# APPENDIX 2: Motomed Letto 2 Cycling Protocol

Cycling will be performed for **45 minutes per session** using the Motomed Letto 2 cycle.

## How to Detect Active Cycling (all criteria are required to occur simultaneously):
1. Active cycling time will be displayed on screen
2. While patient is actively cycling, there is a moving bike icon on the screen
3. While patient is actively cycling, actual cycling speed displayed on screen is greater than the default setting of 10 or 25 rpm

*Training will occur in 3 Phases according to the 3 Steps below:*

## I: ASSESSMENT PHASE (*10 minutes*):
(1) Using the following **Initial Settings**:
   Spasm control: off; Default speed: 10 rpm
(2) Initial gear setting: 0 (this is default gear)
(3) Vigorously verbally encourage the patient to cycle – the goal is to maximize the duration that the patient spends actively cycling.
(4) At the end of 10 minute interval, determine the ***duration of active cycling***
   a) if ***>5 minutes,*** move to ***Active Interval 1 [Step IIA (2)]***.
   b) if ***≤5 minutes***, move to ***Assisted Interval 1 [Step IIB (2)]***.

## IIA: ACTIVE INTERVALS (*3 intervals of 10 minutes* each; *30 minutes total*):
(1) Vigorously verbally encourage the patient to actively cycle during all intervals.
(2) **Active Interval 1** (*10 minutes*): Select the gear
   a) Start at Gear 1 If today is the first day of the intervention    **OR**
   b) Start at Gear 1 If the highest gear achieved for >5 minutes in one interval on the prior day's intervention was **≤2 OR**
   c) *Start at one gear lower than the highest gear achieved for >5 minutes in one interval* on the prior day's intervention when the **highest gear achieved was ≥3** (i.e. Yesterday patient cycled at gear 5 for 6 minutes, today patient starts at gear 4)
(3) At the end of 10 minute interval, determine *duration of active cycling* during this interval using this calculation:

| Cumulative Active Cycling Minutes at **MINUS** | Cumulative Active Cycling Minutes |
|---|---|
| end of *current* interval | at end of *prior* interval |

(4) If the duration of active cycling is:
   a) ***>5 minutes***, move to ***Active Interval 2*** [***Step IIA (5)***].
   b) ***≤5 minutes,*** move to ***Assisted Interval 2-A*** [***Step IIB (3)***].
(5) **Active Interval 2** (*10 minutes*): *Increase the Gear by 1* for and repeat step (3). If the duration of active cycling is:
   a) ***>5 minutes***, move to ***Active Interval 3-A***  [***Step IIA (6)***],
   b) ***≤5 minutes,*** move *to* ***Assisted Interval 3-A*** [***Step IIB (5)***]
(6) **Active Interval 3A** (*10 minutes*): Increase the Gear by 1 and repeat step (3).
(7) **Active Interval 3B** *(10 minutes)*: Select the gear
   a) Start at Gear 1 If today is the first day of the intervention    **OR**
   b) Start at Gear 1 If the highest gear achieved for >5 minutes in one interval on the prior day's intervention was **≤2 OR**
   c) *Start at one gear lower than the highest gear achieved for >5 minutes in one interval* on the prior day's intervention when the **highest gear achieved was ≥3** (i.e. Yesterday patient cycled at gear 5 for 6 minutes, today patient starts at gear 4)

## IIB: ASSISTED INTERVALS (*3 intervals of 10 minutes each; 30 minutes total*):
(1) Vigorously verbally encourage the patient to actively cycle during all intervals
(2) **Assisted Interval 1** (*10 minutes*):
   a) Increase speed to 25 RPM with Gear set at 0
   b) Do not assess for active cycling
   c) Move to ***Assisted Interval 2-B [Step IIB (5)]***
(3) **Assisted Interval 2-A** *(10 minutes):*
   a) Keep speed at 10 RPM
   b) Decrease gear by 1.
(4) Determine duration of active cycling [as defined in ***Step IIA (3)*** above]. If duration of active cycling is:
   i. **>5 minutes**, move to **Active Interval 3-A** [***Step IIA (6)***]

     ii. **<u><5 minutes</u>**, move to **Assisted Interval 3 A** [*Step IIB (6)*]

(5) **<u>Assisted Interval 2-B</u>** (*10 minutes*):
   a) Decrease speed to 10 RPM
   b) Keep gear at 0.
   c) Determine duration of active cycling [as defined in **Step IIA (3)** above]. If duration of active cycling is:
     i. **>5  minutes**, move to **Active Interval 3-B** [*Step IIA (7)*]
     ii. **<u><5 minutes</u>**, move to **Assisted Interval 3B** [*Step IIB (7)*]
(6) **<u>Assisted Interval 3A</u>** (*10 minutes*):
   a) Decrease Gear by 1
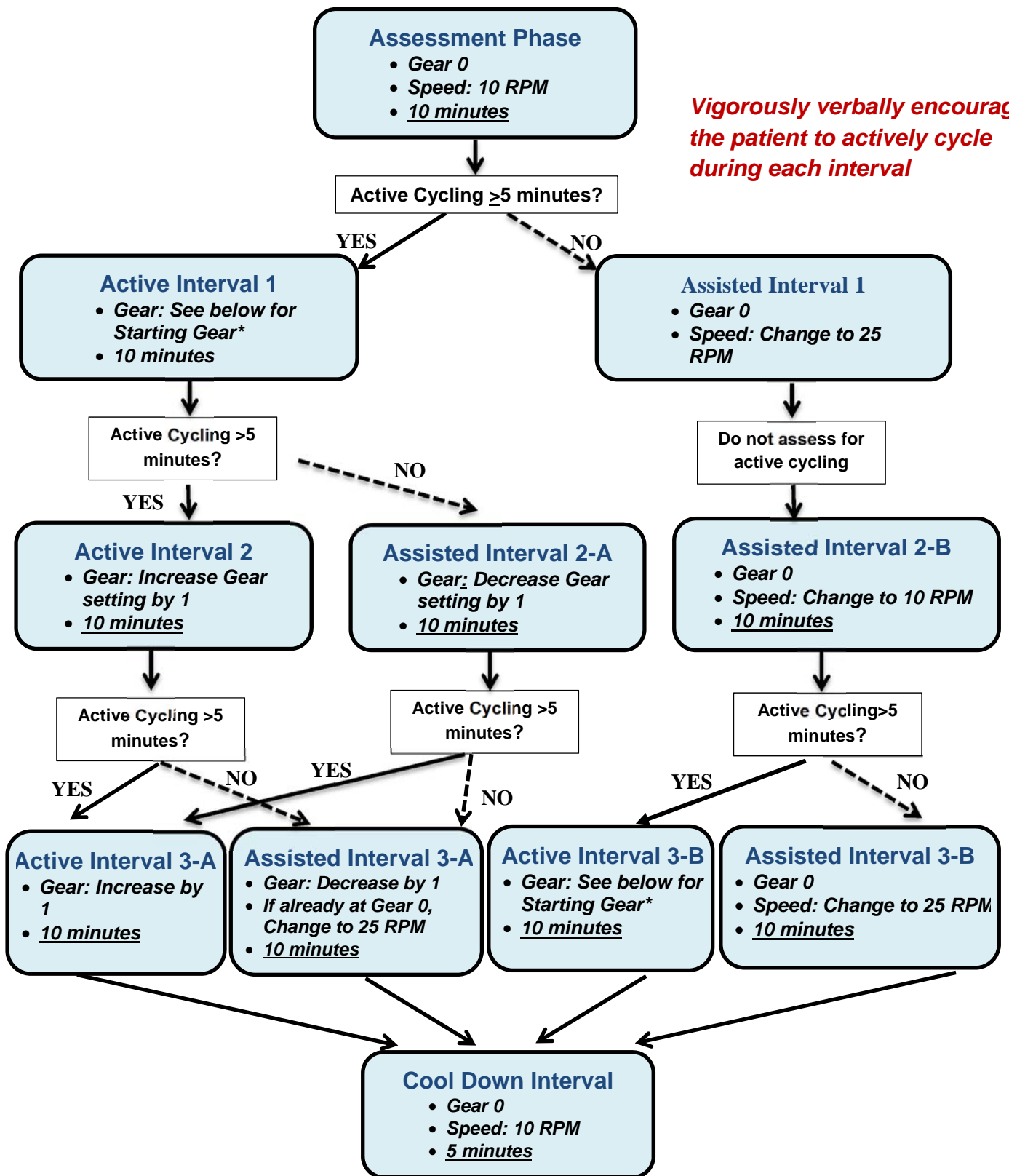   b) If already at Gear 0, then increase speed to 25 RPM
(7) **<u>Assisted Interval 3B</u>** *(10 minutes)*:
   a) **Increase speed to 25 RPM with Gear set at 0.**

**<u>III: COOL DOWN Phase</u>** (*5 minutes*):
 (1) Revert to Initial Settings (spasm control off; 10 RPM, gear set at 0).
 (2) Encourage slow-paced active cycling.

**Assessment Phase**
- *Gear 0*
- *Speed: 10 RPM*
- *10 minutes*

*Vigorously verbally encourage the patient to actively cycle during each interval*

**Active Cycling ≥5 minutes?**

YES → **Active Interval 1**
- *Gear: See below for Starting Gear\**
- *10 minutes*

NO → **Assisted Interval 1**
- *Gear 0*
- *Speed: Change to 25 RPM*

**Active Cycling >5 minutes?**

Do not assess for active cycling

YES → **Active Interval 2**
- *Gear: Increase Gear setting by 1*
- *10 minutes*

NO → **Assisted Interval 2-A**
- *Gear: Decrease Gear setting by 1*
- *10 minutes*

**Assisted Interval 2-B**
- *Gear 0*
- *Speed: Change to 10 RPM*
- *10 minutes*

**Active Cycling >5 minutes?**

**Active Cycling >5 minutes?**

**Active Cycling>5 minutes?**

**Active Interval 3-A**
- *Gear: Increase by 1*
- *10 minutes*

**Assisted Interval 3-A**
- *Gear: Decrease by 1*
- *If already at Gear 0, Change to 25 RPM*
- *10 minutes*

**Active Interval 3-B**
- *Gear: See below for Starting Gear\**
- *10 minutes*

**Assisted Interval 3-B**
- *Gear 0*
- *Speed: Change to 25 RPM*
- *10 minutes*

YES / NO / YES / NO / YES / NO

**Cool Down Interval**
- *Gear 0*
- *Speed: 10 RPM*
- *5 minutes*

\*Starting Gear:
If today is the first day of the intervention, use Gear 1; Otherwise:

| Highest gear achieved >5 min. during a completed 10 min. active interval on prior day | Starting gear |
| --- | --- |
| | |