



# NEUROPATHY: HOW STRENGTH AND BALANCE CAN HELP

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IWMF - JANUARY 26, 2022

# AGENDA

- Introduction
- What is peripheral neuropathy (PN)?
- How exercise may help with symptoms
- Practice exercises
- Questions

# WHAT IS AN EXERCISE PHYSIOLOGIST?

- Allied health profession that involves the study of the acute responses and chronic adaptations to exercise
- How does this look within exercise and cancer?
  - How does walking reduce the risk of cancer recurrence?
  - How can muscle mass help with chemotherapy side effects and prevent dose reductions?

# WHAT IS PERIPHERAL NEUROPATHY (PN)?

- A group of neuromuscular symptoms that result from nerve damage caused by:
  - Diagnosis (WM)
  - Drug therapies used during cancer treatment (CIPN)
  - Diabetes
  - Idiopathic
- Affects 30-90% of patients getting specific neurotoxic chemotherapy drugs
- The most commonly used classes of drugs causing CIPN are Revlimid, Velcade, Thalidomide, Taxanes & platinum-based drugs

# PN SYMPTOMS

- Vary from person to person based on diagnosis, type of treatment and individual differences
- Sensory Nerves
  - Numbness, tingling and discomfort in the upper or lower extremities
  - Sensitivity to cold or touch
- Motor Nerves
  - Difficulty fastening buttons or opening jars
  - Altered walking/gait pattern
    - Decreased walking speed; shorter steps
- Autonomic Nerves
  - Involuntary bodily functions (ex. blood pressure, temp, bladder)

# EXERCISE AND PN RESEARCH

- Mostly in Diabetic Neuropathy or Chemotherapy Induced PN (CIPN)
- Recent Meta-analysis in 2020 Cancer Nursing
  - 13 studies
  - Conclusion:
    - “The exercise interventions, dosages, and settings have been too heterogeneous to identify the most beneficial intervention for CIPN.”
    - “Aerobic exercise may be a key component of exercise interventions for CIPN.”

# BENEFITS OF EXERCISE

- People with neuropathy often have:
  - Reduced proprioception
  - Decreased extremity sensation
  - Reduced strength in the affected area
- This can lead to increased risk for falls
- Strength and balance training may:
  - Improve symptoms listed above
  - Improve QOL
  - Decrease inflammation
  - Help tolerate treatment side effects

# GENERAL EXERCISE PRESCRIPTION

- **Cardio**
  - 20 minutes daily; weekly goal 140-180 min/week
  - Mode: something you enjoy that doesn't increase pain/symptoms
- **Strength**
  - 2-3 days a week
  - Focus on major muscle groups (legs, back, chest, core)
- **Balance/Flexibility/Mobility**
  - At least 5 minutes daily
- Focus on consistency



# TRAFFIC LIGHT APPROACH

- **Red** light day
  - Feeling exhausted; increase in PN symptoms
    - Stretch, chair yoga, breathing exercises
- **Yellow** light day
  - Moderate fatigue or PN symptoms
    - Walk around house/yard; yoga; strength and balance training (seated if needed)
- **Green** light day
  - Minimal fatigue or PN symptoms
    - Longer walk; bike ride; yoga; strength training; more challenging balance poses

# TIPS FOR FOOT NEUROPATHY

If you have numbness in your feet, you should:

- Wear comfortable, properly fitting shoes
- Avoid sandals, open toes or heeled shoes
- Inspect feet daily for injury
- Avoid walking barefoot or in socks alone
- Always check for foreign objects in shoes before putting them on
- Change shoes in the middle of the day
- Consider making an appointment for physical/occupational therapy or podiatry

# TIPS FOR HAND NEUROPATHY

If you have numbness in your fingers, you should:

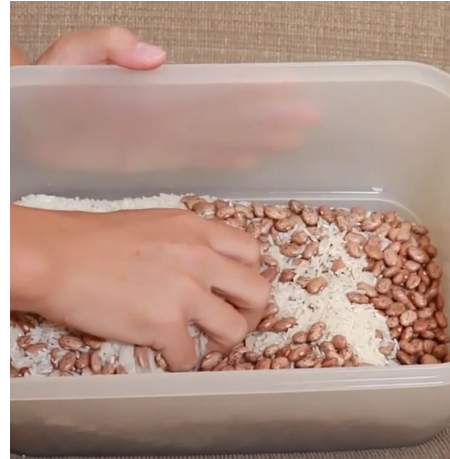
- Wear warm clothing in cold weather and protect hands from extreme cold
- Use care when washing dishes or taking a bath or shower do not let the water get too hot
- Use potholders when cooking
- Use gloves when washing dishes or gardening
- Inspect skin for cuts, abrasions and burns
- Consider making an appointment for physical or occupational therapy

# POP QUIZ

- What is your largest sensory organ?

# POTENTIAL MODALITIES

- Massage
- Vibrating plate/foam roller
- Desensitization
  - Particle Stimulation
    - Hands or feet in a container filled with dried rice, beans, marbles or coins
    - Rock mat
- Physical or occupational therapist trained in using Kinesiotape, nerve glides or cupping



# FINGER ROLLS

- Extend arms in front of you at shoulder height with palms facing away from you
- Starting with your little finger, curl your hand into a fist one finger at a time
- Rotate the fist to face you
- Then open up your fingers one at a time, again starting with your little finger
- Then rotate your palm back to the front
- Do 4 sets of finger rolls

# FINGER ROLL WITH FIST

- Extend your arms in front of you at shoulder height with palms facing ceiling
- Starting with your little finger, curl your hand into a fist one finger at a time and make a fist
- Squeeze the fist, then open up fingers, squeeze again
- Do 4 sets of finger rolls

# FINGER TAPS

- Extend your arms in front of you at shoulder height with palms facing ceiling
- Touch your little finger to your thumb, then ring finger, then middle finger, then index
- Then unwind starting with index finger straightening, then middle finger, then ring
- Do 4 sets of finger taps



# SEATED FOOT EXERCISES

- Draw ABCs with foot
- Foot pumps
  - Extend 1 leg and imagine you are pushing down on the gas pedal
  - Hold for 1-3 seconds at each end of the range of motion
- Ankle circles

# CALF RAISE

Stand with your feet hip distance apart, with a slight bend in your knees

While maintaining total body alignment, lift heels off the floor and raise as high as you can onto your tippy toes

Lower slowly and repeat

Lift for 3 counts, hold for 1-2 counts, lower for 4 counts

Progression:

Perform calf raise off a step for more range of motion



# STANDING SIDE LEG

1

Stand next to a chair in an upright position, with feet together

2

Maintain your balance by gently touching the back of a chair with your right hand.

3

Raise your left leg in an outward motion, as far as possible. Make sure the left foot continues to point forward.

4

Hold for 2 seconds and return slowly to the starting position.

5

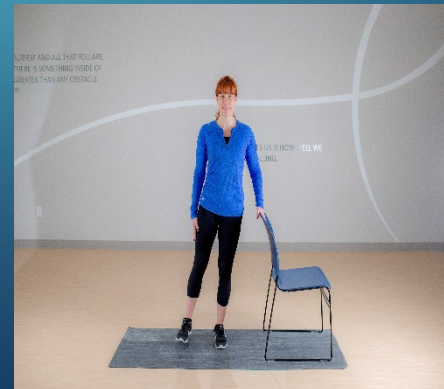
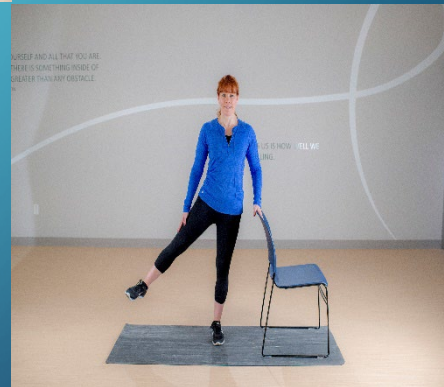
Make sure to keep your back straight as you raise your left leg. Your head, spine, and stationary leg should be aligned.

6

Keep your abdominal muscles engaged throughout the movement.

7

Repeat with the other leg.



# VIRTUAL RESOURCES

- Dana-Farber Zakim Center (DF patients only)
  - Exercise consultation via Zoom
    - [www.Dana-farber.org/exercise](http://www.Dana-farber.org/exercise) or 617 632 3322
- Live Zoom Classes & YouTube channel
  - <https://myzakim.dana-farber.org/>
    - Strength Training
    - Tai Chi/Qigong
    - Chair Yoga
      - Helpful to have a tennis ball

# RESOURCES

- Dana-Farber Zakim Center (DF patients - in person)
  - Acupuncture, Massage & Reiki
    - [www.dana-farber.org/zakim](http://www.dana-farber.org/zakim) or 617 632 3322
- Physical or Occupational Therapy, Podiatrist
- YouTube Videos
  - Kelly Reed - <https://www.youtube.com/watch?v=85Def5r1c7A>
  - Lebed Method - <https://www.youtube.com/watch?v=KK1Uf56mNC8>

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# QUESTIONS?

- Open discussion and tips from participants

# Thank you!