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INFORMATION/EDUCATION PAGE

What do I Need to Know About Home and Community-Based Physical Activity and Exercise After My Stroke?

Check for updates

This Information/Education Page was written to help people who have had a stroke, and their families learn how to start a healthy physical fitness program to meet their personal needs. It describes what physical activity and exercise are and how they can help you in your recovery if you are experiencing mild or moderate effects after your stroke.

What is a stroke?

A stroke happens when the blood supply to your brain is interrupted. When your brain cells do not get a continuous blood supply, they do not get the necessary oxygen and nutrients and those brain cells die.[1] Most often, this occurs because of a clot blocking a blood vessel leading to your brain. The medical term for this is "ischemic stroke". Strokes can also happen when a blood vessel bursts, causing bleeding in your brain tissue. The medical term for this is "hemorrhagic stroke".

Stroke is one of the leading causes of disability. It can be a very challenging condition for survivors to manage. Over 90% of people who have had a stroke have some long-term effects. Recovery is a lifelong process. Physical activity and exercise have been shown to greatly assist survivors. While rehabilitation programs led by your health professionals are crucial in your recovery process, learning ways to keep active in your day-to-day life is also important.

What changes might I experience after my stroke?

After a stroke, you may be facing many changes in your body, your mind, and your ability to do everyday tasks. You may experience weakness in your muscles, particularly in your hands and legs, muscle tightness, physical and mental fatigue, difficulty with your balance and coordination, changes in sensation, pain, and changes in your posture. You may have difficulty walking, handling objects, speaking, swallowing, eating, dressing yourself, or doing other kinds of daily activities. You may notice changes in your mood and emotional reactions, including feelings of anxiety or depression.

How can I reduce my risk of further health problems?

In the first year after your stroke, you have a greater risk of developing health issues, including the possibility of a second stroke. Some recommendations to reduce your risk of further health problems are to maintain healthy blood pressure and cholesterol levels, maintain a healthy weight, have good control of your blood sugars if you have diabetes, take your medications as prescribed by your doctor, and try to give up smoking if you were a smoker. You can also get support from a mental health professional if you are experiencing any psychological or emotional distress.

One of the most important things you can do to recover and avoid further health problems is to do a variety of physical activities on a daily basis, especially in those first months after your stroke.[2] What many stroke survivors have said works best is to make physical activity at least 5 times a week the "new normal" of your daily life.

What is physical activity, and how is it different from exercise?

- **Physical activity** means all types of movement that require you to use energy.
- **Exercise** is a particular physical activity that you usually plan to do, has a very specific structure that can be repeated over and over, and has the goal of improving your physical fitness. It also usually requires you to use more energy than other physical activities.[3]

So, although not all physical activity is exercise, both physical activity and exercise have been shown to improve your heart function, your muscle strength, and your brain health. That's why they are so helpful and important for you in your recovery process after your stroke.[4]

What are specific benefits of physical activity and exercise after my stroke?

The table 1 gives examples of physical activity and exercise that you can do after your stroke and their benefits.

Are physical activity and exercise safe after my stroke?

Sometimes people who have had a stroke are worried that being physically active or exercising could cause another stroke. This is actually not true. In fact, by actively moving, you are more likely to reduce the risk of another stroke, as well as your risk of heart or lung problems, while also improving your general mobility, flexibility, and daily functioning. It is safe to do a wide variety of physical activities and exercise after your stroke.

Before you begin a new physical activity program you should consult with your doctor or other health professional to evaluate your current health and ability. One way of measuring your ability to get back to or start a physical activity is with something called a "stress test", or "stress exercise test", administered by a doctor or trained technician. It will show how your heart is working during a physical activity. This may involve walking on a treadmill or riding a stationary bike while a health professional monitors your heart rhythm, blood pressure, and breathing.

Another measurement is a questionnaire called The Borg Rating of Perceived Exertion that asks you to rate how hard you feel you are working.

While most physical activity and exercise are safe after your stroke, in the beginning you may want to have someone with you if possible so that you can feel safe and more confident when you are getting more active again. You will also want to:

- Avoid over-exercising or pushing yourself too hard while exercising. Overuse injuries are one of the biggest reasons people stop exercising.
- Include periods of rest and calmness between your exercise sessions.
- Soreness is a common experience when strengthening muscles, but if your soreness continues for more than 24-48 hours after a workout, you may need to adjust how much you are exercising and the way you are doing it.
- Do gentle stretches after finishing your exercise.
- Avoid very intense activity or exercise that might put you at risk for falls or overly strain your muscles.
- Avoid sudden, rapid, or forced stretching that can strain your joints or tear your muscles.
- Stay hydrated! Your muscles and organs, including your brain, need fluid to stay healthy and to recover from the effect of your stroke.
- Keep breathing! Don't hold your breath when you are moving. Your muscles and organs, including your brain, also need oxygen to stay healthy and to recover from the effect of your stroke. Coordinate exhales and inhales with your movement: inhale during effort, for example when you are lifting a hand weight or doing a sit-up, and exhale during rest, when you are lowering your arm with the hand weight or your body after a sit-up. Focus on easy exhales through your mouth, without forcing or pushing air out, and easy inhales through your nose, without forcing or pulling air in. Think of your lungs expanding into your back and sides. You may find yourself breathing rapidly, sometimes both in and out through your mouth, up to 40-60 times per minute. When your activity becomes more vigorous, it is normal to feel

Table 1 Examples of physical activity and exercise and their benefits

Examples of Physical Activity and Exercise	Benefits
General physical activity means any movement you do that requires energy, such as grocery shopping, washing your car, taking a walk, or gardening.	• Improves your muscle strength, endurance, and flexibility • Improves your day-to-day functioning • Improves your brain health • Improves your mood • Improves your overall quality of life • Reduces your chances of having another stroke[1]
Aerobic exercise means any physical activity that uses large muscle groups and increases your heart rate. This makes your heart more efficient and it can pump more oxygenated blood with every beat. Your body then uses this oxygen to produce energy. Aerobic exercise can be rhythmic and repetitive, such as brisk walking, running, any kind of dancing, or cycling. You can use a recumbent bike if you have mobility issues.	• Improves your ability to utilize oxygen by strengthening your heart and lungs • Lowers blood pressure • Improves your muscle strength, endurance, and flexibility • Improves your balance • Improves your mental functioning • Improves brain recovery after stroke • Improves your mood and reduces anxiety • Improves your general quality of life[2,4]
Strengthening exercises include push-ups, sit-ups, working with weights, repeating actions like standing up and sitting down several times, or doing low-intensity Pilates training.	• Improves your ability to do things around the house • Improves your muscle strength, endurance, and flexibility • Improves your muscle tone • Improves your stability • Improves your bone density • Helps you maintain a healthy weight • Improves your mood and sense of confidence • Improves your general quality of life[1,5,6]
Flexibility exercises include gentle stretching, yoga, Alexander technique, Feldenkrais, or Pilates.	• Improves your range of motion • Increases blood flow to your muscles • Reduces stiffness or pain in your joints and muscles • Reduces the risk of injuries • Improves your overall daily functioning[6–9]

"out of breath". This can be an unpleasant feeling, but it is not dangerous.[8,9]
- Make sure the area where you exercise is safe by removing any loose rugs that can slide out from under you.

Easy does it! Pace yourself; move smoothly and mindfully. Remember: if you are enjoying your physical activity, you will be more likely to continue moving.

How intense should my physical activity and exercise be after my stroke?

The American Heart Association recommends 20-60 minutes of aerobic exercise per day, 3 to 7 days per week if you are recovering from a stroke. Strength-training exercises are recommended 2 or 3 days per week. These exercises can be adjusted to your fitness level by your health professional.[4]

Your main goal is to gradually return to your previous level of activity as much as possible. Always start slowly and increase the intensity and amount of your activities gradually. It is normal for an activity that you used to consider "light" to feel "moderate" or even "hard" after your stroke. Remember to adjust your physical activity for your **current** effort level rather than it to what you used to do.[5,6] Here are some examples of different levels of intensity activities:

- **Low to moderate intensity activities** involve "very light" to "fairly light" effort. These include walking on flat surfaces, standing up and sitting down, a tai chi class, or a community pool class where the water gives gentle resistance to your movements and helps you get stronger.
- **Moderate intensity activities** feel "fairly light" to "somewhat hard" to do. These include outdoor activities such as gardening or walking your dog, some repeats of going up and down stairs for a few minutes, or a yoga or Pilates mat class that is adapted to your age and ability.
- **High intensity activities** feel "somewhat hard" to "hard" to do. These include treadmill walking, swimming, using arm or leg exercise equipment, or doing an intermediate level Pilates mat or equipment class. Try to do these activities or exercises for 20 to 40 minutes at a time, 3 to 5 days per week.
- **More advanced activities** are vigorous! They can feel "hard" or "very hard" to do. These include walking faster over a variety of surfaces outdoors or on a treadmill with adjustable speed or "hill" settings, running at a comfortable pace while including walking breaks, swimming for longer periods of time, stair climbing, using an elliptical trainer or a recumbent bike, or doing some type of resistance training 2 or 3 times a week, doing each activity one to 3 times with between 10 to 15 repetitions each time. You can use hand weights, free weights, weight machines, resistance bands, or use your own body weight by doing sit-ups or push-ups. If you feel ready, try these vigorous activities and exercises for 60-75 minutes at a time once or twice a week, and then begin to increase them as you feel more fit.

What online resources are available for me?

- **Try finding some online exercise classes.**

There are a wide variety of live Zoom movement classes with guided instruction broadly available now. You can also find a number of stroke exercise videos from the American Stroke Association that can be performed at home: https://www.stroke.org/en/life-after-stroke/stroke-rehab/post-stroke-exercise-videos

- **Get help getting online.**

If you want a little help learning how to use Zoom or other online services, the Older Adults Technology Services organization offers great free support! https://oats.org/

- **Culturally familiar music and movement matters.**

Moving to the sounds and dances you are familiar with can keep you active. Find the music and dances that connect you to the kinds of physical activities you grew up with. On the other hand, by learning new kinds of music and dances, you might stimulate new connections in your brain. Whether it is Rock n' Roll, Hip Hop, Indian Bharatanatyam, American Square Dance, African Zulu dance, Native American ceremonial dances, or Irish or Scottish dancing, moving to the groove of a variety of dance forms may be beneficial.[10–12] Enjoy yourself and

Table 2 Apps for movement and exercise

App Name	URL
"7 Minute Workout Challenge"	7 Minute Workout Challenge app is designed for exercising a mere 7 minutes a day. https://apps.apple.com/us/app/7-minute-workout-challenge/id680170305
"Clock Yourself"	Introduces progressively complex physical activities to help you react more quickly. https://www.clockyourself.com.au/?fbclid=IwAR2TptBaCc231Ok-sa0uInNE6e2OqmOL4TvMYMwRTZLIhKIAdIvTt2Pb3jM
"Think Up" — Alexander App	Helps you improve your coordination and breathing https://www.thinkup.nl/en/app/
Walking apps	A walking app could help you get the most from your outings. Each of these eleven free apps has a different feature to enhance your walks, from social functions that involve your friends to maps that encourage exploration. https://www.bhf.org.uk/informationsupport/heart-matters-magazine/activity/walking/walking-inspiration/free-walking-apps
Fitness apps	Eight free fitness apps for all levels. https://www.bhf.org.uk/informationsupport/heart-matters-magazine/activity/8-free-fitness-apps
Cycling apps	These 7 free cycling apps can track your ride to give you extra motivation, help with route planning or get live weather forecasts. Or use them for your cycle machine workouts. https://www.bhf.org.uk/informationsupport/heart-matters-magazine/activity/cycling/7-free-cycling-apps

don't worry if you can't do the steps perfectly! Here are a few to try:

- Rock n' Roll: https://www.youtube.com/watch?v=qURzcDm5J7Y, https://www.youtube.com/watch?v=uWkUc3fMMq0, https://www.youtube.com/watch?v=UZSyrtMr-nA
- Hip Hop: https://www.learntodance.com/hip-hop-dance-moves/
- Indian Dance: https://www.youtube.com/@arth8404
- Square Dance: https://www.youtube.com/watch?v=p-wDn9QRjJ0
- African Zulu Dance: https://www.youtube.com/watch?v=Ewqq-3xJFdI
- Native American Dance (Cree Nation): https://www.youtube.com/watch?v=fl98GcKLozo
- Irish Dance: https://www.irishamericanmom.com/5-places-you-can-learn-irish-dance-online/
- Scottish Dance: https://www.youtube.com/watch?v=sjXW0TTVl3M

- **Include non-exercise movement.** Practices that focus on flowing and thoughtful movement, such as yoga or tai chi, are pleasurable and can improve your balance and coordination. Learning activities that teach you ways to better connect your brain with your movement, like Alexander technique or Feldenkrais method, may be helpful when recovering from a stroke. All these activities can have long lasting effects, including improving your posture, reducing your risk for injury and pain, increasing your overall confidence in avoiding falls

Table 3 Resources for physical activity and exercises

Resource Organizations	What it Offers	Websites
Resources in English		
Stroke Support Association	Provides group meetings and education.	https://strokesupportassoc.org/
American Stroke Association	Provides information on stroke and sponsor support groups and programs in U.S. for stroke survivors and their families, including a stroke support group finder local to you	https://www.stroke.org/en/
American Stroke Foundation	Helps stroke survivors, caregivers, and families improve their overall quality of life.	https://americanstroke.org/
Centers for Disease Control and Prevention	Offers facts and statistics on stroke-related topics.	https://www.cdc.gov/stroke/
Engaged: The National Resource Center for Engaging Older Adults	Provides resources for older adults, people with disabilities and caregivers to increase social engagement	https://www.engagingolderadults.org/
Stroke Association	Provides resources on how to become active after stroke	https://www.stroke.org.uk/resources/exercise-and-stroke
The Fitness and Mobility Exercise (FAME) Program	Provides handout of exercises you can do at home	http://fameexercise.com/wp-content/uploads/EXERCISES-I-CAN-DO-HANDOUT-updated-September-17th-2019.pdf
Resources in Spanish		
Health information translations	Provides resources about exercise and rehabilitation after stroke	https://www.healthinfotranslations.org/language/spanish/524152/topic/exercise_and_rehabilitation/53747/
American Stroke Foundation	Helps stroke survivors, caregivers, and families improve their overall quality of life.	https://www.stroke.org/en/about-stroke/recursos-en-espanol
Native Americans		
Indian Health Services- The Federal Health Program for American Indians and Alaska Natives	Contains physical activities from Healthy Body Awareness, a physical activity and nutrition education program for Navajo older adults.	https://www.ihs.gov/hpdp/pak/

and taking on more challenging activities, and in general bringing you more pleasure again in your daily movement.[13–16]

- **Try putting some movement and exercise apps on your smartphone or iPad.** If you have a smartphone, there are many apps that can help you keep up your physical activity and exercise. Some are especially designed for people living with stroke. Others are more general (*Please refer to Table 2)*. Most phones already have apps on them that can count your steps and other measures of your activity (Note: Some of these apps do charge a fee for you to download them, or a subscription fee to use them over time).

Supplemental appendix S1 **has some additional ideas and suggestions for physical activity and exercise.**

Table 3 **has some resources for physical activity and exercise for you and your family.**

Authorship

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