

At-Home Physical Therapy Exercises for Becker Muscular Dystrophy



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DISCLAIMER: This document is meant to inform and educate the community. The information presented is not intended to replace discussions with your healthcare provider and is not and should not be considered to be medical advice. Please consult with your healthcare team for information specific to you.

Introduction

This resource describes physical therapy exercises for people with Becker muscular dystrophy (BMD). Some of the exercises outline modifications and progression to best fit the functional abilities of the individual.

For all exercises, use the rate of perceived exertion (RPE) scale to determine when to take rest breaks.

Rate of Perceived Exertion (RPE) Scale

10	Maximum effort activity Feels impossible to maintain for more than a very short time. Completely out of breath, unable to talk.
9	Very hard activity Difficult to maintain. Can barely breathe, can speak only a few words.
7-8	Vigorous activity Borderline uncomfortable. Short of breath, can speak a sentence.
4-6	Moderate activity Somewhat comfortable, but noticeably challenging. Breathing heavily, can hold a short conversation.
2-3	Light activity Feels like you can maintain for hours. Easy to breathe and carry on a conversation.
1	Very light activity Hardly any exertion, but more than when resting.

For all exercises, stay at or below 4-6 on the RPE scale. If you reach 4-6 before completing the recommended duration or number of repetitions for an exercise, stop and rest. Do not overtire yourself with exercises.

Before Starting an Exercise Program

For a safe, effective exercise program, keep these important points in mind:

- Speak to your healthcare team before you start a new exercise regimen. They can tailor a program for you, including what types of exercises to do and how long you should exercise. They can also monitor your response to exercise.
- Avoid exercises that are aggressive, high-impact, or high-intensity.
- Select exercises that are safe for your level of functioning.
 - > Avoid exercises that may cause a fall.
 - > Stay at or below a moderate activity exertion level (see the RPE scale on page 2).
- Start slowly and rest as needed.
- Avoid pushing through pain and fatigue.
- Remember to breathe throughout all exercises; do not hold your breath.

After exercise, you should be able to:

- Recover quickly (in 1-2 hours)
- Have enough energy for your daily activities, self-care, work, family, and social activities
- Have enough energy to safely complete daily mobility tasks (e.g., balance, transfers)

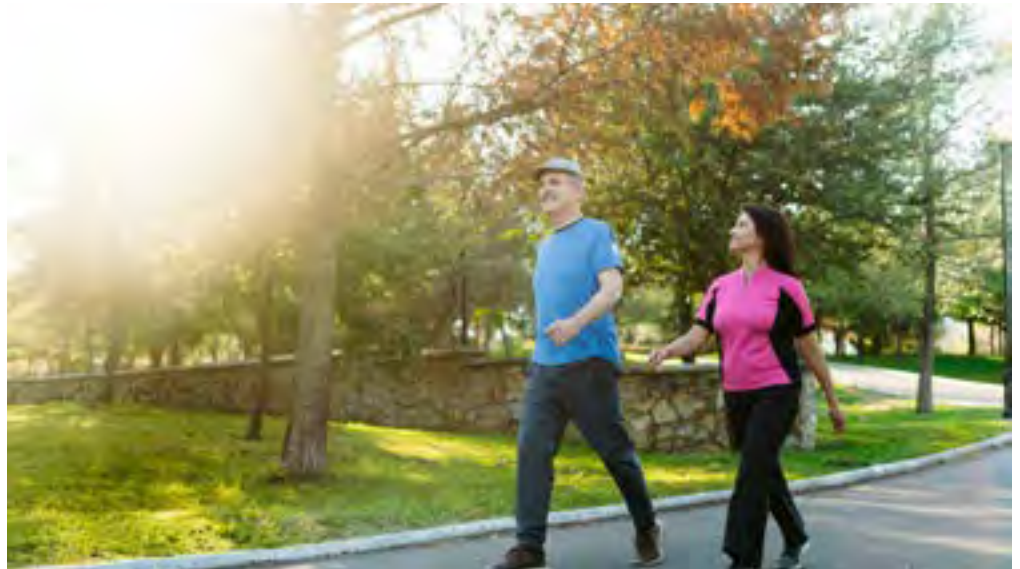
Get Outdoors for Your Health

Spending 20 minutes outdoors each day is ideal, but every little bit counts.

Getting outside is good for your health. Exposure to sunlight can:

- Boost your body's vitamin D supply
- Help reduce anxiety, stress, and symptoms of depression
- Instill calm, peace, and relaxation through the release of endorphins
- Help restore your focus
- Give you a break from constant stimulation

Walking is a great exercise that you can do outdoors in your neighborhood or indoors at a mall or other building with sufficient space for walking. Monitor your heart rate and distance, and set reasonable goals for this exercise so you can track your improvement in endurance.



Whether you are able to walk or not, **getting fresh air** and spending time outdoors every day can change the way you feel and be a refreshing activity that regenerates your energy and gives you a positive outlook for the day.

Flexibility Exercises

Flexibility exercises are most effective when muscles are warmed up through light to moderate activity.

Instructions for flexibility exercises

Intensity: Stretch to the point of feeling tightness or slight discomfort, not pain

Time: Unless otherwise noted, hold 10-30 seconds, repeat for a total stretch time of 60 seconds for each muscle.

Frequency: At least 3-4 days/week

Recommendations:

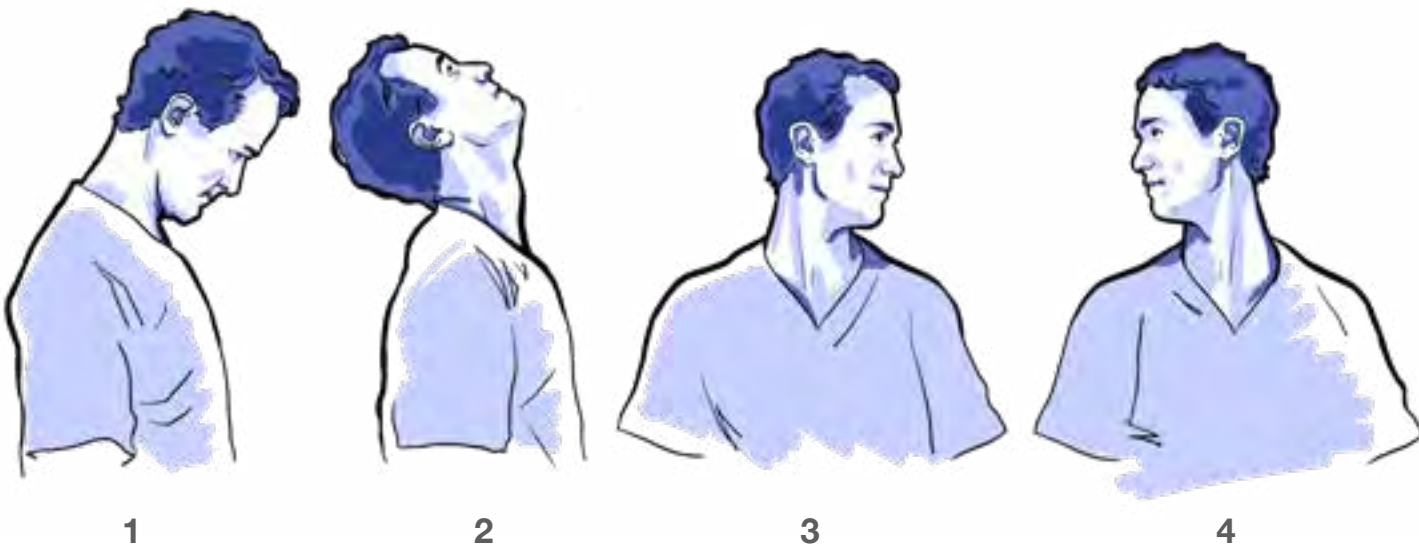
- Address areas that feel sore, tight, or cramped on a regular basis.
- Refer to the illustrations below to help guide you in proper positioning.
- Make sure you are getting enough water during the day to help decrease cramping and maintain appropriate hydration.

Upper Body

Neck stretches

Gently stretching the neck is a great way to start the day. Hold each position for 10-15 seconds and repeat the cycle 2-3 times.

1. Look down toward your chest.
2. Look up as far as you can without discomfort.
3. Look straight ahead and then turn your head to the left as far as you can comfortably.
4. Look straight ahead and then turn your head to the right as far as you can comfortably.



Shoulder stretch lying down

1. Lie on your back with your arm at your side. Move your arm in a big circle up toward your ear and head. Try to keep your arm flat against the surface you are lying on. Repeat on the other side.
2. If you need help, someone can guide your arm up.



Back of shoulder stretch

1. Raise one arm forward and reach it across your body.
2. With your other arm, hook the arm you are stretching above the elbow to assist in bringing your arm farther across your chest.

Chest muscle stretch

1. Lie over a towel roll or small pillow. Bring your arms up behind your head to open your chest.
2. An alternative is to lie flat on your back and stretch your arms out to the sides **(2a)**. Try this with your elbows bent at 90 degrees **(2b)**.

1



2a



2b

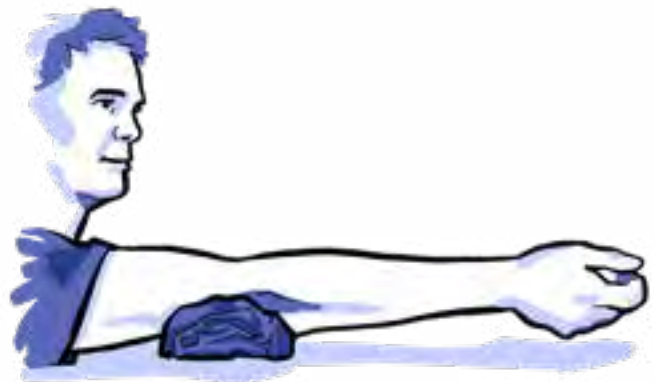


Elbow stretch

1. Have someone help you stretch your elbow by supporting the back of the elbow and gently straightening it with slight pressure above the wrist.



2. To stretch your own elbow, sit at a table and place your arm in front of you on a ball or small towel roll. Keep your elbow as straight as possible and your palm facing up. You may hold a light weight or let gravity assist in straightening your elbow.



Wrist mobility

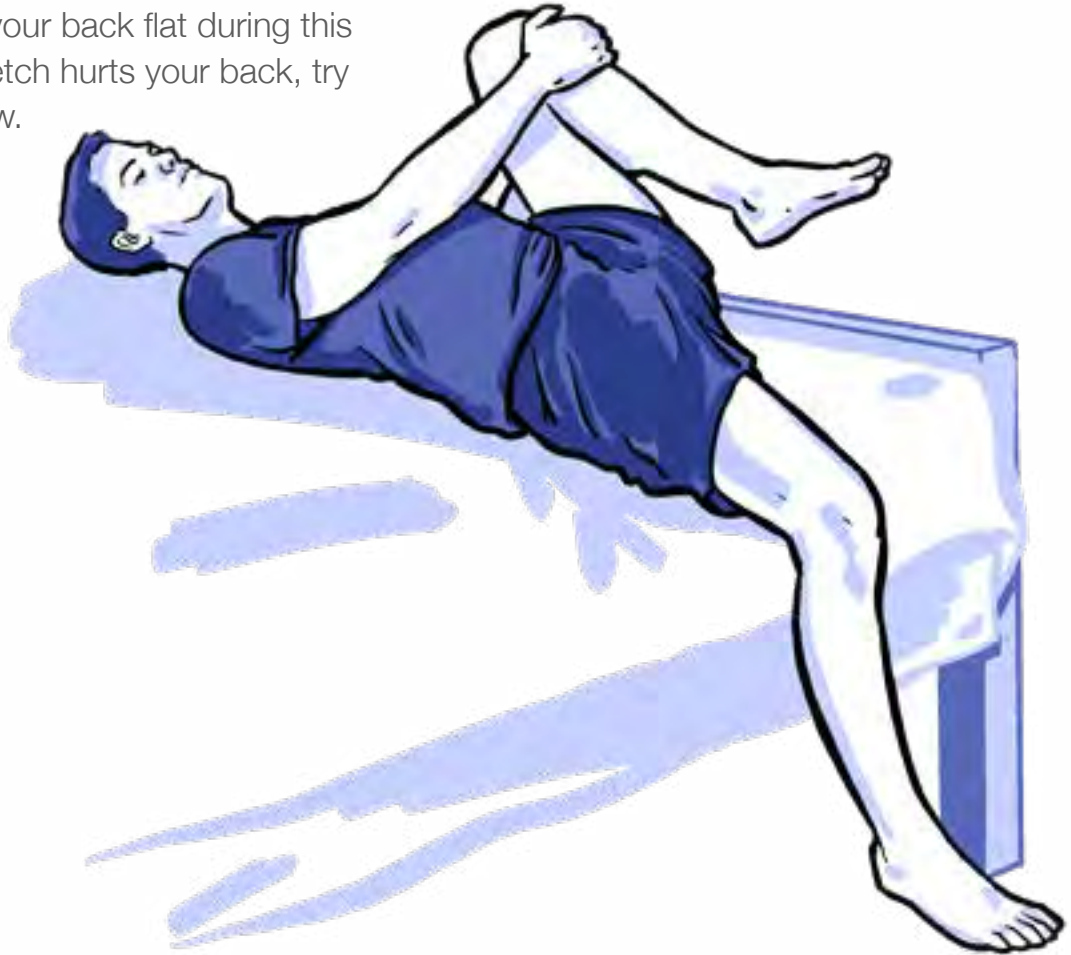
1. Sit with your forearm on a flat surface in front of you.
2. Gently bend your hand downward (**flexion**) while using your other hand to support the back of your hand. Do not force the wrist down.
3. Gently bend your hand back toward your forearm (**extension**) while using your other hand to support your fingers and palm.
4. Usually, one motion feels tighter than the other. Concentrate on the direction that is not as flexible. Only go until you feel a good stretch; never force a stretch.



Lower Body

Hip flexor stretch

1. Lie at the edge of a bed. Bring one knee to your chest and allow the other leg to hang off the bed. This is the leg being stretched. Keep your back flat during this stretch. If this stretch hurts your back, try the exercise below.



2. An alternative is to lie with your whole body on a flat surface and pull one knee to your chest.



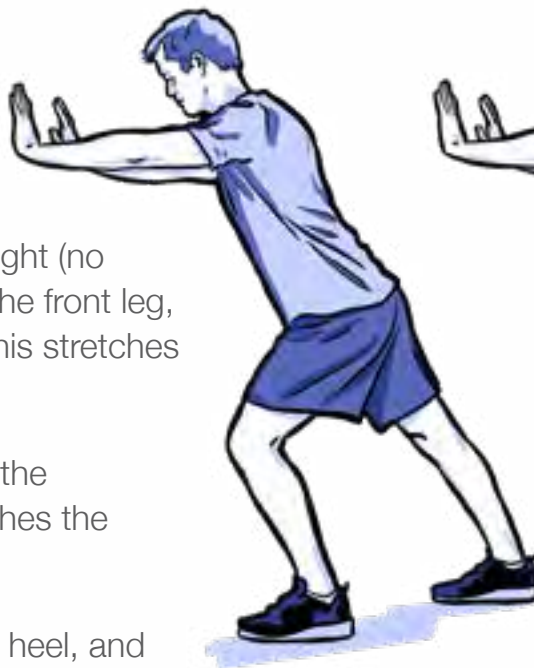


Hamstring stretch

1. Use a strap (such as a belt, tie, stretch band, sheet, or towel) looped under the arch of your foot.
2. Lift your leg as high as you can with a straight knee to feel the stretch. You should feel this behind your knee as it stretches the hamstring muscles. Remember to keep your knee straight.

Heel cord stretches (shoes recommended)

1. Stand with your hands against a wall. Move one leg slightly behind the other and keep your heels flat on the ground and toes pointing forward. Lean forward, keeping your back straight (no arching), and bend the knee of the front leg, keeping the back leg straight. This stretches the gastrocnemius muscle.
2. In the same position, now bend the knee of the back leg. This stretches the soleus muscle.
3. You should feel a stretch at your heel, and some people will also feel a stretch behind the knee. Both stretches are important because the gastrocnemius and soleus muscles connect to your heel cord and can contribute to tightness.



Gastrocnemius stretch

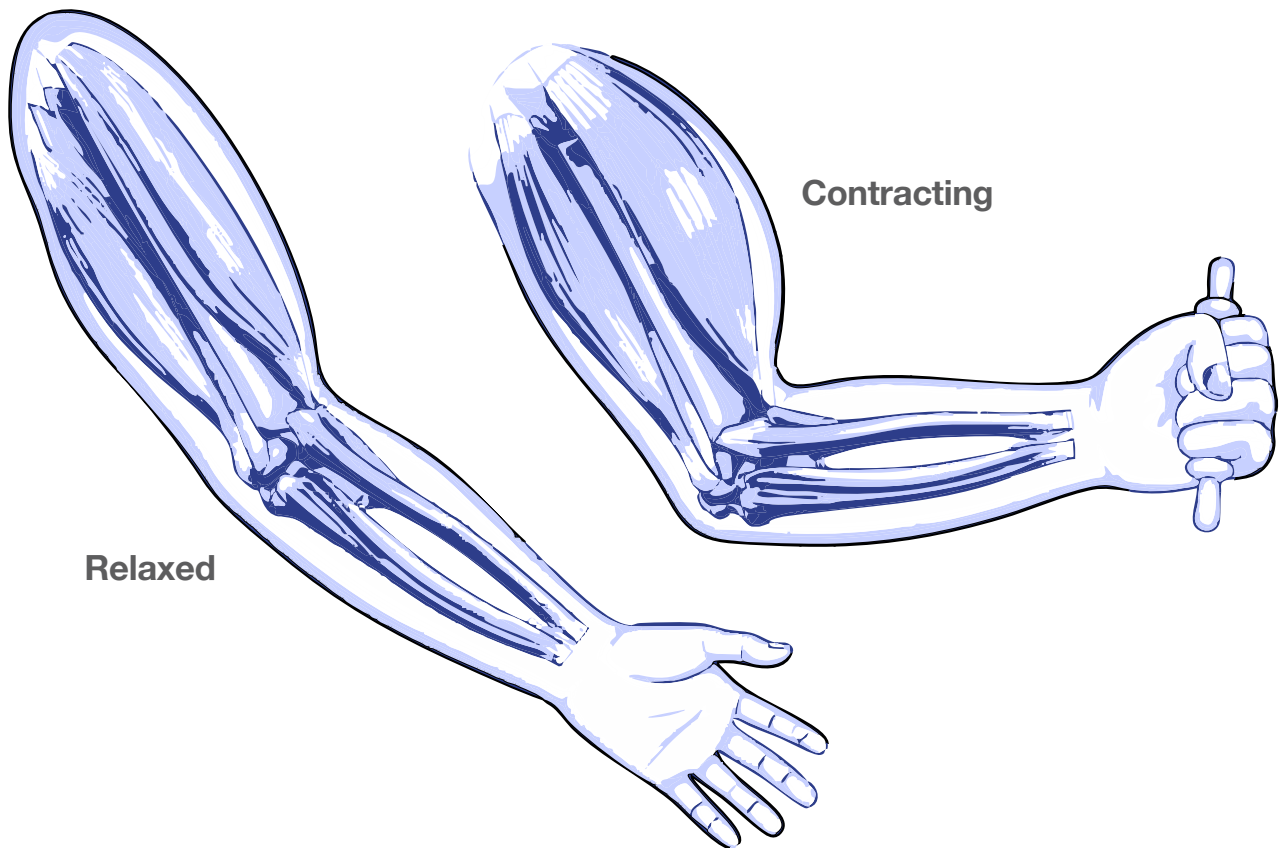


Soleus stretch

Isometric Exercises

Isometric exercises are static exercises where the muscle contracts and holds a position. This is the least damaging type of muscle contraction because the muscle fibers do not move against each other. Evidence supports the use of isometric exercises as part of a low-load resistance training regimen with a slow build-up over time for individuals with BMD.

Isometric muscle contraction



Instructions for isometric exercises

Time: Hold the contraction for 5-10 seconds

Repetitions: 6 repetitions, 4 sets on each side of the body

Frequency: 2-3 days/week

Recommendations:

- Select an area or body part to focus on.
- Set your goals.
- Consult a physical therapist for guidance.

Upper Body

Shoulder girdle isometric exercise

This exercise engages your shoulder girdle muscles, including your deltoid, latissimus dorsi, and scapular muscles.

1. Sit or stand with one arm close to a wall. Place a ball or rolled towel between your arm and the wall, with your elbow bent.
2. Push your arm against the ball or towel to hold it in place.



Anterior chest isometric exercise

This exercise engages your chest and some shoulder muscles, including the deltoid and pectoral muscles.

1. Choose a ball that is big enough to wrap your arms around. Hold the ball with your elbows bent and shoulders held at about 90 degrees.
2. Squeeze the ball and hold this position.
3. If you cannot hold the ball with your elbows and shoulders at 90 degrees, simply hug the ball and squeeze. You will be doing an isometric exercise for your chest muscles.

Hand isometric exercises

These exercises engage your hands, fingers, and forearm muscles.

1. Squeeze a small soft ball, Play-Doh, or TheraPutty.



2. Bring your hands together in a prayer position and push them together.

3. Squeeze your thumb and index finger together and hold. Repeat with each fingertip.



Hand isometric exercises

4. With your palm open, spread your fingers wide and hold, then bring your fingers together and hold.



5. Make a fist with one hand. With your arm as straight as you can, push your fist against a wall or other stable surface.



6. Now, open your fingers and press your fingertips against the wall or stable surface. Your fingers should be arched, not flat.

7. Try to hold a clothespin open. Clothespins of varying resistance levels are available.



Lower Body

Quadriceps isometric exercise

This exercise engages the quadriceps muscles on the top of your thighs. They straighten your knee and bend your hip.

1. Sit up straight with your back supported against a wall and your legs in front of you. Place a rolled towel under one knee so it is slightly bent.
2. Pull your foot up and straighten your knee. Hold this position with your leg straight.



Hip adductor isometric exercise

This exercise engages the muscles of your inner thighs, which bring your legs together.

1. Sit on a chair with a ball between your knees. Choose a chair with back support, if you need it.
2. Squeeze the ball between your knees and hold it there.



Hamstring isometric exercises

These exercises engage the hamstring muscles of the back of the thighs. They bend your knee and extend your hip.

1. Lie down on a flat surface to support your back, or sit with your back supported and your legs straight out in front of you. Bend one knee and push your heel down into the surface. Do not allow your heel to slide down or your knee to straighten. You should feel this behind your knee.



2. An alternative is to sit in a chair with back support. Cross your feet and use the leg behind to try to push the front leg forward. Hold this position and don't allow the front leg to move forward.



Gluteal isometric exercise

This exercise engages your gluteal or “butt” muscles, which stabilize your hips and help you stand and walk.



1. Start lying on your back with your knees bent and feet flat. Try to lift your rear end off the surface and hold the position.
2. If you cannot lift your rear end off the surface, simply tighten your “butt” muscles as much as you can. If your knees fall out to the side, you can use a stretchy band or strap around your knees to keep them together.

Aerobic Exercises

Aerobic exercise, often called cardio, is repetitive movement that increases your heart rate, blood flow, and breathing rate. There are many ways to participate in aerobic exercise.

Check with your doctor first to be sure you are cleared to do aerobic exercise.

Instructions for aerobic exercises

Time: 15-30 minutes of continuous activity, or broken into intervals

Frequency: 3 days/week

Recommendations:

- Build up your time slowly.
- Consult a physical therapist for guidance.
- Work out using 40%-60% of your heart rate reserve (HRR). To find your HRR:
 - » Look up the predicted maximum heart rate (max HR) for your age.
 - » Find your resting heart rate (resting HR).
 - » Calculate HRR: $\text{Max HR} - \text{Resting HR} = \text{HRR}$.
 - » Calculate target heart rate for aerobic exercise:
 $(\text{HRR} \times \% \text{ intensity of exercise}) + \text{Resting HR}$.
 - » Target heart rate for aerobic exercise: $(\text{HRR} \times 0.40) + \text{Resting HR}$.
This is a good place to start for beginners.

Aerobic Cycling

Cycling is an aerobic activity that can be performed with many different types of equipment.

Pedal exerciser

A pedal exerciser, also called a mini exercise bike, can be used for arms or legs. For arms, place the exerciser on a tabletop and move the pedals with your hands. Pay close attention to positioning to maximize the use of your arms.

For legs, place the exerciser on the floor and pedal with your legs. Sit in a regular chair, a wheelchair, or any other piece of furniture that allows you to maintain good posture while pedaling. If your knees splay out, use a band around your thighs to maintain good alignment with the pedals. Positioning and posture are important during exercise.

Monitor your heart rate and blood pressure before and after your exercise. Many pedal exercisers measure revolutions or have a timer. Keep track of the time you exercise to measure your progress.



Portable pedal exerciser

Recumbent exercise bike

This type of exercise bike allows cycling with back support. It may have a way to monitor your heart rate.

Positioning is important. Consult a physical therapist about the appropriate fit or adjustments for a recumbent exercise bike. Set goals for yourself, and monitor your time and distance to measure your progress. Monitor your heart rate and blood pressure before and after you exercise.



Aquatic (Pool) Exercises

Pool exercise is fun. Exercising in the water can help you move more easily and improve your balance, flexibility, strength, and endurance.

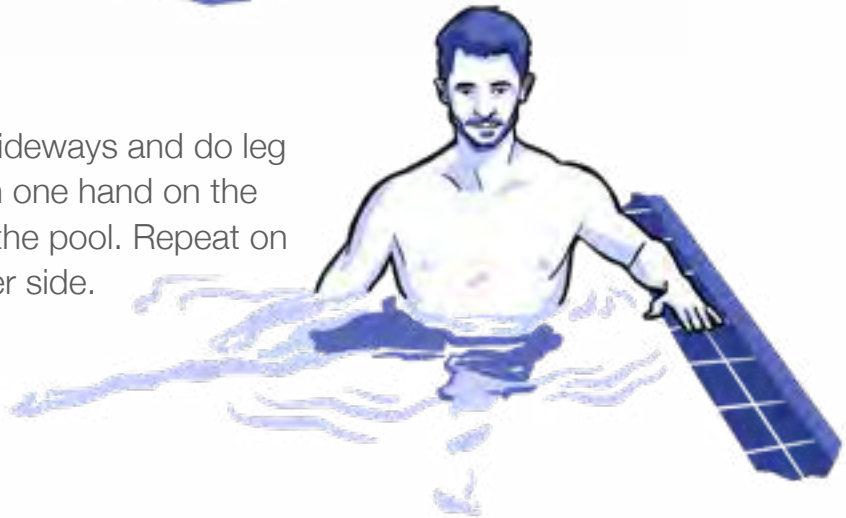
Leg exercises in the pool

The water assists with these leg exercises by adding buoyancy and reducing the effects of gravity. This is a safe way to exercise.

1. Stand facing the side of the pool and do small squats.



2. Stand sideways and do leg lifts with one hand on the side of the pool. Repeat on the other side.



Swimming

Swimming in a pool is a good aerobic exercise. Track the distance you swim, and monitor your heart rate to avoid overexertion.



Walking in the pool

Walking in the shallow end of the pool is a less intense aerobic exercise. Try walking back and forth from one side of the shallow end to the other. Hold onto a ball, flotation bars, or another flotation device to help with your balance if needed. Here are more exercise options.



1. Do lunges across the width of the shallow end.
2. Work on balance activities, such as standing on one leg.

Core and Balance Exercises

Working on your trunk muscles helps you maintain your balance and stability. These exercises can be fun and challenging.

Ball exchange

This exercise can be done seated in a regular chair or in your wheelchair. Begin with a lightweight ball you can hold with one hand. Once you can do the basic set below, increase the difficulty by changing the weight or size of the ball or progressing to a standing position.



1. Sit in a chair with your feet flat. Begin with the ball in the middle and position it on your right hand, with your palm open. Be sure it is balanced. Now, move your arm out to the right side, as pictured. Keep your elbow bent at your side to begin with. Keep your eyes forward and count to 10. Now, bring the ball back to the middle.



2. With both hands on the ball and your feet flat on the floor, raise the ball up over your head as far as you can. At the highest point, hold the ball steady while maintaining your balance and count to 10. Now, bring the ball back down.



3. Keeping your feet flat on the floor, position the ball in your left hand, with your palm open. Be sure it is balanced. Now, move your arm out to the left side, as pictured. Keep your elbow bent at your side to begin with. Keep your eyes forward and count to 10. Now, bring the ball back to the middle and rest. Try to complete five repetitions on both sides.

Single leg stance

1. Stand at a chair or countertop for support, holding it lightly with your hands. While keeping your upper body still and upright, try to lift one leg.
2. Let go of the chair when you feel comfortable doing so. Hold the position for 10 seconds and gradually build up your time to 1 minute.



Dribbling a ball

Dribbling helps you work on shifting your weight back and forth and side to side. This is good for your balance. You can change the weight of the ball or shoot the ball into baskets of different heights depending on how challenging you want to make the activity. You could also interchange the baskets with floor targets to vary the activity. This helps with coordination, targeting, and strengthening.

Make sure to stay hydrated while exercising, and most of all, have fun!

This resource was created with the expertise and knowledge of Claudia Senesac, PT, PhD, PCS, Clinical Professor Emerita, University of Florida.

Muscular Dystrophy Association

Muscular Dystrophy Association (MDA) is the #1 voluntary health organization in the United States for people living with muscular dystrophy, ALS, and over 300 other neuromuscular conditions. For 75 years, MDA has led the way in accelerating research, advancing care, and advocating for support and inclusion of families living with neuromuscular disease. MDA's mission is to empower the people we serve to live longer, more independent lives.

To learn more, contact the MDA Resource Center at **1-833-ASK-MDA1** or email **ResourceCenter@mdausa.org**.

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 Discord: MDA Let's Play