

ORGANIZATION NEWS

Information/Education Page

Physical Activity After Traumatic Brain Injury



Traumatic brain injury (TBI) refers to damage to the brain from a physical force. This can include falls, car accidents, or gunshots, among other causes. TBI can cause difficulties with cognition (thinking) and function (movement). More than 2.5 million Americans experience a TBI each year. Many individuals with TBI do not complete regular physical activity.

What is “physical activity”?

- Physical activity is any bodily movement produced by skeletal muscles that results in the expenditure of energy
- Exercise is a physical activity that is planned, structured, repetitive, and performed to improve health or fitness
- The Health and Human Services Physical Activity Guidelines¹ provide recommendations about the time and intensity of physical activity needed to maintain health and well-being
- The Health and Human Services Physical Activity Guidelines¹ advise individuals to get at least:
 - 150 minutes of moderate activity (eg, walking briskly, dancing, gardening) per week OR
 - 75 minutes of vigorous physical activity (eg, running, tennis, hiking uphill, heavy housework) per week AND
 - 2 or more days of strength training per week

Benefits of physical activity after TBI

- Physical activity increases the release of growth factors in the brain that help build new

brain cells² and increase brain size,³ which leads to:

- Decreased memory decline⁴
- Improved ability to make decisions^{5,6}
- Increased processing speed, which is how quickly you can think^{5,7}
- Improved learning and memory⁷
- Social benefits of physical activity⁸
 - Improved life satisfaction
 - Decreased stress
- Social benefits of group physical activity⁸
 - Social interaction with peers
 - Opportunities to build new friendships
 - Increased communication skills
- Physical health benefits of physical activity
 - Maintain healthy weight⁹
 - Prevent falls¹⁰
 - Increase bone density¹¹
 - Improve your heart and lung function^{12,13}

Reasons you might not be physically active and ways to overcome them

There are many reasons why you may find it challenging to be physically active.^{14,15} Table 1 identifies some of the barriers and potential solutions.

The key is to be as active as you can—do what you can when you can. Even if you can only tolerate a few minutes of physical activity at a time, try to do it 2 to 3 times per day. Gradually increase your activity goal to 30 minutes daily. Table 2 lists example activities and ways to modify them according to your fitness and functional levels

Table 1 Possible solutions to overcome barriers to physical activity

Barriers to Physical Activity	Potential Solutions
Transportation	<ul style="list-style-type: none"> Use public transportation or ride sharing applications
Access to fitness center	<ul style="list-style-type: none"> Ask family or friends Complete activity in a large room in your home
Cost	<ul style="list-style-type: none"> Go to the local park Find low cost or free activities such as brisk walking Use resistance bands or household items as weights
Do not know how to exercise	<ul style="list-style-type: none"> Ask a certified inclusive fitness trainer or physical therapist Talk with your doctor
Cognition and memory	<ul style="list-style-type: none"> Keep a consistent routine Use a planner to schedule physical activity Set reminders on electronic devices such as your phone Use written step-by-step directions
Poor motivation	<ul style="list-style-type: none"> Find a partner or group Explore what inspires or motivates you and others
Fatigue	<ul style="list-style-type: none"> Participate during times you have more energy Start with tasks at home that do not cause fatigue Know your limits and schedule rest breaks

Your health care team can help you be more physically active

- Consult your physician if you are unsure how to safely start adding more physical activity into your daily life
- Physical therapists are rehabilitation professionals who diagnose and treat a variety of movement impairments associated with health-related conditions or injuries to improve quality of life
- Certified inclusive fitness trainers have advanced training and can help safely adapt physical activities for individuals with physical, sensory, and cognitive disabilities

Table 2 Examples of activities and modifications.

Activities	Modification
Improve Endurance	
Walk	<p>If too easy: increase the speed, time, or distance</p> <p>If too hard: slow down, take shorter walks more often</p>
Bicycle	<p>If too hard: use a stationary bicycle with a back rest to help with balance</p>
Improve Leg Strength	
Squats: stand with legs shoulder-width apart and lower your buttocks toward the ground slowly before coming back up	<p>If too easy: add weights or try 1 leg at a time</p> <p>If too hard: practice standing up from a chair</p>
Heel raises: stand up on your tip toes	<p>If too easy: do 1 leg at a time</p> <p>If too hard: hold on to the wall or a table for balance</p>
Improve Arm Strength	
Bicep curls: hold a weighted object (such as a can of soup) in each hand at your side and bring up to the shoulder while bending your elbow	<p>If too easy: increase the weight or use a resistance band by standing on the band with your feet</p> <p>If too hard: do without a weight</p>
Shoulder abduction: hold a weighted object in each hand at your side and move your arms away from the body until they are parallel to the ground	<p>If too easy: increase the weight or use a resistance band by standing on the band with your feet</p> <p>If too hard: do without a weight</p>
Pushups: keep your hands on the ground next to your shoulders and toes on the floor. Push up from the ground keeping your body straight	<p>If too easy: increase the number you do</p> <p>If too hard: put your knees on the ground when completing the movement. You can also do when standing next to a wall and push off from the wall</p>
Improve Balance	
Yoga, tai chi, and leg strength exercises	<p>If too easy: close your eyes</p> <p>If too hard: use a chair or the wall for challenging poses</p>

Resources for becoming more physically active

- Move United (www.moveunitedsport.org/sports/adaptive-sports)
- National Center on Health, Physical Activity and Disability (www.nchpad.org)
- LoveYourBrain Yoga (www.loveyourbrain.com/yoga)

- YMCA provides memberships with sliding scale payment (www.ymca.net)

Authorship

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