

# Falls Prevention and Parkinson's Disease

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# Overview

- What is a Fall
- Why are Falls a concern?
- What are the risk factors for Falls and ways to minimize them
- What are the risk factors for Falls specific to Parkinson's Disease and ways to minimize them
- Talking to your doctor about Falls

# What is a Fall?

- Falls seem like a commonly used term but are often misunderstood. Falls are different from “passing out” or “sitting down because I felt lightheaded”.
- The accepted medical definition of a fall has 3 components<sup>1</sup>:
  - that a fall is an unintentional or unexpected event,
  - it results in the person coming to rest on the ground or another lower level,
  - and that it is not the result of a major intrinsic event (such as a loss of consciousness) or overwhelming external force

# Why are Falls a Concern

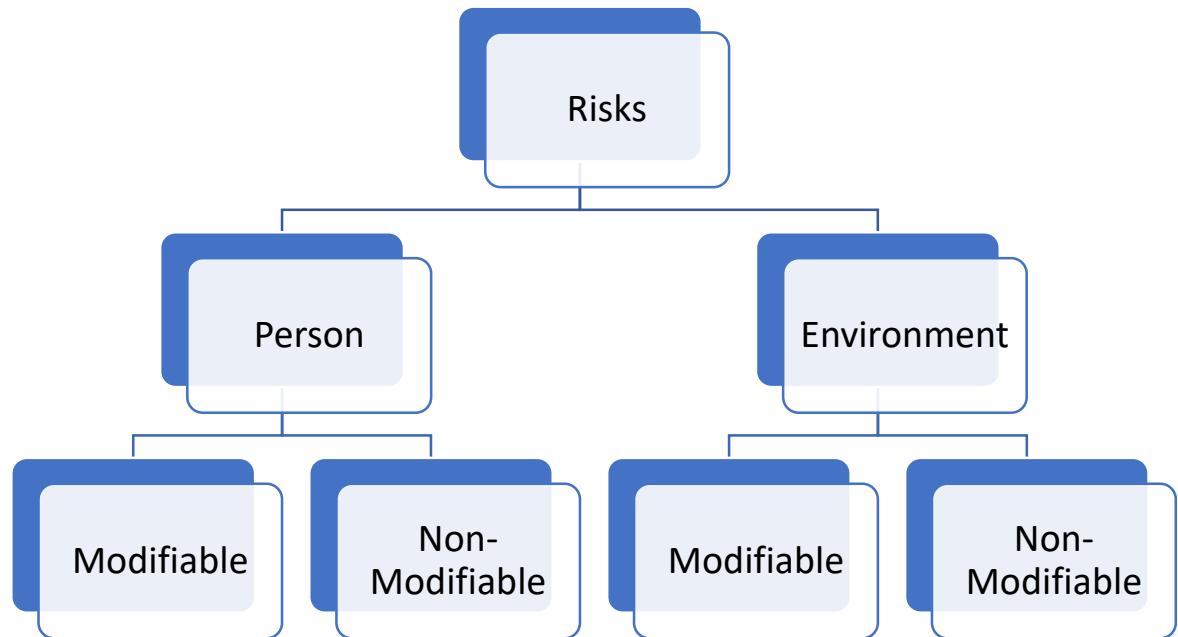
- They are very common:
  - Stats Canada reporting Falls are the most common cause of injury among older Canadians.
  - Every year, 1 in 3 Canadians over the age of 65 years will fall at least once.<sup>2</sup>
  - Falls are one of the most common causes of hospitalizations

# Why are Falls a Concern

- They have a major impact on health and quality of life
  - One third of seniors admitted to hospital with a fall are then discharged to a nursing home
  - Falls are a “life changing event” often leading to need for gait aides like canes or walkers and rehabilitation
  - Falls are a risk factor for fractures (Osteoporosis) such as hip or shoulder fractures which are a major life altering event
  - The “fear of falling” effects the person themselves and their caregivers often limiting their activity and therefore their quality of life

# Risk factors for Falls

- Risk Factors for Falls can be thought of as two categories.
  1. Risks based upon the person themselves
  2. Risks from the environment
    - Within both the personal and environmental risks there are ones that you can change and ones that we must work around.

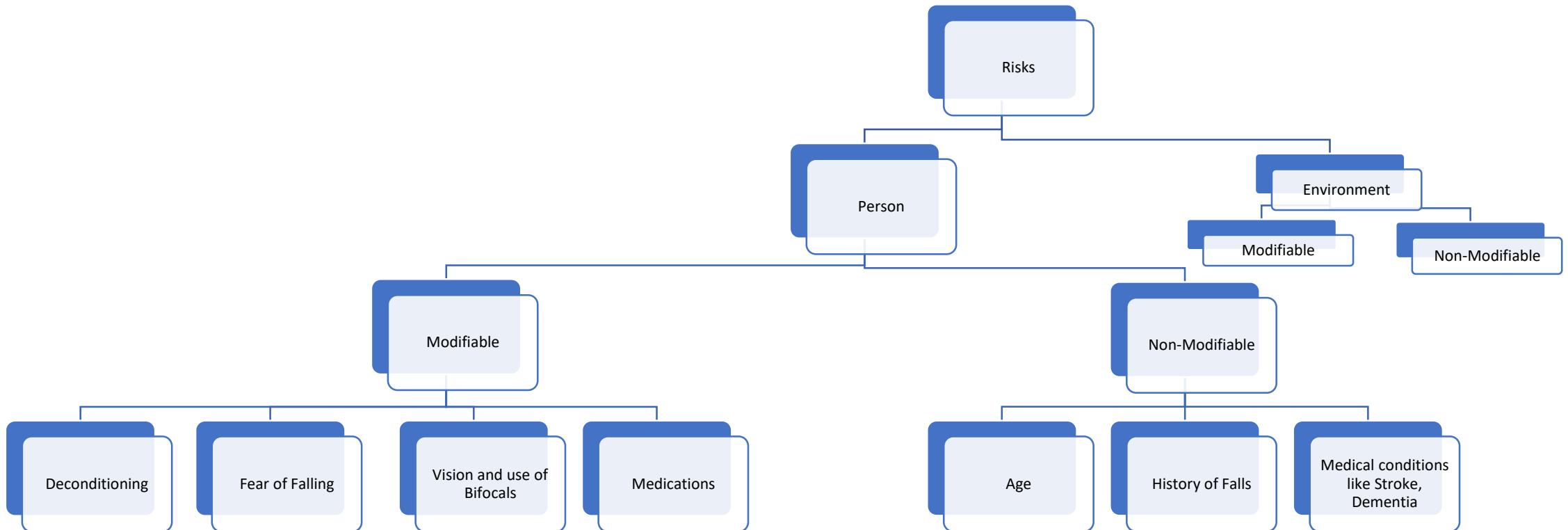


# Fall Risks associated with the Person

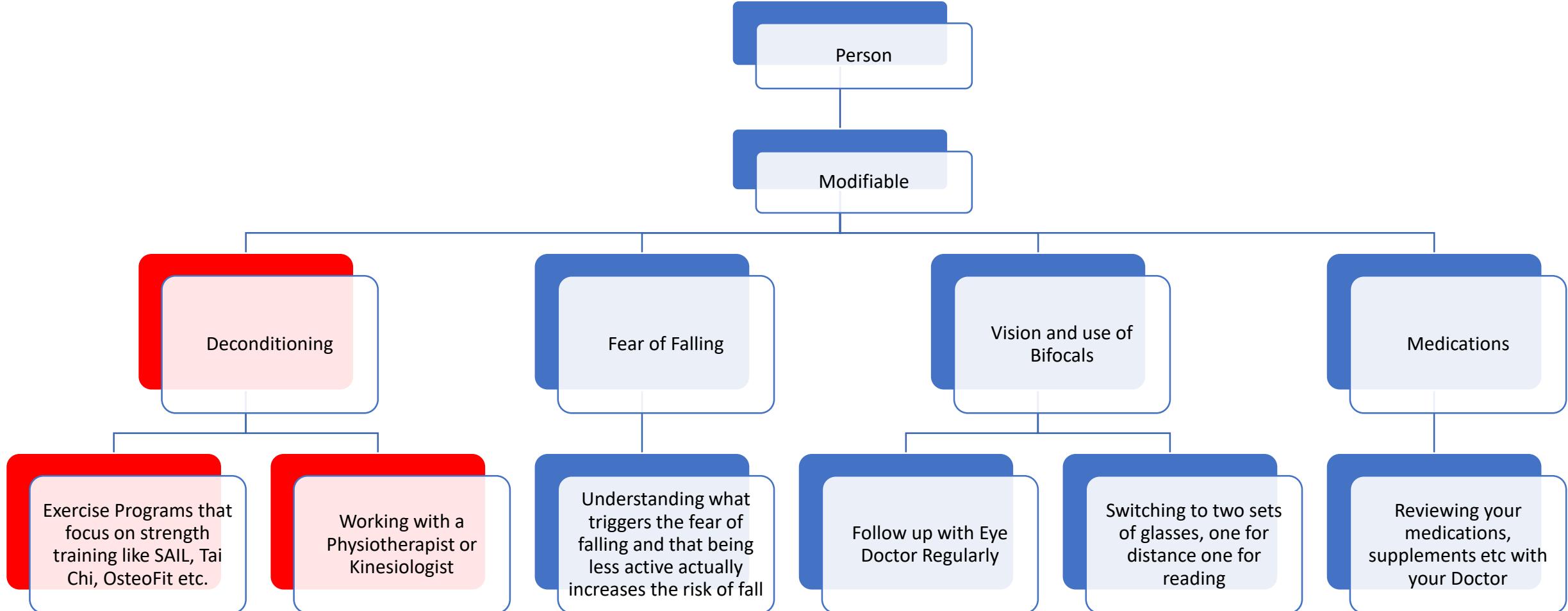
- History of Falls- the greatest risk factor for a fall is a history of previous fall
- Age greater than 65 years
- Deconditioning also called “muscle weakness” or “out of shape”
- Fear of Falling
- Vision changes that affect visual fields, use of bifocals or progressive lenses
- Medications that lower blood pressure or cause drowsiness
- Vestibular problems (inner ear) like Vertigo
- Medical conditions like Parkinson’s Disease, Stroke, Peripheral Neuropathy (Diabetes), Dementia

# Fall Risks associated with the Person

- Those are a lot of risks, so what can we do?
  - Consider which risk factors you can change and which you cannot

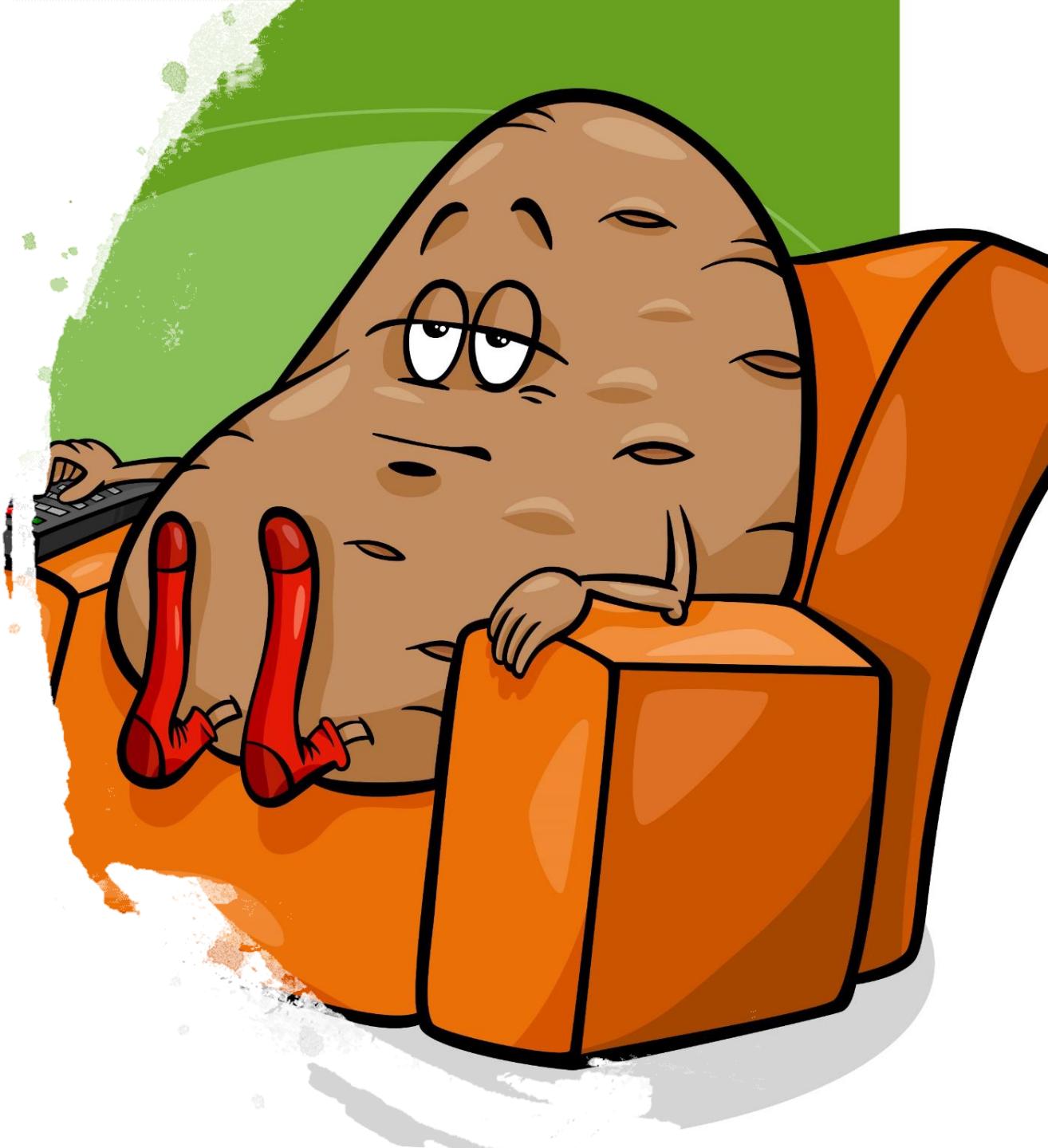


# Minimizing Falls Risks



# Deconditioning

- The medical term for Deconditioning is Sarcopenia and it is the number one cause of falls and thankfully the most treatable cause
- With age, we lose more muscle mass. This is compounded by being less active with time.
  - Medical illnesses, retirement or hobbies that are not physical can all lead to this



# Deconditioning

- The primary concern is a loss of hip strength, the same muscles you use to “launch” yourself out of a chair and the muscles of posture—your lower back and abdominal muscles.
- There are many great exercise programs that help prevent or treat this muscle weakness.
  - At home programs like the SAIL (Strategies and Actions for Independent Living) are well known to doctors and therapists across Canada and easily available with a quick web search
  - Organized programs like OsteoFit, Tai Chi and Steady Feet are also available with virtual classes online, community centres or local gyms.

\*Yoga and Aquafit are not beneficial for Falls Risks

# Deconditioning

- The major barrier to building back muscle strength is usually motivation
  - You can work with a trainer, Physiotherapist or Kinesiologist to help you create a plan for you and stick to it. Be sure to find someone who suites you as a good coach.
    - You don't need them to just put you through a workout, you need to be able to do the exercises on your own and get in the habit of it
    - You can reward yourself for doing your exercises
    - You can schedule your exercises on your calendar or plan with a friend or family member to do them together



# Deconditioning and Vitamin D Deficiency

- Vitamin D is an important building block for muscles just as it is for bones.
- Canadians are prone to deficiency because we don't get enough sunshine. Our location also means our sunshine isn't as efficient in producing Vitamin D from our skin
- Vitamin D is the only “medicine” that has been shown to independently reduce the risk of Falls
- The most common dosage of Vitamin D is 1000 units by mouth a day, but always ask your Doctor before starting any supplements to ensure it's right for you.

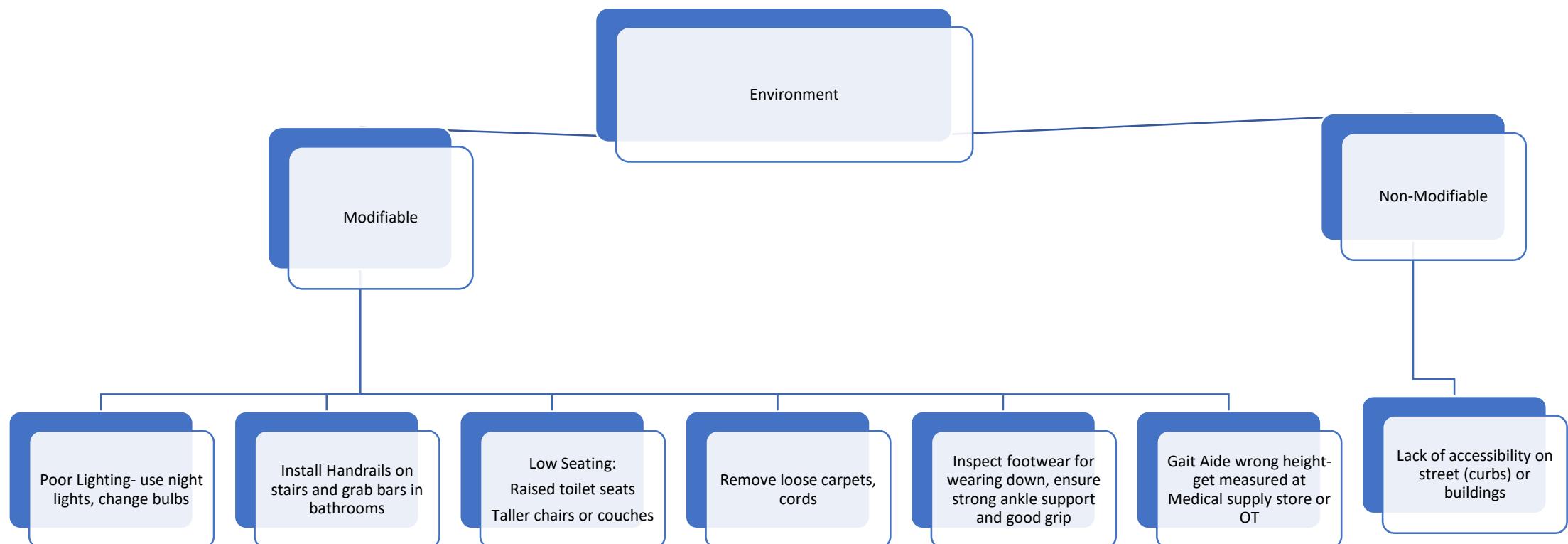
# Falls Risks associated with the Environment

- Poor lighting
- No handrails on steps
- No grab bars in bathrooms
- Low seated position in chairs or toilets etc
- Loose carpets, cords
- Poor footwear
- Gait aide that is the wrong size



# Falls risk associated with the Environment

- Often your home environment can be adapted but there are still struggles with public places
- It is a big task to review on your own. You can always ask for an Occupational Therapist Safety Assessment to review your environmental risks



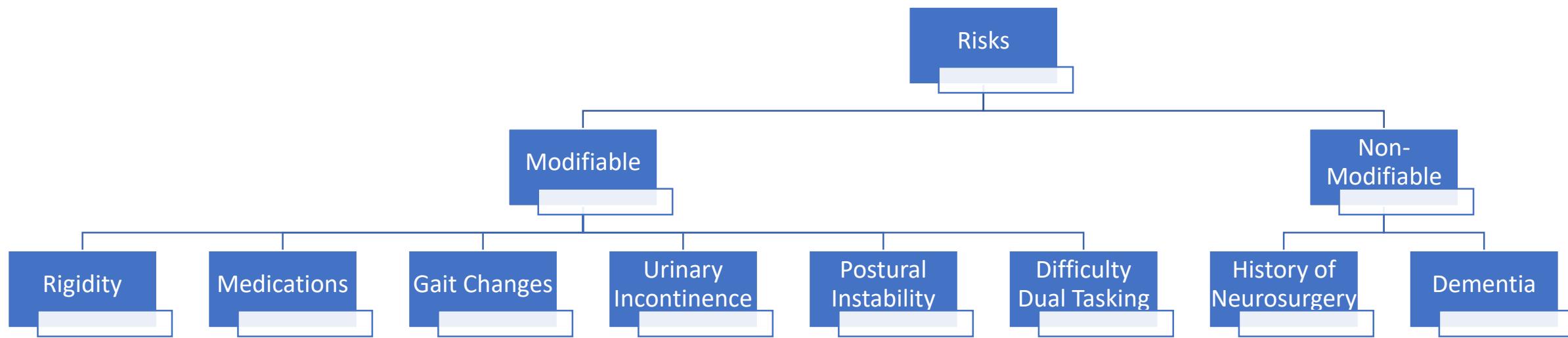
# Falls Risks from Parkinson's Disease

- Falls are very common in Parkinson's Disease with 60.5% of people with Parkinson's Disease reporting a fall. Recurrent falls occur in 39% of people with Parkinson's Disease.<sup>3</sup>
- The onset of falls is not necessarily tied to severity of disease. It has been shown that even 10 years before diagnosis of Parkinson's Disease that patients are at higher risk of falls and fractures.

# Falls Risks Specific to Parkinson's Disease

- Rigidity, especially truncal rigidity affecting posture and decreased arm swing
- Medications: side effect from dopamine agonists (pramipexol, ropinerol etc) and higher doses of levodopa, dyskinesias
- History of neurosurgery for PD treatment- ie Deep Brain Stimulation
- Gait changes from PD- shuffling, small steps, freezing, difficulty setting off (festination)
- Urinary incontinence
- Postural instability- blood pressure changes when moving from sit to stand
- Dementia
- Difficulty Dual Tasking

# Falls Risk Specific to Parkinson's Disease



# Minimizing Parkinson's Disease associated Falls Risks

- Rrigidity: Realize that movements will be slower and more cautious, focus on slower turns and maintaining good posture (exercises can help)
- Medications: work with your doctor to find the balance of medications for rigidity versus the dyskinesias that can occur. Also consider medication for postural blood pressure changes
- Urinary Incontinence: Timed voiding and continence pads
- Difficulty Dual Tasking: Stop walking when answering a question or doing another task

# Minimizing Parkinson's Disease associated Falls Risks

- Gait changes: Work on strengthening hips and posture to improve step height. For festination having markers on the ground.
  - From research data, the best intervention to prevent falls in PD is exercise with Tai Chi showing the greatest improvement in balance and reduced falls
  - Walking is also a great exercise to reduce Falls Risk. Studies have shown that walking in environments with more challenges (inclines, curbs, uneven side walks, puddles etc) whether in real life or virtual reality also significantly reduce risk of fall in PD.

# Osteoporosis

- When we discuss Falls, we should always discuss Osteoporosis as well.
- Osteoporosis is a higher risk of suffering a fracture. It is defined by either
  - a history of a fracture after a fall from standing height
  - a Bone Mineral Density result less than -2.5 standard deviations below normal (ie bone strength is less than the lower 2<sup>nd</sup> percentile)
- In BC the guidelines are for every person above the age of 65 years to have a screening Bone Mineral Density every 3 years. Sooner if you've suffered a fracture

# Osteoporosis

- Osteoporosis has a major effect on a person's health.
- A fracture can often be an indicator of frailty and poor prognosis
- Fractures require time to heal and correct rehabilitation or leave a person permanently disabled with need for cane, walker or wheel chair
- Fractures can lead to significant chronic pain

# Osteoporosis and Falls- the same disease

- The current approach to Falls and Fractures is merging as research shows that they are interconnected and may in fact be a continuum of the same disease called Osteosarcopenia.
- The loss of bone strength often mirror the loss of muscle strength
- Together these increase risk of falls and fracture
- Both are associated with low Vitamin D levels
- Both are treated with resistance exercises to improve strength of muscles and bones
- There are medications that can improve bone strength and reduce fracture risk

# When to talk to your Doctor

- Falls are common, can lead to major health crisis and long term debility.
- Any fall warrants a review by your doctor as falls are not a “normal part of aging”.

# When to talk to your Doctor

- Any person who has suffered a fall should have a work up for the cause, including a history, physical exam and laboratory tests if indicated. A screening Bone Density should also be done if one has not been done in the last 3 years.
- There are specialized Falls Prevention Clinics, such as the UBC/VCH Falls Prevention Clinic in Vancouver. Geriatricians across the province also offer specialized assessment and for those who do not have a local Geriatrician a virtual appointment can also be done for Falls Assessment
- Treatment and Prevention Plans will always include physical exercise prescriptions and may include changes to medications as indicated

# Summary

- Falls are common and a leading cause of hospitalization, admission to nursing home, need for gait aides and changes to quality of life
- All falls should be worked up as there are modifiable risk factors for falls
- Minimizing environmental risks can happen with a review of your home and with an Occupational Therapist as well
- Parkinson's Disease has risk factors from the disease itself and side effects from medications that can increase the risk of falls
- Osteoporosis should always be screened for after a fall
- The foundation of treatment is exercise, specifically resistance exercises such as Tai Chi. Vitamin D is also beneficial in preventing falls.
- If you've had a fall, you should discuss with your Family Doctor who can begin your work up and if indicated refer you on to a specialized Falls Prevention Clinic or a Geriatrician

# References

1. Allen NE et al. Recurrent Falls in Parkinson's Disease: A Systematic Review. *Parkinson's Disease*. 2013; 2013:906274 doi: 10.1155/2013/906274
2. <https://www150.statcan.gc.ca/n1/pub/82-624-x/2014001/article/14010-eng.htm>
3. Fasano A et al. Falls in Parkinson's Disease: A complex and Evolving Picture. *Movement Disorders*. Vol 32 No. 11