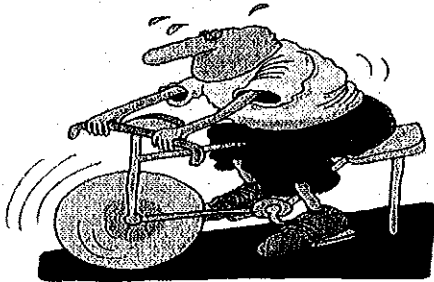


NEUROPATHY AND EXERCISE

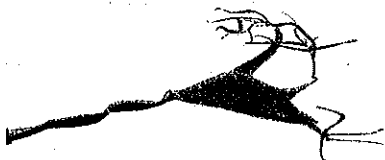




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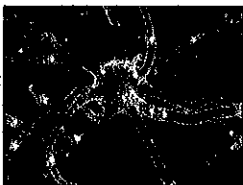
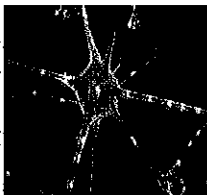
Neuropathy – Nerve Disease

- Neuropathy is a disease of the nerves.
- There are many types of neuropathy with different causes.



Types of Nerves Damaged

- Motor nerves can weaken the muscles
- Sensory nerves can limit the ability to feel.



Causes of Neuropathy

According to the National Institute of Neurological Disorders and Stroke, peripheral neuropathy can be caused by:

- Physical injury or trauma to a nerve, often from repetitive motion or pressure from a cast or crutches
- Tumors
- Toxins and/or exposure to poisons
- Autoimmune responses such as lupus and rheumatoid arthritis
- Nutritional deficiencies, especially of vitamin B
- Alcoholism
- Vascular and metabolic disorders such as diabetes
- Genetics
- Unknown etiology

Physician Over-site

- Always discuss with your physician your exercise plan and what you should monitor.
- *Check with your doctor before being any new exercise program.*
- Medical treatment must be directed toward the underlying cause of the disease.
- Exercise can change blood pressures, blood sugars and fluid balance.

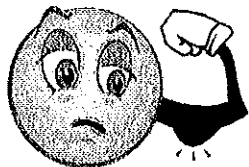


Warning to Exercise

- Although there are many potential benefits of exercise, too much exercise can be harmful.
- It is important to discuss your exercise plans with your health care provider and choose an exercise routine that will help, rather than aggravate, your symptoms.
- Avoid cross-legged positions or exercises that put pressure on the elbow and knee joints.
- If choosing a yoga class for neuropathy, avoid heated classes and look for an instructor with training in yoga therapy.
- People with neuropathy caused by diabetes should avoid only aerobic exercise because of the strain on the feet a variety of exercise types is the best.

Symptoms of Neuropathy

- Muscle weakness
- Loss of sensation
- Numbness
- Tingling
- Cramping
- Spasms



Proprioception

- One of the senses that may be lost is "position sense", also called "proprioception."
- Because of the nerve damage, a person with neuropathy cannot tell what position the affected hand, arm, foot or leg is in.



Proprioception

- When neuropathy is present in the foot, ankle, and leg, balance and walking may be impaired.
- A person with neuropathy can damage the ankle joint without realizing it, sprain the ankle, or fall because of poor position sense.



PHYSICAL THERAPY

Physical therapy may be helpful in maintaining strength, mobility, and function regardless of the underlying cause of Neuropathy.

Diabetic neuropathy patients must also tightly control their blood sugar levels to prevent major fluctuations.



Objectives of Physical Therapy

- Maintaining and improve functions by range of motion - passive range of motion exercises consist of progressive stretching and self stretches
- Strengthening muscles - this includes exercising against increasing resistance, use of weights, and isometric exercise
- Balance training provides stability and prevents falls
- Physical therapists can also recommend braces and/or splints to enhance balance and posture
- Splinting is often used in the treatment of compression mononeuropathies, such as carpal tunnel syndrome

Occupational Therapy

- Occupational therapy is instrumental in helping a patient cope with the functional, vocational, and social impact of neuropathy by:
- Improving sensory-motor skills
- Teaching the patient to avoid exposure to environmental or industrial toxins



OT (cont.)

- Teaching self-care activities
- Teaching the patient safety issues, (e.g., paying more attention to the terrain when walking since falling or tripping may pose a risk for patients)
- Teaching the patient to pay attention to issues which involve automatic functions (e.g., learning how to change positions smoothly to avoid a sudden drop in blood pressure and the risk of falling)

Exercise and Neuropathy

Exercise greatly benefits those who are managing neuropathy because:

- It can help to strengthen weak muscles,
- Preserve range of motion of affected parts of the body,
- Improve balance.



Benefits of Exercise

- Exercise also increases the pain threshold by releasing endorphins and serotonin that relieve pain and stress.
- Workouts need not be vigorous



Types of Exercise Activities

- A comprehensive physical activity routine includes four kinds of activities:
- Aerobic Exercise
- Flexibility Exercise
- Strength Training Exercise
- Balance Exercise



Aerobic exercise:

- Increases your heart rate, works your muscles, and raises your breathing rate. For most people, it's best to aim for a total of about 30 minutes a day, between 3-5 days a week. If you haven't been very active recently, you can start out with 5 or 10 minutes a day and work up to more time each week. Or split up your activity for the day -- try a 10-minute walk after each meal. Here are some examples of aerobic exercise:
- Take a brisk walk (outside or inside on a treadmill)
- Take a low-impact aerobics class
- Swim or do water aerobic exercises
- Stationary bicycle indoors



Flexibility Exercises

- Flexibility exercises, also called stretching, help keep your joints flexible and reduce your chances of injury during other activities. Gentle stretching for 5 to 10 minutes helps your body warm up and get ready for aerobic activities such as walking or swimming.



Balance

- Keeping your balance system healthy is especially important if you have problems due to illness, such as joint pain, weakness or dizziness.
- Balance, in particular, is an important element for the elderly.
- Older muscles are smaller and slower and respond less efficiently when you need to brace yourselves, making you more vulnerable to falls.



Exercises for neuropathy involving the hand and fingers:

1. Touch the tip of the thumb to the tip of the index finger, making a round circle. Stretch the hand open. Repeat with middle, ring, and little finger in succession 10 times.



2. Touch the pad of the thumb with the pad of the index finger. Move the index finger down to the base of the thumb. Repeat twice with the index, middle, ring, and little fingers in succession 10 times.

Hand exercises (cont)

1. Place the palms of your hands on your lap. Lift the index finger twice, and tap your lap. Repeat twice with each finger in succession.
2. Clasp your hands loosely together. Circle you thumbs around each other 10 times.

Seated Exercises with Feet, Ankles and Legs

- Keeping heels on the floor, lift you toes off the floor, and tap them vigorously. Repeat 5 Times.



Anterior Tibialis Exercise

- Keeping heels together on the floor, lift your toes off the floor as high as possible. Turn your toes out, and put them back on the floor. Lift your toes again, bring them together, and put them back on the floor. Repeat 5 times.

(Your feet form a "V")

Seated Exercises with Feet, Ankles and Legs (cont)

- Straighten one knee. Point and flex your ankle 5 times.
- Straighten one knee. Circle the ankle clockwise then counter clockwise 5 times each.
- Repeat each exercise on the other side.

Standing Exercises for Balance:

- It is very important that you are safe when you work on balance exercises so you do not fall.
- You may need to have supervision or assistance from another person to prevent a fall.
- If your balance is good enough, you may stand by your kitchen sink, or behind a sturdy chair.

Marching in place

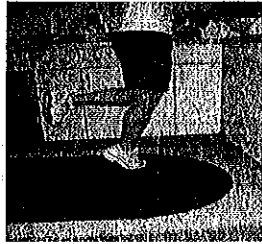
- March gently in place, lifting only your heels off the floor. When that becomes easy lift the heels and toes off the floor very slightly as you march in place. As your balance improves, lift your feet higher off the floor.



Toes Raises

- Raise slowly up on your tip toes, then go back on your heels. The knee is kept straight, but not locked.

(If too hard as pictured, keep both feet on floor.)



Standing Exercises for Balance: (cont.)

- Step to the side with your right foot, then bring the left foot next to the right foot. Step to the side with the left foot, then bring the right foot next to it. Repeat several times. As your balance improves, take a larger step to the side.

Standing Exercises for Balance: (cont.)

- Stand tall. Keeping your torso straight up and down, and your feet flat on the floor, bend your knees and hips slightly, sinking downward. Then straighten your hips and knees and stand back up straight. Repeat several times. As your balance and strength improve, bend your knees a little more. (If you have knee pain, stop the exercise.)



FALL PREVENTION EXERCISES

- *The following exercises emphasize balance. Be sure you are safe when performing balance exercises to prevent falling. You may need to have someone with you when performing these exercises.*
- *Hold onto the edge of the kitchen sink or sturdy chair as much as needed.*
- *Check with your doctor before being any new exercise program.*

Fall Prevention (cont.)

- You might like to place a chair nearby so you can sit to rest as you need to.
- Hold onto the edge of the sink as much as needed for safety.
- Stand facing the sink with your feet a comfortable distance apart and pointing straight forward.
- Repeat each of the following strengthening exercises 4 times.
- Gradually increase to 8 – 12 repetitions as strength and endurance improve.

Balance/Fall Prevention Exercises (cont.)

- **Heel Lifts**—Slowly rise up to your tiptoes, and then lower your heels back to the floor.
- **Toe Lifts**—Keeping your heels on the floor, lift your toes off the floor. Hold them up for a count of 3; then lower them back to the floor. (Don't allow your hips to go backward when you do this exercise; keep them as straight as possible.)

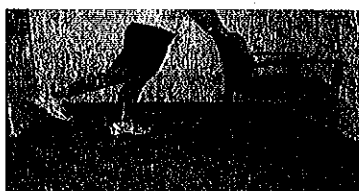
Balance/Fall Prevention Exercises (cont.)

- **Side Leg Lifts**—Slowly lift one leg out to the side; then return it to the center. Keep the knee straight and the toes pointing forward. Lead with the side of your foot, not your toe. Repeat with each leg up to 4 repetitions.



Back Leg Lifts

- Slowly lift one leg to the back then return it to the starting position. Tighten the abdominal muscles so the lower back does not arch. Repeat with each leg up to 4 repetitions



Balance/Fall Prevention Exercises (cont.)

- **Side Step Lunge**—Begin with feet together. Step to the side with the right foot, bend the right knee as if lunging; straighten the right knee, and bring the right foot back to the center. Repeat to the left side. *If you have knee pain, avoid doing this exercise, or bend more shallowly.*
- Do 5 repetitions as tolerated

Balance/Fall Prevention Exercises (cont.)

- **Standing Feet Together**—Stand with good posture, feet together. Use the edge of the sink only as much as you need to for balance. A small amount of sway is normal. Stand still for the count of 10. Gradually increase your time until you can stand still for 30 seconds. Then advance to the next exercise.
- Do 5 repetitions as tolerated

Balance/Fall Prevention Exercises (cont.)

- **Standing with One Foot a Half Step Ahead**—Place the ball of one foot beside the instep of the other foot. Try to maintain balance with your feet in this position for a count of 10. Repeat with the other foot in front. Gradually increase your time until you can stand still for 30 seconds with your feet in each position. Then advance to the next exercise.

Modification: If this exercise is too difficult, place feet wider apart.

- Do 5 repetitions as tolerated

Balance/Fall Prevention Exercises (cont.)

- **Heel-to-Toe Standing**—Place the heel of one foot directly in front of the toe of the other foot as if on a balance beam. Try to maintain balance for a count of 10 with your feet in this position. Perform the exercise with the other foot in front. Gradually increase your time until you can stand still for 30 seconds with your feet in each position.

Modification: If this exercise is too difficult, place feet wider apart.

- Do 5 repetitions as tolerated

Balance/Fall Prevention Exercises (cont.)

- **High Step Marching**—March alternately (R L R L) lifting the feet only slightly off the floor to begin with. As your balance improves, gradually raise your knees higher. Slow marching challenges your balance more than fast marching.

Modification: It may work better to turn your side toward the sink and hold onto the sink with one hand.

Do 5-10 repetitions as tolerated

Daily Activities

Daily activities serve as exercise, as they combine stretching and light lifting.

- Gardening
- Yard work
- Housecleaning



Sit down and rest if tired or sore, but return to the activity later, getting at least 30 active minutes per day.

Best Treatment Practice for Neuropathy



1. See your physician for medication and pain relievers
2. Eat a healthy diet. Be sure to include B-12 food sources (meats, fish, eggs, low-fat dairy and specially fortified cereals) to get a diet rich in fruits, vegetables and whole grains.
3. Take care of your hands and feet. Check every day for blisters, cuts and calluses. Do not wear tight shoes or socks.
4. Exercise. Consistent and regular exercise can relieve pain and will also keep weight under control, which will relieve pressure on the feet and improves circulation to the extremities.
5. Reduce or eliminate alcohol consumption, which adversely affects circulation.
6. Quit smoking. Smoking also adversely affects circulation.

Best Practices (cont.)

- **7. Massage hands and feet daily.** Massage not only improves circulation but also stimulates the nerves and can temporarily relieve pain.
- **8. Avoid prolonged pressure on hands and feet.** Be careful with:
 - Crossing your legs,
 - Standing for great lengths of time or leaning on your elbows too long.
- These can make your current situation worse and cause new damage to the nerves.

Research and Exercise Managing Neuropathy



- The Cochrane Library, suggest that strength training can be effective for those with this disease.
- Even though most of the research on strength training for neuropathy was tested on people with diabetes, the research results have been consistent:
 - Those who participated in the resistance- training program moderately improved muscle strength. Improvements in being able to perform basic daily activities — such as walking to and from cars — were also reported.

Research (cont.)

- Researchers at the University of Louisville have determined that lower-body weight training three times a week for 30 minutes curtails neuropathy.



Other suggestions

- Adequate and frequent rest breaks (get of feet)
- Walking a little bit each d
massaging the feet),
- Water exercise classes,
- Yoga or other stretching regimens,
- Tai chi,
- Pilates



Other Suggestions

- Using a stationery bike for up to 1 hour a day
- Always start slowly and increase speed or intensity of any exercise cautiously.
- Squeezing a soft ball has been found to be helpful for the hands.
- Warm baths
- Acupuncture



Still waiting for Cure for Neuropathy

- They are experimenting:
 - With infrared (Anodyne therapy)
 - Electrowave technology.
- So far, this has been successful in alleviating the effects of neuropathy in some people but not a cure.



- Thanks for the opportunity to speak with you.

Questions?

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