Assessment (Evidence-based instrument):
Perform a submaximal CV test, preferably in the AM; be aware of individual patient differences: meds, needs, impairments, and choose a test that is practical and relevant to the patient.

- 6-Minute Walk Test\(^1\) for early stage
- Astrand-Rhyming 6-Minute Cycle Test\(^2\) for early and early-middle stage
- Upper body ergometer submax test for those with balance and significant lower extremity impairment for middle-late stage

Intervention

Patient Education:

Endurance training can help reverse the effects of deconditioning caused from inactivity in the early phase.\(^7\)
Endurance training can increase strength of LE & improve perceived well-being\(^3\)
Encourage compliance with exercise program.
Teach patient how to listen to their body (overheating, fatigue, etc.)
Teach patient how to use Rate of Perceived Exertion scale to monitor level of intensity.
Educate family/caregiver on progression of disease and what to expect.

Exercise Protocol: A warm up should be 5 minutes around 30% HRmax

<table>
<thead>
<tr>
<th>Stage</th>
<th>Frequency</th>
<th>Intensity</th>
<th>Mode of Exercise</th>
<th>Time/Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>3x/wk</td>
<td>60-75% HRmax</td>
<td>Upright cycle(^4)</td>
<td>25-30 min/session</td>
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<tr>
<td></td>
<td></td>
<td>RPE 12-16 (Light-Very Hard)</td>
<td>Swimming (cold)</td>
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<tr>
<td></td>
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<td></td>
<td>Aquatic Aerobics (cold)</td>
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<td></td>
<td></td>
<td></td>
<td>Treadmill Training(^5)</td>
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<td>Walking Program(^6)</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>3x/wk or more frequent lighter intensity sessions</td>
<td>RPE 10-14 (Very light-Somewhat Hard)</td>
<td>Recumbent bike Aquatic Therapy (cold) Upper Body Ergometer</td>
<td>30 min session or 2 x 15 min session**</td>
</tr>
<tr>
<td>Late</td>
<td>Arm/Leg ergometry for advanced stage (nonambulatory)(^6)</td>
<td>can be used if patient is able to withstand exercise. However, at this stage, the patient is likely to be dependent on care giver and unable to perform cardiovascular exercises. Caregiver should be educated on how to monitor the patient’s response to activity. Caregiver should be able to monitor patient’s core body temperature, heart rate, and blood pressure.</td>
<td></td>
<td>**If fatigue is a limiting factor to patient performance, break up the 30 minute sessions into more frequent, lighter intensity sessions throughout that day or throughout the week to allow recovery time. Pay attention to fatigue levels the same day as well as the next day to determine if previous treatment was too vigorous.</td>
</tr>
</tbody>
</table>
References

1 Enright, P.L. The Six-Minute Walk Test Respiratory Care. 2003, August; 48 (8).


*References 1 – 4 were found by previous students, Janice Dinglasan and Rachel Madigan.