

**Electronic Supplement 1:** Graphical depiction of intervention and control groups, and outcomes assessments.

| Time line          | Cycling + Routine physical therapy interventions  | Routine physical therapy interventions (control)  |
|--------------------|---|---|
| Randomization      |   |   |
| Baseline           |    |    |
| ICU                |     |    |
| ICU Awakening      |     |     |
| ICU Discharge      |     |     |
| Post-ICU           |    |    |
| Hospital Discharge |   |   |

**Activity**

**Description**



**Baseline measures:** APACHE II severity of illness score, Charlson comorbidity index, Functional comorbidity index, Functional Status Score for ICU, Clinical frailty scale, Katz Activities of Daily Living scale



**In-bed cycling,** 30 minute individual session led by ICU PT, 5 days per week (excluding weekends and statutory holidays). Offered if patient has no temporary exemptions precluding cycling. Cycling started with a warm up of 1 minute (passive, 5 revolutions per minute), 29 minutes of cycling, and then 30 seconds of cool down. We fixed the resistance at 0.6 Nm. If the patient started to cycle actively, we allowed them to continue at a self-selected cadence. Resistance was constant throughout. In-bed cycling occurred for the duration of the ICU stay, 28 days, or when the patient could march on the spot for 2 consecutive days, whichever occurred first. Each center’s ICU PTs received a 1-day training session on in-bed cycling and the research protocol. If the center had no experience cycling, we offered an additional 1-day introductory cycling training session. We provided ICU PTs with cycle equipment instruction manuals and the research protocol electronically and in hard copy.



**Routine ICU physical therapy interventions,** led by ICU PT per current institutional practice. Interventions include, but not limited to airway clearance techniques, activities to maintain or improve limb range of motion and strength, mobility exercises (in- and out- of bed), and ambulation. Offered for the duration of the patient’s ICU stay.

| Activity | Description  |
|----------|--|
| d        | <b>Physical strength and function measures:</b> Physical function ICU Test (scored), Medical Research Council Sum Score, 30 second sit to stand test   |
| e        | <b>Intensive Care Psychological Assessment Tool</b> (only occurred if patient completed ICU Awakening Assessment)  |
| f        | <b>Physical strength and function measures:</b> All items in (d), plus 2 minute walk test and quadriceps strength measured by hand-held dynamometry  |
| g        | <b>Additional measures:</b> Patient-reported functional scale for ICU, Katz Activities of Daily Living, EQ-5D quality of life, Clinical Frailty Score (ICU discharge only)   |
| h        | <b>Routine ward physical therapy interventions</b> , led by PT per current institutional practice. Interventions include, but not limited to airway clearance techniques, activities to maintain or improve limb range of motion and strength, mobility exercises (in- and out- of bed), and ambulation. |
| i        | <b>Blinded Physical strength and function measures:</b> All items in (f), conducted by assessors blinded to treatment allocation   |

**Legend:** This is a graphical representation and description of the Cycling and Routine groups. Squares represent fixed activities (e.g., baseline measures, in-bed cycling, outcome measures), and circles represent flexible (i.e., not protocolized) activities. We briefly describe each component, its content, and who delivers the intervention or control.