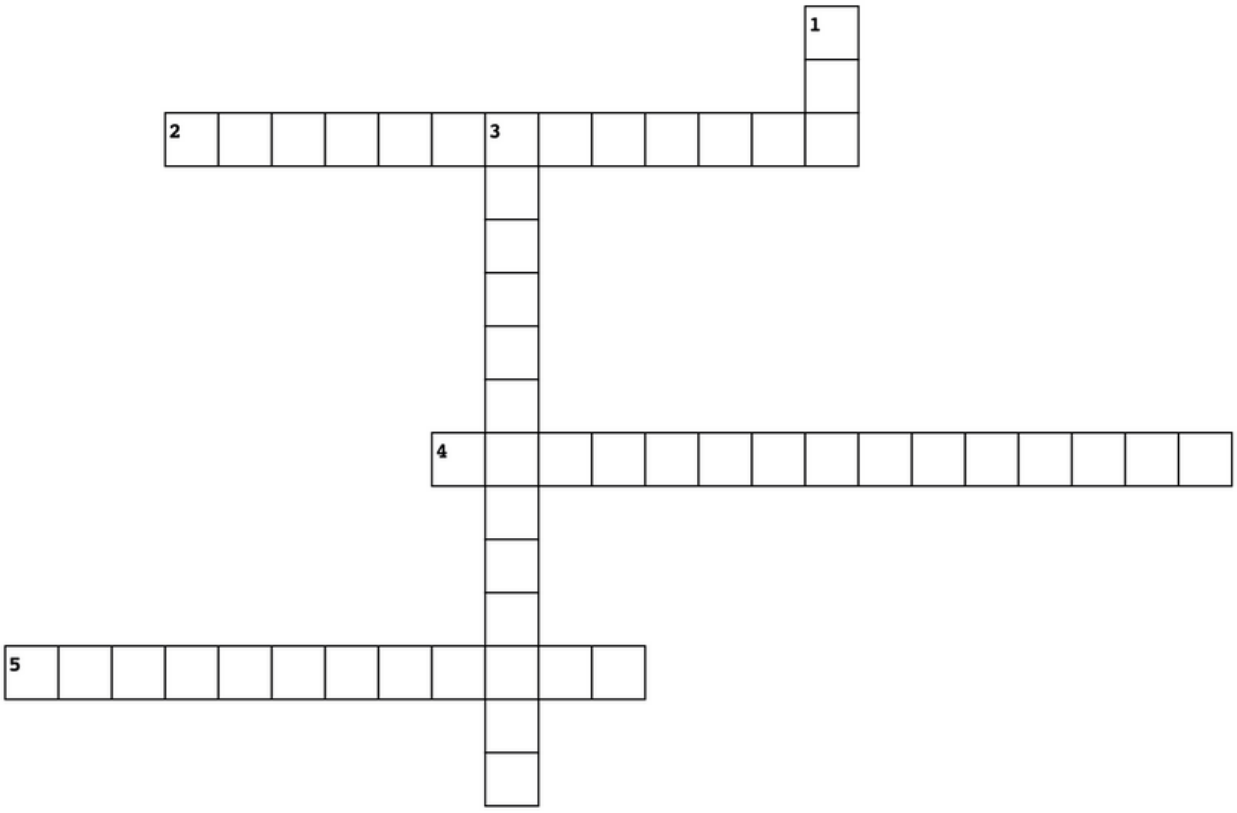
Sources:

1. https://www.theglobalfund.org/media/11304/corporate_2021resultsreport_report_en.pdf

ESTI Crossword

Reinforce what you've learned!

ESTI: October 2021



Across

2. A partnership designed to accelerate the end of AIDS, tuberculosis and malaria as epidemics.

4. When learning one task either facilitates (positive transfer) or interferes with (negative transfer) learning the second task.

5. Lawsuits that hold governments and companies legally responsible for contributing to global warming.

Down

1. A disorder characterized by unreasonable thoughts and fears that lead to compulsive behaviors.

3. The quest for improved cognitive function through the regular use of computerized tests.