

WHY DOES MOVEMENT HELP? THE REMARKABLE SCIENCE OF PHYSICAL THERAPY

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PHYSICAL THERAPY

An allied health profession aiming to improve a person's ability to do activities. This job is called "physiotherapy" in many parts of the world.

Many things happen in your body when you exercise. It is not just your muscles that get a workout. Almost every system in your body improves because of exercise. Physical therapists make the most of these changes. They provide movement-based treatments for a very wide range of conditions. In this article, we discuss how physical therapy came about, we explain where you might find physical therapists and what kinds of conditions they help with, and we describe how movement can help our bodies. Recent scientific advances certainly have people moving in a healthy direction!

WHAT IS PHYSICAL THERAPY?

People have been exercising for hundreds of years. But **physical therapy**, also called physiotherapy, only became an official job in the 1800s. People were given massages, physical adjustments, and exercise. Past pandemics and world wars, times when many people were ill or injured, created opportunities for physical therapy to

Table 1

What does a physical therapist typically do?

1. Ask questions
2. Measure how the patient's joints and muscles move
3. Make a diagnosis
4. Explain what will likely happen with the patient's condition in the future
5. Teach the patient about his or her condition
6. Give treatments that will help the patient now
7. Give treatments that will help the patient in the future
8. Give advice on how to live a healthy life

Table 1

advance quickly. More and more research is being done every year, and physical therapy is now being used in many ways to improve people's quality of life. We expect that physical therapy will keep changing in the future. For example, people are more frequently accessing physical therapy *via* the internet now, due to the COVID-19 pandemic.

Physical therapy aims to improve a person's ability to do activities. Table 1 shows you what physical therapists do during an appointment.

Although they are called *physical* therapists, these professionals also care about people's health in terms of their thinking, their emotions, and their relationships. This is because scientists now know how much all these parts of life are connected.

MUSCULOSKELETAL CONDITIONS

Health problems affecting the body's muscles and bones. For example, a fractured radius (bone in the wrist).

ACTIVE TREATMENTS

Treatments that involve the patient doing the hard work of movement.

SYNOVIAL FLUID

Liquid in the joints that helps them to move smoothly, absorb forces, and obtain nutrients. The knee makes about a teaspoon of synovial fluid every day!

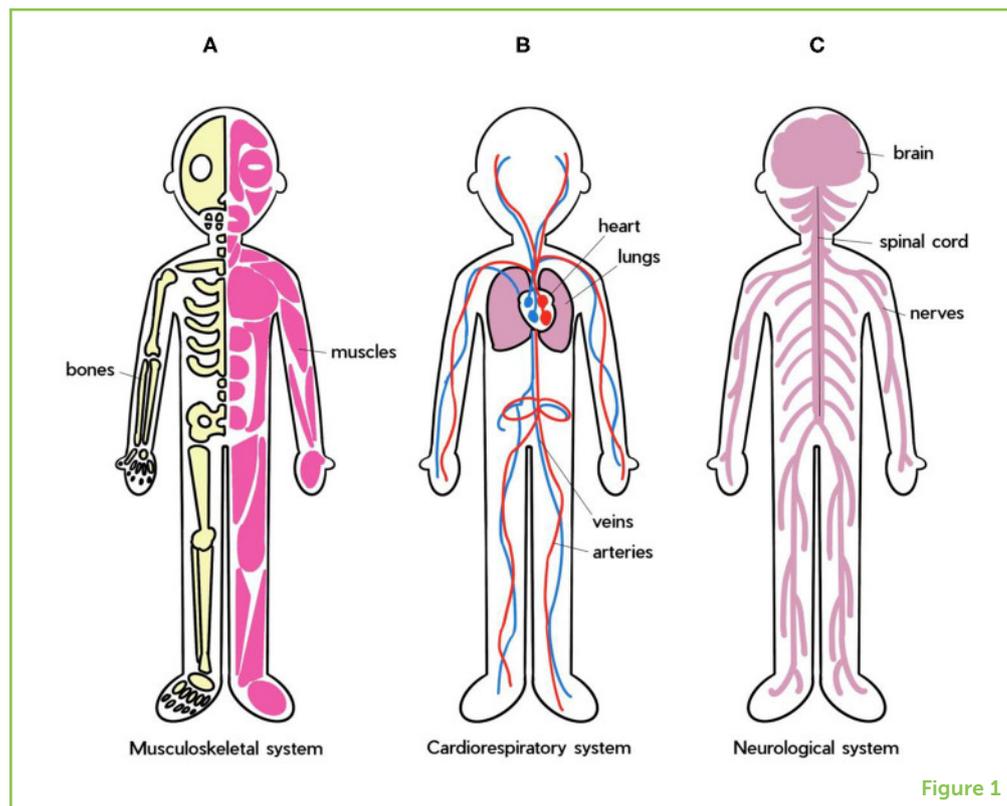
WHAT KINDS OF CONDITIONS DO PHYSICAL THERAPISTS TREAT?

Patients can do physical therapy in a range of places like hospitals, gyms, or even at home. There are three common types of conditions in which physical therapists are an important part of the treatment process (Figure 1).

First, physical therapists see people who have **musculoskeletal conditions**, such as injuries of muscles and joints. You may have seen a physical therapist run onto a sporting field during a match to help someone who is injured, or maybe you have heard about someone going to a physical therapy clinic. Researchers have discovered the benefits of **active treatments** involving exercise [1]. Exercise helps the natural healing process of our bodies happen as well as possible. Moving and putting weight on a joint like the knee spreads around the **synovial fluid**, which is a liquid in joints that provides nutrients and helps joints to move smoothly and absorb forces. For people with musculoskeletal conditions, active treatments strengthen muscles, help with coordination, improve balance, and improve walking and running.

Figure 1

(A) The musculoskeletal system contains muscles and bones. When we run, jump, sit, or play, our muscles get shorter or longer to make our joints (knees, elbows, etc.) move. (B) The cardiorespiratory system contains the heart, blood, and blood vessels. This system makes sure our bodies get the oxygen they need to work properly. (C) The neurological system contains the brain, spinal cord, and nerves. The brain and body send extremely fast messages along the nerves. All these systems are connected and depend on each other. For example, when you go for a walk, all these systems work together with every step you take.

**CARDIORESPIRATORY CONDITIONS**

Health problems affecting the body's heart and lungs. For example, asthma.

CHRONIC

A condition that lasts for a long time. For example, chronic pain is pain that lasts for more than 3 months.

NEUROLOGICAL CONDITIONS

Health problems affecting the body's brain, spinal cord, and nerves. For example, multiple sclerosis (MS).

Second, physical therapists measure and treat people with **cardiorespiratory conditions**, which are conditions that affect the heart and lungs. Some are conditions that people are born with, like cystic fibrosis. Some are **chronic** conditions that last a long time, like a disease called chronic obstructive pulmonary disease (COPD), in which it is difficult to breathe. These conditions may also be short-term, like the flu or a lung infection. Research has shown that active treatments involving movement and exercise make a big difference for people with cardiorespiratory conditions [2]. Active treatments help oxygen to travel through the body, help to clear out excess mucus, and strengthen the heart and lungs.

Third, physical therapy is of short- and long-term benefit for people with **neurological conditions**. These are conditions that affect how the nerves and brain connect and control other parts of the body. Neurological conditions might cause the arms or legs to move more slowly or to be a bit jumpier than usual. For people with neurological conditions, active treatments maintain or improve muscle strength, improve coordination, help with balance, and improve walking and running.

WHAT ELSE CAN PHYSICAL THERAPISTS DO?

Beyond these three main areas of physical therapy, there are many other areas, too! Did you know that some physical therapists work

with animals alongside vets, some work with children, some work with older people, some work in swimming pools, and some work in workplaces? Many physical therapists are well-known for their roles in elite sports teams. You may have seen them on television during the Olympics or at the World Cup! Other physical therapists work specifically with women or with men, and some specialize in specific conditions or situations, such as cancer, pain management, mental health, terminal illness, or recovery after surgery. Some physical therapists work in hospital emergency departments and still others work with people challenged with disabilities. Some physical therapists do not work with patients directly, but help out behind the scenes as researchers or teachers, or in a range of organizational, leadership, and business jobs.

HOW IS MOVEMENT USED AS A MEDICINE?

Just like different medicines are used to treat different illnesses, physical therapy can also differ based on what is going on with each patient. Physical therapy treatments are typically tailored to each individual. This is important because everyone is different in terms of their expectations, goals, motivation, and what they can do physically. So, a “one-size-fits-all” approach to physical activity makes no sense at all. Gentle movements in a pool may be ideal for some people with some illnesses. For people in other situations, it may be ideal to do really intense exercise that makes them sweat and breathe much harder. In addition to helping people recover from illness and injury, physical therapists can also help people to prevent potential issues in the future [3]. Scientists have found that exercise helps to prevent things like heart attacks, chronic pain, falls, and feelings of sadness and stress. Intense exercise that makes you sweat and breathe much harder during your teen years is very important, because it increases bone strength and can reduce our chances of breaking bones when we are older [4].

CONCLUSION

We know that movement is good for everyone. Scientific studies of physical therapy have found that, in the long term, active movement-based treatments are better than passive treatments like putting pressure, or something hot, or something cold, or electrical, on the affected body part [5]. While scientists are still discovering more about the ways that exercise and physical therapy work to keep us healthy, we know that active treatments are helpful for many conditions. Now you know about many ways that physical therapies are used to help people. We recognize that exercise is important, but exercise is only *part* of what physical therapists do—they work hard understand to treat the *whole* person. The science of physical therapy is complex and a lot of research is still happening. Hopefully

this research will benefit this field in the future, so that we can all keep moving in a healthy direction with physical therapy.

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YOUNG REVIEWER



RORY, AGE: 15

I am 15 years old and will be a sophomore in high school. I really enjoy school as well as sports, including golf and working out to keep my body fit and strong.

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He is a lecturer (assistant professor) in physiotherapy at the University of Technology Sydney. He recently moved from his job as a senior physiotherapist in a hospital, and a Ph.D. researcher, to this academic role. Joshua is continuing his research into pain in children and education about the science of pain. He loves that moment when his students say, "Aha! I get it now!" Outside of work, he enjoys reading books with his two kids and using power tools to build cool stuff. *joshua.pate@uts.edu.au



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She is an associate professor in physiotherapy at Macquarie University. She has over 15 years of experience as a clinical physiotherapist and supervises students and clinicians doing research. Verity is an expert on rare and complex conditions in children, focusing on physical activity, function, and quality of life. When she is not at work, she is busy having fun with her two children.

