

Bernheim

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Ted talk transcript:

[https://www.ted.com/talks/wendy\\_suzuki\\_the\\_brain\\_changing\\_benefits\\_of\\_exercise/transcript](https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise/transcript)

Wendy Suzuki

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TEDWomen 2017

## The brain-changing benefits of exercise

What if I told you there was something that you can do right now that would have an immediate, positive benefit for your brain including your mood and your focus? And what if I told you that same thing could actually last a long time and protect your brain from different conditions like depression, Alzheimer's disease or dementia. Would you do it? Yes!

00:30

I am talking about the powerful effects of physical activity. Simply moving your body, has immediate, long-lasting and protective benefits for your brain. And that can last for the rest of your life. So what I want to do today is tell you a story about how I used my deep understanding of neuroscience, as a professor of neuroscience, to essentially do an experiment on myself in which I discovered the science underlying why exercise is the most transformative thing that you can do for your brain today. Now, as a neuroscientist, I know that our brains, that is the thing in our head right now, that is the most complex structure known to humankind. But it's one thing to talk about the brain, and it's another to see it.

01:23

So here is a real preserved human brain. And it's going to illustrate two key areas that we are going to talk about today. The first is the prefrontal cortex, right behind your forehead, critical for things like decision-making, focus, attention and your personality. The second key area is located in the temporal lobe, shown right here. You have two temporal lobes in your brain, the right and the left, and deep in the temporal lobe is a key structure critical for your ability to form and retain new long-term memories for facts and events. And that structure is called the hippocampus. So I've always been fascinated with the hippocampus. How could it be that an event that lasts just a moment, say, your first kiss, or the moment your first child was born, can form a memory that has changed your brain, that lasts an entire lifetime? That's what I want to understand. I wanted to start and record the activity of

individual brain cells in the hippocampus as subjects were forming new memories. And essentially try and decode how those brief bursts of electrical activity, which is how neurons communicate with each other, how those brief bursts either allowed us to form a new memory, or did not.

02:44

But a few years ago, I did something very unusual in science. As a full professor of neural science, I decided to completely switch my research program. Because I encountered something that was so amazing, with the potential to change so many lives that I had to study it. I discovered and I experienced the brain-changing effects of exercise. And I did it in a completely inadvertent way. I was actually at the height of all the memory work that I was doing -- data was pouring in, I was becoming known in my field for all of this memory work. And it should have been going great. It was, scientifically. But when I stuck my head out of my lab door, I noticed something. I had no social life. I spent too much time listening to those brain cells in a dark room, by myself. (Laughter) I didn't move my body at all. I had gained 25 pounds. And actually, it took me many years to realize it, I was actually miserable. And I shouldn't be miserable. And I went on a river-rafting trip -- by myself, because I had no social life. And I came back --

03:57

(Laughter)

03:58

thinking, "Oh, my God, I was the weakest person on that trip." And I came back with a mission. I said, "I'm never going to feel like the weakest person on a river-rafting trip again." And that's what made me go to the gym. And I focused my type-A personality on going to all the exercise classes at the gym. I tried everything. I went to kickbox, dance, yoga, step class, and at first it was really hard. But what I noticed is that after every sweat-inducing workout that I tried, I had this great mood boost and this great energy boost. And that's what kept me going back to the gym. Well, I started feeling stronger. I started feeling better, I even lost that 25 pounds.

04:42

And now, fast-forward a year and a half into this regular exercise program and I noticed something that really made me sit up and take notice. I was sitting at my desk, writing a research grant, and a thought went through my mind that had never gone through my mind before. And that thought was, "Gee, grant-writing is going well today." And all the scientists --

05:05

(Laughter)

05:06

yeah, all the scientists always laugh when I say that, because grant-writing never goes well. It is so hard; you're always pulling your hair out, trying to come up with that million-dollar-winning idea. But I realized that the grant-writing was going well, because I was able to focus and maintain my attention for longer than I had before. And my long-term memory -- what I was studying in my own lab -- seemed to be better in me. And that's when I put it together.

05:37

Maybe all that exercise that I had included and added to my life was changing my brain. Maybe I did an experiment on myself without even knowing it. So as a curious neuroscientist, I went to the literature to see what I could find about what we knew about the effects of exercise on the brain. And what I found was an exciting and a growing literature that was essentially showing everything that I noticed in myself. Better mood, better energy, better memory, better attention. And the more I learned, the more I realized how powerful exercise was. Which eventually led me to the big decision to completely shift my research focus. And so now, after several years of

really focusing on this question, I've come to the following conclusion: that exercise is the most transformative thing that you can do for your brain today for the following three reasons.

06:35

Number one: it has immediate effects on your brain. A single workout that you do will immediately increase levels of neurotransmitters like dopamine, serotonin and noradrenaline. That is going to increase your mood right after that workout, exactly what I was feeling. My lab showed that a single workout can improve your ability to shift and focus attention, and that focus improvement will last for at least two hours. And finally, studies have shown that a single workout will improve your reaction times which basically means that you are going to be faster at catching that cup of Starbucks that falls off the counter, which is very, very important.

07:16

(Laughter)

07:17

But these immediate effects are transient, they help you right after. What you have to do is do what I did, that is change your exercise regime, increase your cardiorespiratory function, to get the long-lasting effects. And these effects are long-lasting because exercise actually changes the brain's anatomy, physiology and function. Let's start with my favorite brain area, the hippocampus. The hippocampus -- or exercise actually produces brand new brain cells, new brain cells in the hippocampus, that actually increase its volume, as well as improve your long-term memory, OK? And that including in you and me.

08:01

Number two: the most common finding in neuroscience studies, looking at effects of long-term exercise, is improved attention function dependent on your prefrontal cortex. You not only get better focus and attention, but the volume of the hippocampus increases as well. And finally, you not only get immediate effects of mood with exercise but those last for a long time. So you get long-lasting increases in those good mood neurotransmitters.

08:31

But really, the most transformative thing that exercise will do is its protective effects on your brain. Here you can think about the brain like a muscle. The more you're working out, the bigger and stronger your hippocampus and prefrontal cortex gets. Why is that important? Because the prefrontal cortex and the hippocampus are the two areas that are most susceptible to neurodegenerative diseases and normal cognitive decline in aging. So with increased exercise over your lifetime, you're not going to cure dementia or Alzheimer's disease, but what you're going to do is you're going to create the strongest, biggest hippocampus and prefrontal cortex so it takes longer for these diseases to actually have an effect. You can think of exercise, therefore, as a supercharged 401K for your brain, OK? And it's even better, because it's free.

09:31

So this is the point in the talk where everybody says, "That sounds so interesting, Wendy, but I really will only want to know one thing. And that is, just tell me the minimum amount of exercise I need to get all these changes."

09:44

(Laughter)

09:45

And so I'm going to tell you the answer to that question. First, good news: you don't have to become a triathlete to get these effects. The rule of thumb is you want to get three to four times a week exercise minimum 30 minutes an exercise session, and you want to get aerobic exercise in. That is, get your heart rate up. And the good news is, you don't have to go to the gym to get a very expensive gym membership. Add an extra walk around the block in

your power walk. You see stairs -- take stairs. And power-vacuuming can be as good as the aerobics class that you were going to take at the gym.

10:23

So I've gone from memory pioneer to exercise explorer. From going into the innermost workings of the brain, to trying to understand how exercise can improve our brain function, and my goal in my lab right now is to go beyond that rule of thumb that I just gave you -- three to four times a week, 30 minutes. I want to understand the optimum exercise prescription for you, at your age, at your fitness level, for your genetic background, to maximize the effects of exercise today and also to improve your brain and protect your brain the best for the rest of your life.

11:07

But it's one thing to talk about exercise, and it's another to do it. So I'm going to invoke my power as a certified exercise instructor, to ask you all to stand up.

11:16

(Laughter)

11:18

We're going to do just one minute of exercise. It's call-and-response, just do what I do, say what I say, and make sure you don't punch your neighbor, OK? Music!

11:28

(Upbeat music)

11:30

Five, six, seven, eight, it's right, left, right, left. And I say, I am strong now. Let's hear you.

11:40

Audience: I am strong now.

11:43

Wendy Suzuki: Ladies, I am Wonder Woman-strong. Let's hear you!

11:48

Audience: I am Wonder Woman-strong.

11:51

WS: New move -- uppercut, right and left. I am inspired now. You say it!

11:58

Audience: I am inspired now.

12:01

WS: Last move -- pull it down, right and left, right and left. I say, I am on fire now! You say it.

12:10

Audience: I am on fire now.

12:13

WS: And done! OK, good job!

12:16

(Applause)

12:21

Thank you. I want to leave you with one last thought. And that is, bringing exercise in your life will not only give you a happier, more protective life today, but it will protect your brain from incurable diseases. And in this way it will change the trajectory of your life for the better.

12:45

Thank you very much.

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TEDxPennQuarter Christopher McDougall

## Are we born to run?

00:03

Running: it's basically just right, left, right, left, yeah? I mean, we've been doing it for two million years, so it's kind of arrogant to assume that I've got something to say that hasn't been said and performed better a long time ago. But the cool thing about running, as I've discovered, is that something bizarre happens in this activity all the time. Case in point: A couple months ago, if you saw the New York City Marathon, I guarantee you, you saw something that no one has ever seen before.

00:30

An Ethiopian woman named Derartu Tulu turns up at the starting line. She's 37 years old. She hasn't won a marathon of any kind in eight years, and a few months previously, she had almost died in childbirth. Derartu Tulu was ready to hang it up and retire from the sport, but she decided she'd go for broke and try for one last big payday in the marquee event, the New York City Marathon. Except -- bad news for Derartu Tulu -- some other people had the same idea, including the Olympic gold medalist, and Paula Radcliffe, who is a monster, the fastest woman marathoner in history by far. Only 10 minutes off the men's world record, Paula Radcliffe is essentially unbeatable. That's her competition.

01:13

The gun goes off, and -- I mean, she's not even an underdog; she's, like, under the underdogs. But the under-underdog hangs tough, and 22 miles into a 26-mile race, there is Derartu Tulu, up there with the lead pack. Now, this is when something really bizarre happens. Paula Radcliffe, the one person who is sure to snatch the big paycheck from Derartu Tulu's under-underdog hands, suddenly grabs her leg and starts to fall back. So we all know what to do in this situation, right? You give her a quick crack in the teeth with your elbow and blaze for the finish line. Derartu Tulu ruins the script. Instead of taking off, she falls back and she grabs Paula Radcliffe, and says, "Come on. Come with us. You can do it." So Paula Radcliffe, unfortunately, does it. She catches up with the lead pack and is pushing toward the finish line. But then she falls back again. The second time, Derartu Tulu grabs her and tries to pull her. And Paula Radcliffe, at that point, says, "I'm done. Go." So that's a fantastic story, and we all know how it ends. She loses the check, but she goes home with something bigger and more important. Except Derartu Tulu ruins the script again. Instead of losing, she blazes past the lead pack and wins. Wins the New York City Marathon, goes home with a big fat check.

02:25

It's a heartwarming story, but if you drill a little bit deeper, you've got to sort of wonder about what exactly was going on there. When you have two outliers in one organism, it's not a coincidence. When you have someone who is more competitive and more compassionate than anybody else in the race, again, it's not a coincidence. You show me a creature with webbed feet and gills; somehow water's involved.

02:46

Someone with that kind of heart, there's some kind of connection there. And the answer to it, I think, can be found down in the Copper Canyons of Mexico, where there's a reclusive tribe, called the Tarahumara Indians. Now, the Tarahumara are remarkable for three things. Number one is: they have been living essentially unchanged for the past 400 years. When the conquistadors arrived in North America you had two choices: you either fight back and engage or you could take off. The Mayans and Aztecs engaged, which is why there are very few Mayans and Aztecs. The Tarahumara had a different strategy. They took off and hid in this labyrinthine, networking, spider-webbing system of canyons called the Copper Canyons. And there they've remained since the 1600s, essentially the same way they've always been.

03:35

The second thing remarkable about the Tarahumara is: deep into old age -- 70 to 80 years old -- these guys aren't running marathons; they're running mega-marathons. They're not doing 26 miles, they're doing 100, 150 miles at a time, and apparently without injury, without problems.

03:53

The last thing that's remarkable about the Tarahumara is: all the things we're going to be talking about today, all the things we're trying to use all of our technology and brain power to solve -- things like heart disease and cholesterol and cancer; crime, warfare and violence; clinical depression -- all this stuff -- the Tarahumara don't know what you're talking about. They are free from all of these modern ailments.

04:16

So what's the connection? Again, we're talking about outliers; there's got to be some kind of cause and effect. Well, there are teams of scientists at Harvard and the University of Utah that are bending their brains and trying to figure out what the Tarahumara have known forever. They're trying to solve those same kinds of mysteries. And once again, a mystery wrapped inside of a mystery -- perhaps the key to Derartu Tulu and the Tarahumara is wrapped in three other mysteries, which go like this: Three things -- if you have the answer, come up and take the microphone, because nobody else knows the answer. If you know it, you're smarter than anybody on planet Earth.

04:50

Mystery number one is this: Two million years ago, the human brain exploded in size. Australopithecus had a tiny little pea brain. Suddenly humans show up, Homo erectus, big old melon head. To have a brain of that size, you need to have a source of condensed caloric energy. In other words, early humans are eating dead animals -- no argument, that's a fact. The only problem is, the first edged weapons only appeared about 200,000 years ago.

05:14

So somehow, for nearly two million years, we are killing animals without any weapons. Now, we're not using our strength, because we are the biggest sissies in the jungle. Every other animal is stronger than we are, they have fangs, they have claws, they have nimbleness, they have speed. We think Usain Bolt is fast. Usain Bolt can get his ass kicked by a squirrel. We're not fast. That would be an Olympic event: turn a squirrel loose, whoever catches it gets a gold medal.

05:38

(Laughter)

05:39

So no weapons, no speed, no strength, no fangs, no claws. How were we killing these animals? Mystery number one.

05:45

Mystery number two: Women have been in the Olympics for quite some time now, but one thing that's remarkable about all women sprinters: they all suck; they're terrible. There's not a fast woman on the planet and there never has been. The fastest woman to ever run a mile did it in 4:15. I could throw a rock and hit a high-school boy who can run faster than 4:15. For some reason, you guys are just really slow. But --

06:08

(Laughter)

06:09

But, you get to the marathon we were just talking about -- you've only been allowed to run the marathon for 20 years, because prior to the 1980s, medical science said if a woman tried to run 26 miles -- does anyone know what would happen if you tried to run 26 miles? Why you were banned from the marathon before the 1980s?

06:24

Audience Member: Her uterus would be torn.

06:26

Christopher McDougall: Her uterus would be torn, yes. Torn reproductive organs. The uterus would literally fall out of the body.

06:32

(Laughter)

06:33

Now, I've been to a lot of marathons, and I've yet to see any ...

06:37

(Laughter)

06:40

So it's only been 20 years that women have been allowed to run the marathon. In that very short learning curve, you've gone from broken organs up to the fact that you're only 10 minutes off the male world record.

06:51

Then you go beyond 26 miles, into the distance that medical science also told us would be fatal to humans - - remember Pheidippides died when he ran 26 miles -- you get to 50 and 100 miles, and suddenly, it's a different game. You take a runner like Ann Trason or Nikki Kimball or Jenn Shelton, put them in a race of 50 or 100 miles against anybody in the world, and it's a coin toss who's going to win. I'll give you an example. A couple years ago, Emily Baer signed up for a race called the Hardrock 100, which tells you all you need to know about the race. They give you 48 hours to finish this race. Well, Emily Baer -- 500 runners -- she finishes in eighth place, in the top 10, even though she stopped at all the aid stations to breastfeed her baby during the race.

07:30  
(Laughter)

07:31

And yet, she beat 492 other people. The last mystery: Why is it that women get stronger as distances get longer? The third mystery is this: At the University of Utah, they started tracking finishing times for people running the marathon. What they found is that if you start running the marathon at age 19, you'll get progressively faster, year by year, until you reach your peak at age 27. And then after that, you succumb to the rigors of time. And you'll get slower and slower, until eventually you're back to running the same speed you were at age 19. So about seven, eight years to reach your peak, and then gradually you fall off your peak, until you go back to the starting point. You'd think it might take eight years to go back to the same speed, maybe 10 years -- no, it's 45 years. 64-year-old men and women are running as fast as they were at age 19. Now, I defy you to come up with any other physical activity -- and please don't say golf -- something that's actually hard --

08:25  
(Laughter)

08:26

where geriatrics are performing as well as they did as teenagers.

08:30

So you have these three mysteries. Is there one piece in the puzzle which might wrap all these things up? You've got to be careful anytime someone looks back in prehistory and tries to give you a global answer because, it being prehistory, you can say whatever the hell you want and get away with it. But I'll submit this to you: If you put one piece in the middle of this jigsaw puzzle, suddenly it all starts to form a coherent picture. If you're wondering why the Tarahumara don't fight and don't die of heart disease, why a poor Ethiopian woman named Derartu Tulu can be the most compassionate and yet the most competitive, and why we somehow were able to find food without weapons, perhaps it's because humans, as much as we like to think of ourselves as masters of the universe, actually evolved as nothing more than a pack of hunting dogs.

09:15

Maybe we evolved as a hunting pack animal. Because the one advantage we have in the wilderness -- again, it's not our fangs, our claws or our speed -- the only thing we do really well is sweat. We're really good at being sweaty and smelly. Better than any other mammal on Earth, we can sweat really well. But the advantage of that little bit of social discomfort is the fact that, when it comes to running under hot heat for long distances, we're superb -- the best on the planet. You take a horse on a hot day, and after about five or six miles, that horse has a choice: it's either going to breathe or it's going to cool off. But it ain't doing both. We can. So what if we evolved as hunting pack animals? What if the only natural advantage we had in the world was the fact that we could get together as a group, go out there on that African savanna, pick out an antelope, go out as a pack, and run that thing to death? That's all we could do. We could run really far on a hot day.

10:13

Well, if that's true, a couple other things had to be true as well. The key to being part of a hunting pack is the word "pack." If you go out by yourself and try to chase an antelope, I guarantee there will be two cadavers out in the savanna. You need a pack to pull together. You need to have those 64- and 65-year-olds who have been doing this for a long time to understand which antelope you're trying to catch. The herd explodes and it gathers back again. Those expert trackers have to be part of the pack. They can't be 10 miles behind. You need the women and the adolescents there, because the two times in your life you most benefit from animal protein is when you're a nursing mother and a developing adolescent. It makes no sense to have the antelope over there, dead, and the people who want to eat it 50 miles away. They need to be part of the pack. You need those 27-year-old studs at

the peak of their powers ready to drop the kill, and you need those teenagers who are learning the whole thing involved. The pack stays together.

11:02

Another thing that has to be true: this pack cannot be materialistic. You can't be hauling all your crap around, trying to chase the antelope. You can't be a pissed-off pack. You can't be bearing grudges, like, "I'm not chasing that guy's antelope. He pissed me off. Let him go chase his own antelope." The pack has got to be able to swallow its ego, be cooperative, and pull together. What you end up with, in other words, is a culture remarkably similar to the Tarahumara, a tribe that has remained unchanged since the Stone Age. It's a really compelling argument that maybe the Tarahumara are doing exactly what all of us had done for two million years, that it's us in modern times who have sort of gone off the path.

11:41

You know, we look at running as this kind of alien, foreign thing, this punishment you've got to do because you ate pizza the night before. But maybe it's something different. Maybe we're the ones who have taken this natural advantage we had and we spoiled it. How do we spoil it? Well, how do we spoil anything? We try to cash in on it. Right? We try to can it and package it and make it "better" and then sell it to people. And then what happened was, we started creating these fancy cushioned things which can make running "better," called running shoes.

12:11

The reason I get personally pissed-off about running shoes is because I bought a million of them and I kept getting hurt. And I think if anybody in here runs -- I just had a conversation with Carol. We talked for two minutes backstage, and she talked about plantar fasciitis. You talk to a runner, I guarantee within 30 seconds, the conversation turns to injury. So if humans evolved as runners, if that's our one natural advantage, then why are we so bad at it? Why do we keep getting hurt?

12:35

A curious thing about running and running injuries is that the running injury is new to our time. If you read folklore and mythology, any kind of myths, any kind of tall tales, running is always associated with freedom and vitality and youthfulness and eternal vigor. It's only in our lifetime that running has become associated with fear and pain. Geronimo used to say, "My only friends are my legs. I only trust my legs." That's because an Apache triathlon used to be you'd run 50 miles across the desert, engage in hand-to-hand combat, steal a bunch of horses, and slap leather for home. Geronimo was never saying, "You know something, my Achilles -- I'm tapering. I've got to take this week off." Or, "I need to cross-train. I didn't do yoga. I'm not ready."

13:14

(Laughter)

13:16

Humans ran and ran all the time. We are here today. We have our digital technology. All of our science comes from the fact that our ancestors were able to do something extraordinary every day, which was just rely on their naked feet and legs to run long distances.

13:30

So how do we get back to that again? Well, I would submit to you the first thing is: get rid of all packaging, all the sales, all the marketing. Get rid of all the stinking running shoes. Stop focusing on urban marathons, which, if you do four hours, you suck, and if you do 3:59:59, you're awesome, because you qualified for another race. We need to get back to that sense of playfulness and joyfulness and, I would say, nakedness, that has made the Tarahumara one of the healthiest and serene cultures in our time. So what's the benefit? So what? So you burn off the Häagen-Dazs from the night before.

14:04

But maybe there's another benefit there as well. Without getting too extreme about this, imagine a world where everybody could go out the door and engage in the kind of exercise that's going to make them more relaxed, more serene, more healthy, burn off stress -- where you don't come back into your office a raging maniac anymore, or go home with a lot of stress on top of you again. Maybe there's something between what we are today and what the Tarahumara have always been. I don't say let's go back to the Copper Canyons and live on corn and maize, which is the Tarahumara's preferred diet, but maybe there's somewhere in between. And if we find that thing, maybe there is a big fat Nobel Prize out there. Because if somebody could find a way to restore that natural ability that we all enjoyed for most of our existence up until the 1970s or so, the benefits -- social and physical and political and mental -- could be astounding.

15:00

What I've been seeing today is there is a growing subculture of barefoot runners, people who've gotten rid of their shoes. And what they have found uniformly is, you get rid of the shoes, you get rid of the stress, you get rid of the injuries and the ailments. And what you find is something the Tarahumara have known for a very long time: that this can be a whole lot of fun. I've experienced it personally myself. I was injured all my life; then in my early 40s, I got rid of my shoes and my running ailments have gone away, too.

15:27

So hopefully it's something we can all benefit from. I appreciate your listening to this story.

15:32

Thanks very much.

Wendy Suzuki explains how exercise improves your brain health. Read more: Your brain on exercise. Get inspired to go to the gym as Suzuki discusses the science of how working out boosts your mood and memory - and protects your brain against neurodegenerative diseases like Alzheimer's. It doesn't take much: Large study shows just 1 hour of exercise per week prevents depression. Wendy Suzuki explains how keeping the body healthy and fit can have a lasting impact in the moment and long-term as well, against incurable neurodegenerative diseases, such as Alzheimer's disease. Access The Brain-Changing Benefits of Exercise from Ted Talks. Content Provided By. TED. Related Topics Diet & Lifestyle Movement Thinking, Sensing & Behaving. Also In Teaching Techniques. Building Trust in Science Starting in the Classroom. Taking A Placebo Can Reduce Anxiety Before An Exam Even When You Know The Pills Are Inert. Can we exercise our brains? Freestyle forms of exercise, such as hip hop dancing or skateboarding, could be especially beneficial for the brain because of how engaged it needs to be and how it challenges your brain to be creative. Definitely. Exercise is essentially medicine for the mind so working out your body will boost it as well. Most of the benefits detailed above are the result of long-term, regular exercise requiring weeks or months of practice. However, a short bout of exercise will have its effects as well. Functional and/or structural brain changes in response to resistance exercises and resistance training lead to cognitive improvements—a systematic review. European Review of Aging and Physical Activity, 16(1), 1-33. How well-planned regular exercise can boost your brain and help you reach more than just your physical fitness goals--explained by an esports training pro. But science is always moving forward, and that means we're learning way more about the benefits of working out. Now, here's the amazing thing: we now know that exercise can actually boost your life in countless areas other than weight loss! A few highlights: Adults that move vigorously for at least 150 minutes per week not only have a lower chance of developing aging-related illnesses like Alzheimer's and dementia, but also have stronger bone density and healthier hearts. We now know of a wide variety of mental health benefits that come with regular exercise. How Does Exercise Affect the Brain? 10 Neurological Benefits of Exercise. 5 Interesting Facts about the Brain. A Look at the Research and Science. How Exercise Reprograms the Brain. Exercise, Cognition and the Aging Brain. What Does it Do for Memory? How Does it Improve Concentration and Remove Brain Fog? What Can Physical Activity Do For Neurological Problems? The way people spend their leisure time also changed when television became America's favorite pastime (Krantz-Kent, 2018), with people consuming around 4 and 5 hours of daily screentime (Shaw, 2004). All of this meant that in today's developed regions, the standard of living dramatically increased. Without physical effort, one could survive and even earn money, have fun, and eat well.