

Muscles and Mobility Matter – Clinical Practice



Richelle Street – Accredited Exercise Physiologist



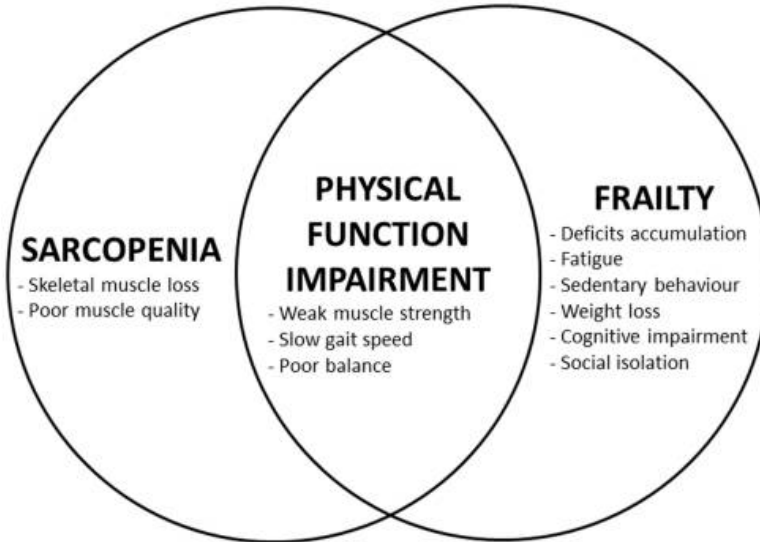
1

- ⚡ Exercise principles
- ⚡ Prescription
- ⚡ Cases
- ⚡ Tricks of the trade

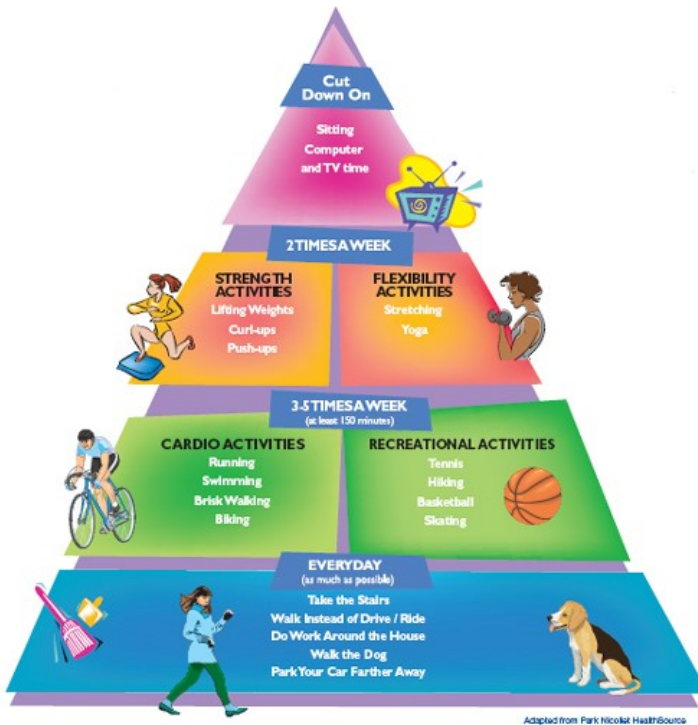


2

Sarcopenia and frailty are characterized by a unique core condition: **the physical function impairment** - usually measured by objective tests of gait speed and muscle strength



3



4

Key Areas

- Ⓛ **Strength, Hypertrophy and Bone Density:** Resistance training, Weight bearing exercise
- Ⓛ **Aerobic Capacity and Muscular Endurance:** Walking, Cycling, Swimming, Team Sports
- Ⓛ **Balance and Postural Training:** Tai Chi and Pilates
- Ⓛ **Flexibility and Range of Motion:** Stretching and Pilates

5

Exercise Prescription

- Ⓛ Frequency (F)
- Ⓛ Intensity (I)
- Ⓛ Time (T)
- Ⓛ Mode/type (T)
- Ⓛ Environment
- Ⓛ Technique
- Ⓛ Recovery
- Ⓛ Pain



6

Exercise Prescription for Osteoporosis and Sarcopenia

Aim for 4-5 times per week 40mins / day – variety

- ⑥ Moderate weight bearing – back and leg exercises
- ⑥ Low to moderate impact activities (ie line dancing and fast walking)
- ⑥ Stair climbing and descending
- ⑥ Tai Chi (Balance)
- ⑥ Balance exercises – heel to toe walking, single leg stands, sideways stepping)



7

Program Basics and Principles

- ⑥ Include upper, lower limb and trunk exercises
- ⑥ Maintain regular program
- ⑥ Exercise 2-3 times/week for: 15-60 min (aerobic) and/or single set of 8-10 resistance exercises
- ⑥ Exercise at 70-80% functional capacity or maximum strength
- ⑥ Perform weight bearing activities and strength training for aerobic conditioning, muscle strength and bone mass. Include exercises for balance, flexibility and coordination.
- ⑥ Site specific gains
- ⑥ Dynamic and varied
- ⑥ Load (bone strain) must exceed normal for an increase to result
- ⑥ **CAUTION:** Excessive loading can result in fatigue damage and failure



8

Design Considerations

- ⚙ Warm Up > Strength and Aerobic conditioning > Cool Down stretches?
- ⚙ Relatable to goals?
- ⚙ Can/cannot do at home?
- ⚙ Increase relevance to functional independence and activities of daily living?
- ⚙ **ALWAYS** have a strength component
- ⚙ Dual task training?



9

Considerations to avoid adverse events

Client History: Conditions including diabetic foot, diabetic retinopathy, diabetic nephropathy, diabetic autonomic neuropathy, cardiovascular risk factors, musculoskeletal disorders, hypoglycaemia, hyperglycaemia, dehydration and interactions between medication and exercise

Client Fatigue Levels

Appropriate equipment nearby to support and trip hazards removed

Monitoring vital signs: i.e. Blood pressure, O2 saturation, blood glucose when dealing with specific health conditions

Considering individuality on group setting: When is best time of day to exercise

Cognition levels information processing capacity



10

Home/Group Exercise Program

- Ⓛ Safe
- Ⓛ Targets all fitness components
- Ⓛ Minimal equipment
- Ⓛ Completed anywhere
- Ⓛ Low impact
- Ⓛ Conditioning Phase
- Ⓛ 2-5 days/ week
- Ⓛ Low-moderate intensity
- Ⓛ Theraband
- Ⓛ Supervised
- Ⓛ Motivation
- Ⓛ Beware of early warning signs



11

Case Study

Mandatory case information	
Description of work environment	Non for profit Aged Care organization – Allied Health community service referral from MAC CHSP
Mandatory Client information	
Age	71
Gender	Female
Referral/purpose	e.g. Falls prevention and osteoporosis management -referral through My Aged Care.
Health History	<p>Mary fractured her back (L2) on 10/7/2019 while out with her husband in their boat. She was sitting on the floor in the boat and rough water bounced her up & down causing the fracture(s). This has affected her mobility and she can only walk a very short distance before needing to lie down. She has a borrowed walker to use when needed.</p> <p>Other health issues include bronchiectasis, osteoporosis, osteoarthritis, reflux, scoliosis and rosacea. Note 2 falls also within past 12 months – both occurred in the home and one resulted in a fractured wrist 12 months ago. Rehabilitated conservatively with cast support. Mary currently weighs 45 kgs. her weight is monitored by her GP. Mary manages her conditions with support from her lung specialist and GP.</p>
Physical activity	Lawn Bowls twice per week.
Goals	Improve stability on feet. Minimize falls to zero in next 12 months. Improve leg strength and confidence on my feet. Keep living independently at home with my husband.



12

EXAMPLE OF A PROGRAM

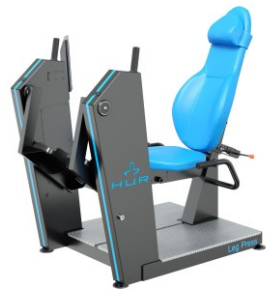
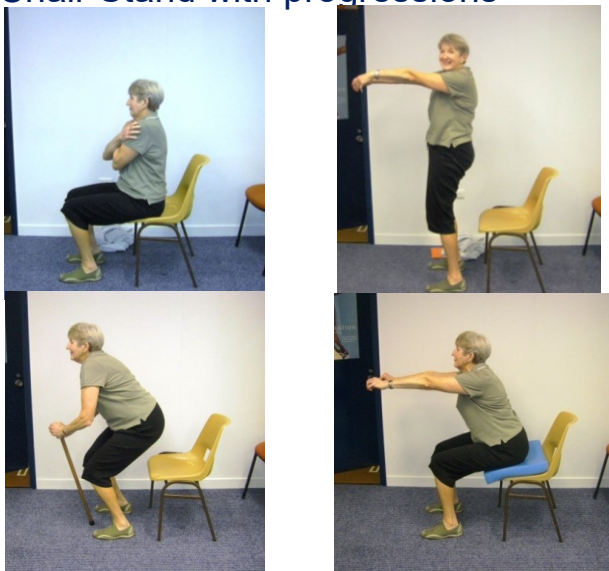
- Walking (5 minutes)
- Chair Stands (2x10)
- Seated Knee Extensions (2x10)
- Standing Side Leg raises (2x10)
- Theraband Row (2x10)
- Theraband Chest Press (2x10)
- Step Ups (2x10)
- Heel Raise (2x10)
- Marching (2x30secs)
- Single leg or Tandem Stance (2x30secs)
- Seated Trunk Twists (2x30secs)
- Repeated TUG (2x1minute)
- Hamstring Stretch (2x30secs)
- Walking (sideways/tandem/backwards) (5minutes)

Gym session:
Substitute body movements for machine work where possible



Home/Group Exercise examples

Chair Stand with progressions



Calf Raises



Leg Extension



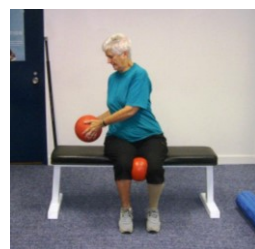
15

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Press



Biceps Curl

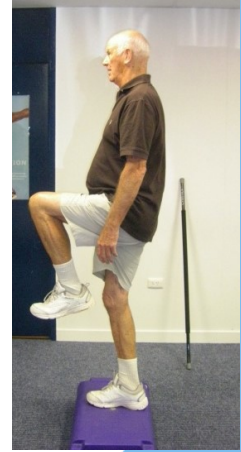


Trunk Twist


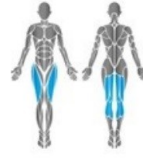


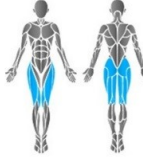


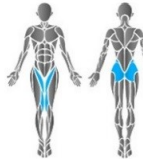




16

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Dynamic Step-Up



17

Equipment	Muscle groups	Alternatives
 Leg Extension/Curl		 <p>Sit stable on a chair with your back straight. If necessary, support yourself with your hands. Place potential weight or exercise band on your ankle. Extend your leg horizontal and return controlled into the starting position. Keep your other leg on the floor.</p> <p>Train both sides.</p>
 Leg Press		 <p>Sit to stand Sit on a chair with your back straight. Lean forward and stand up. Sit back down in a controlled way.</p>
 Adduction/Abduction		 <p>Stand behind your chair (or table). Slowly lift up your leg to the side, as high as you feel comfortable, then return back to the ground. Remember to stand straight, do not lean to the side, try to activate your abdominals and buttocks.</p>
		 <p>Stand behind your chair (or table). Slowly lift up your heel, as high as you feel comfortable, then return back to the ground.</p> <p>Do the movement slowly.</p>
		 <p>Stand with your feet hip-width apart, you can take support from a chair or a table. Squat down by shifting your hips back and down and keep your back in an upright, straight position. Make sure your knees and toes point straight ahead.</p>
		 <p>Sit stable on a chair with your back straight, feet hip width apart on the floor. Place a wide pillow between your legs. Squeeze the pillow for 10 seconds, then relax. Remember to breathe normally while activating your muscles.</p>



18

Tricks of the trade

- ⦿ Check in at the start of each session
- ⦿ Consider line of gravity in plane of movement when exercising
- ⦿ Dumbbells, therabands, HUR (pneumatic pressure), pin weighted.
- ⦿ Confidence is built with progressions and lost with regressions - Always under-prescribe and progress to build clients confidence and trust.
- ⦿ Can you change what the client is standing on? Can you change what the client is holding during the exercise.
- ⦿ Eyes open or closed....significant effect on balance

STAY ACTIVE, STAY STRONG AND STAY INDEPENDENT

