

**Supplemental Table 1. Detailed participant spinal cord injury characteristics.**

| <b>Participant (#)</b> | <b>Group</b> | <b>Level of injury</b> | <b>Neurologically complete/incomplete</b> | <b>Traumatic</b> | <b>Years post injury</b> |
|------------------------|--------------|------------------------|---|------------------|--------------------------|
| 1                      | CON          | T6                     | Yes                                       | No               | 14                       |
| 2                      | CON          | C5/6                   | No  | Yes              | 27                       |
| 3                      | CON          | C5/6                   | Yes                                       | Yes              | 31                       |
| 4                      | CON          | C5/6                   | Yes                                       | Yes              | 30                       |
| 5                      | CON          | T12/L1                 | No  | Yes              | 32                       |
| 6                      | CON          | T8-T12                 | No  | Yes              | 4                        |
| 7                      | CON          | C4                     | Yes                                       | Yes              | 10                       |
| 8                      | CON          | T5                     | Yes                                       | Yes              | 28                       |
| 9                      | CON          | L1                     | No  | Yes              | 11                       |
| 10                     | CON          | C4/5                   | Yes                                       | Yes              | 13                       |
| 11                     | CON          | Cauda Equinae          | No  | No               | 16                       |
| 12                     | CON          | Spina Bifida           | No  | No               | 29                       |
| 13                     | CON          | C6/7                   | Yes                                       | Yes              | 5                        |
| 14                     | CON          | L1/L2                  | No  | Yes              | 4                        |
| 15                     | PA           | T4                     | Yes                                       | Yes              | 3                        |
| 16                     | PA           | T5                     | Yes                                       | Yes              | 32                       |
| 17                     | PA           | T1                     | Yes                                       | No               | 24                       |
| 18                     | PA           | C4/5                   | No  | No               | 5                        |
| 19                     | PA           | C6                     | No  | Yes              | 33                       |
| 20                     | PA           | C6/7                   | Yes                                       | Yes              | 15                       |
| 21                     | PA           | C4/5                   | Yes                                       | Yes              | 7                        |
| 22                     | PA           | Spina Bifida           | No  | No               | 9                        |
| 23                     | PA           | L1/L3                  | No  | Yes              | 2                        |
| 24                     | PA           | T6/7                   | Yes                                       | Yes              | 4                        |
| 25                     | PA           | T9                     | No  | Yes              | 6                        |
| 26                     | PA           | T3                     | Yes                                       | Yes              | 45                       |
| 27                     | PA           | T10/11                 | Yes                                       | Yes              | 20                       |
| 28                     | PA           | C5/6                   | No  | Yes              | 1                        |

Injury characteristics are provided for each participant in the control (CON) and physical activity (PA) groups. “TX”: the Xth thoracic level; “CX”: the Xth cervical level; “LX”: the Xth lumbar level. “Neurologically complete” refers to injuries that result in no motor or sensory function below level of injury, classified as AIS (American Spinal Injury Association Impairment Scale) A, according to the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI).

**Supplemental Table 2. Peak cardiorespiratory performance during graded exercise testing at baseline and following the physical activity intervention.**

|  | Group | Baseline    | Post-intervention | group | <i>p value</i> |                   |                  |
|--|-------|-------------|-------------------|-------|----------------|-------------------|------------------|
|  |       |             |                   |       | <i>time</i>    | <i>gr. × time</i> | <i>Cohen's d</i> |
| VO <sub>2peak</sub> (L/min)                    | PA    | 1.16 (0.38) | 1.30 (0.43)**     | 0.40  | 0.23           | <b>0.0011</b>     | <b>1.09</b>      |
|  | CON   | 1.13 (0.46) | 1.04 (0.40)       |       |                |                   |                  |
| VO <sub>2peak</sub> (ml/kg/min)                | PA    | 15.9 (4.2)  | 17.8 (4.9)***     | 0.24  | 0.17           | <b>&lt;0.001</b>  | <b>1.54</b>      |
|  | CON   | 15.0 (5.7)  | 13.9 (5.5)        |       |                |                   |                  |
| PO <sub>peak</sub> (W)                         | PA    | 82 (27)     | 87 (30)*          | 0.19  | 0.75           | <b>&lt;0.001</b>  | <b>0.90</b>      |
|  | CON   | 70 (37)     | 65 (34)           |       |                |                   |                  |
| HR <sub>peak</sub> (bpm)                       | PA    | 143 (13)    | 143 (21)          | 0.070 | 0.45           | 0.43              | -                |
|  | CON   | 129 (23)    | 123 (27)          |       |                |                   |                  |
| O <sub>2</sub> pulse <sub>peak</sub> (ml/beat) | PA    | 8.2 (3.0)   | 9.9 (2.9)**       | 0.85  | <b>0.018</b>   | <b>0.0026</b>     | <b>0.93</b>      |
|  | CON   | 8.9 (2.7)   | 8.7 (2.6)         |       |                |                   |                  |
| RPE <sub>peak</sub>                            | PA    | 18.5 (1.9)  | 17.5 (2.2)        | 0.76  | 0.060          | 0.94              | -                |
|  | CON   | 18.3 (1.6)  | 17.0 (2.7)        |       |                |                   |                  |
| V <sub>Epeak</sub> (L/min)                     | PA    | 50.8 (15.3) | 60.3 (24.6)#      | 0.40  | 0.60           | <b>0.0040</b>     | <b>0.72</b>      |
|  | CON   | 52.3 (23.4) | 45.5 (18.2)       |       |                |                   |                  |
| V <sub>Tpeak</sub> (L)                         | PA    | 1.42 (0.48) | 1.55 (0.49)       | 0.34  | 0.29           | 0.12              | -                |
|  | CON   | 1.30 (0.63) | 1.27 (0.53)       |       |                |                   |                  |
| f <sub>R peak</sub> (breaths/min)              | PA    | 36 (8)      | 41 (8)#           | 0.81  | 0.57           | <b>0.0043</b>     | <b>0.66</b>      |
|  | CON   | 41 (12)     | 38 (13)           |       |                |                   |                  |
| RER <sub>peak</sub>                            | PA    | 1.24 (0.18) | 1.25 (0.10)       | 0.32  | 0.81           | 0.45              | -                |
|  | CON   | 1.20 (0.14) | 1.17 (0.16)       |       |                |                   |                  |
| VCO <sub>2peak</sub> (L/min)                   | PA    | 1.46 (0.52) | 1.67 (0.63)*      | 0.27  | 0.39           | <b>0.0038</b>     | <b>0.99</b>      |
|  | CON   | 1.38 (0.63) | 1.26 (0.55)       |       |                |                   |                  |
| P <sub>ETCO<sub>2</sub>peak</sub>              | PA    | 39.4 (4.2)  | 37.7 (4.8)        | 0.21  | 0.49           | 0.27              | -                |
|  | CON   | 36.1 (5.9)  | 36.5 (5.3)        |       |                |                   |                  |

Values are means (SD). Peak cardiorespiratory data for physical activity intervention (PA) and control (CON) groups are provided for baseline (pre-intervention) and post-intervention (i.e. 8 weeks). Dependent variables were assessed with repeated-measures ANOVA with main effects for group and time. Main and interaction effects are reported. Effect sizes are for comparisons between pre- and post-intervention in the PA group. VO<sub>2peak</sub>: peak rate of oxygen uptake; PO<sub>peak</sub>: peak power output; HR<sub>peak</sub>: peak heart rate; O<sub>2</sub>pulse<sub>peak</sub>: peak oxygen pulse; RPE<sub>peak</sub>: rating of perceived exertion; V<sub>Epeak</sub>: peak ventilation; V<sub>Tpeak</sub>: peak tidal volume; f<sub>Rpeak</sub>: peak respiratory frequency; RER<sub>peak</sub>: peak respiratory exchange ratio; VCO<sub>2peak</sub>: rate of exhaled carbon dioxide; P<sub>ETCO<sub>2</sub>peak</sub>: peak end-tidal carbon dioxide. \**p*<0.05 vs. baseline; \*\**p*<0.01 vs. baseline; \*\*\**p*<0.001 vs. baseline; #*p*=0.06 vs. baseline.

**Supplemental Table 3. Left ventricular function and structure measures at baseline and following the physical activity intervention.**

|   | Group | Baseline    | Post-intervention | group | <i>p value</i> |                   | <i>Cohen's d</i> |
|---|-------|-------------|-------------------|-------|----------------|-------------------|------------------|
|   |       |             |                   |       | <i>time</i>    | <i>gr. × time</i> |                  |
| <b>LV volumes &amp; hemodynamics</b>              |       |             |                   |       |                |                   |                  |
| EDV (ml)  | PA    | 87 (18)     | 86 (14)           | 0.88  | 0.92           | 0.53              | -                |
|   | CON   | 84 (20)     | 82 (18)           |       |                |                   |                  |
| ESV (ml)  | PA    | 38 (9)      | 38 (9)            | 0.79  | 0.60           | 0.45              | -                |
|   | CON   | 36 (9)      | 35 (8)            |       |                |                   |                  |
| SV (ml)   | PA    | 49 (9)      | 49 (6)            | 0.97  | 0.82           | 0.66              | -                |
|   | CON   | 48 (11)     | 47 (10)           |       |                |                   |                  |
| EF (%)  | PA    | 57 (3)      | 56 (3)            | 0.77  | 0.45           | 0.89              | -                |
|   | CON   | 57 (3)      | 58 (3)            |       |                |                   |                  |
| Q (L/min)   | PA    | 3.22 (0.78) | 3.13 (0.63)       | 0.69  | 0.57           | 0.22              | -                |
|   | CON   | 3.05 (0.87) | 3.13 (0.96)       |       |                |                   |                  |
| HR (bpm)  | PA    | 66 (8)      | 64 (8)            | 0.33  | 0.94           | 0.16              | -                |
|   | CON   | 63 (10)     | 66 (12)           |       |                |                   |                  |
| <b>LV structure &amp; dimensions</b>              |       |             |                   |       |                |                   |                  |
| LVID <sub>a</sub> (mm)                            | PA    | 42 (5)      | 43 (4)            | 0.15  | 0.55           | 0.16              | -                |
|   | CON   | 43 (10)     | 44 (4)            |       |                |                   |                  |
| LV length (mm)                                    | PA    | 82 (6)      | 82 (5)            | 0.47  | 0.76           | 0.68              | -                |
|   | CON   | 79 (7)      | 79 (6)            |       |                |                   |                  |
| Sphericity Index                                  | PA    | 1.98 (0.28) | 1.91 (0.19)       | 0.054 | 0.89           | 0.27              | -                |
|   | CON   | 1.76 (0.17) | 1.78 (0.18)       |       |                |                   |                  |
| PWT (mm)  | PA    | 10 (1)      | 9 (1)             | 0.24  | 0.39           | 0.27              | -                |
|   | CON   | 10 (1)      | 10 (1)            |       |                |                   |                  |
| Relative Wall Thickness (mm)                      | PA    | 0.47 (0.08) | 0.43 (0.08)       | 0.82  | 0.62           | 0.22              | -                |
|   | CON   | 0.44 (0.06) | 0.45 (0.05)       |       |                |                   |                  |
| <b>Doppler-derived flow and tissue velocities</b> |       |             |                   |       |                |                   |                  |
| E (m/s)   | PA    | 0.72 (0.14) | 0.71 (0.14)       | 0.80  | 0.43           | 0.44              | -                |
|   | CON   | 0.71 (0.18) | 0.67 (0.14)       |       |                |                   |                  |
| A (m/s)   | PA    | 0.58 (0.15) | 0.57 (0.12)       | 0.84  | 0.73           | 0.70              | -                |
|   | CON   | 0.55 (0.09) | 0.57 (0.11)       |       |                |                   |                  |
| E/A   | PA    | 1.31 (0.32) | 1.31 (0.43)       | 0.60  | 0.46           | 0.70              | -                |
|   | CON   | 1.31 (0.34) | 1.23 (0.39)       |       |                |                   |                  |
| S' (mm/s)   | PA    | 96 (16)     | 92 (21)           | 0.79  | 0.71           | 0.48              | -                |
|   | CON   | 91 (12)     | 91 (16)           |       |                |                   |                  |
| E' (mm/s)   | PA    | 106 (22)    | 93 (25)*          | 0.90  | <b>0.042</b>   | 0.083             | <b>0.72</b>      |
|   | CON   | 99 (21)     | 96 (19)           |       |                |                   |                  |
| A' (mm/s)   | PA    | 108 (16)    | 94 (16)*          | 0.32  | <b>0.025</b>   | 0.076             | -                |
|   | CON   | 94 (17)     | 96 (19)           |       |                |                   |                  |
| E'/A'   | PA    | 0.99 (0.21) | 1.02 (0.32)       | 0.35  | 0.76           | 0.97              | -                |
|   | CON   | 1.10 (0.33) | 1.14 (0.36)       |       |                |                   |                  |

**Supplemental Table 3 (continued). Left ventricular function and structure measures at baseline and following the physical activity intervention.**

|                                      | Group | Baseline    | Post-intervention | group | <i>p value</i> |                   | <i>Cohen's d</i> |
|--------------------------------------|-------|-------------|-------------------|-------|----------------|-------------------|------------------|
|                                      |       |             |                   |       | <i>time</i>    | <i>gr. × time</i> |                  |
| <b>LV twist and strain mechanics</b> |       |             |                   |       |                |                   |                  |
| Twist (°)                            | PA    | 21.4 (5.6)  | 21.0 (4.8)        | 0.42  | 0.99           | 0.76              | -                |
|                                      | CON   | 20.1 (5.1)  | 19.3 (4.5)        |       |                |                   |                  |
| Untwisting velocity (°/sec)          | PA    | -131 (30)   | -110 (28)         | 0.12  | 0.30           | <b>0.047</b>      | -                |
|                                      | CON   | -96 (26)    | -105 (23)         |       |                |                   |                  |
| Apical rotation (°)                  | PA    | 15.1 (5.2)  | 15.3 (3.2)        | 0.086 | 0.86           | 0.46              | -                |
|                                      | CON   | 13.5 (4.1)  | 12.2 (3.0)        |       |                |                   |                  |
| Basal rotation (°)                   | PA    | -6.8 (2.2)  | -7.7 (3.2)        | 0.76  | 0.47           | 0.39              | -                |
|                                      | CON   | 0.56 (0.07) | 0.56 (0.07)       |       |                |                   |                  |
| Circumferential strain, apex (%)     | PA    | -21.8 (4.2) | -23.5 (6.2)       | 0.36  | 0.87           | 0.54              | -                |
|                                      | CON   | -22.6 (4.6) | -26.3 (6.1)       |       |                |                   |                  |
| Circumferential strain, base (%)     | PA    | -14.8 (5.4) | -17.6 (4.7)       | 0.25  | 0.23           | 0.051             | -                |
|                                      | CON   | -16.8 (2.9) | -17.4 (3.3)       |       |                |                   |                  |
| Longitudinal strain (%)              | PA    | -19.0 (2.6) | -19.2 (2.7)       | 0.092 | 0.75           | 0.95              | -                |
|                                      | CON   | -17.5 (4.3) | -18.1 (3.3)       |       |                |                   |                  |

Values are means (SD). Left ventricular (LV) functional and structural data for physical activity intervention (PA) and control (CON) groups are provided at baseline (pre-intervention) and post-intervention (i.e. 8 weeks). Dependent variables were assessed with repeated-measures ANCOVA with main effects for group and time. Main and interaction effects are reported; covariate statistics are included in Supplemental Table 6. Effect sizes are for comparisons between pre- and post-intervention in the PA group EDV: end-diastolic volume; ESV: end-systolic volume; SV: stroke volume; EF: ejection fraction; Q: cardiac output; HR: heart rate; LVID<sub>d</sub>: left ventricular internal diameter at end-diastole; LV length: left ventricular length and end-diastole; PWT: posterior wall thickness; E: early diastolic filling velocity; A: late diastolic filling velocity; S': systolic septal tissue velocity; E': early diastolic septal tissue velocity; A': late diastolic septal tissue velocity. \**p*<0.05 vs. baseline.

**Supplemental Table 4. Vascular and blood pressure measures at baseline and following the physical activity intervention.**

|  | Group | Baseline    | Post-intervention | <i>group</i> | <i>p value</i> |                   | <i>Cohen's d</i> |
|--|-------|-------------|-------------------|--------------|----------------|-------------------|------------------|
|  |       |             |                   |              | <i>time</i>    | <i>gr. × time</i> |                  |
| <b>Vascular structure and function</b> |       |             |                   |              |                |                   |                  |
| CCA IMT (mm)                           | PA    | 0.62 (0.16) | 0.61 (0.15)       | 0.19         | 0.86           | 0.47              | -                |
|  | CON   | 0.56 (0.07) | 0.56 (0.07)       |              |                |                   |                  |
| PWV (cm/s)                             | PA    | 10.6 (2.9)  | 9.7 (2.5)         | <b>0.042</b> | 0.18           | 0.22              | -                |
|  | CON   | 8.0 (2.0)   | 8.2 (1.9)         |              |                |                   |                  |
| <b>Blood pressure</b>                  |       |             |                   |              |                |                   |                  |
| SBP (mmHg)                             | PA    | 121 (13)    | 127 (16)          | 0.32         | 0.44           | 0.12              | -                |
|  | CON   | 121 (18)    | 116 (18)          |              |                |                   |                  |
| DBP (mmHg)                             | PA    | 69 (6)      | 70 (7)            | 0.69         | 0.27           | 0.28              | -                |
|  | CON   | 70 (9)      | 66 (10)           |              |                |                   |                  |
| MAP (mmHg)                             | PA    | 85 (8)      | 88 (9)            | 0.45         | 0.32           | 0.17              | -                |
|  | CON   | 86 (11)     | 82 (12)           |              |                |                   |                  |

Values are means (SD). Vascular and blood pressure data for physical activity intervention (PA) and control (CON) groups are provided at baseline (pre-intervention) and post-intervention (i.e. 8 weeks). Dependent variables were assessed with repeated-measures ANCOVA with main effects for group and time. Main and interaction effects are reported; covariate statistics are included in Supplemental Table 6. Effect sizes are for comparisons between pre- and post-intervention in the PA group. CCA IMT: common carotid intima-media thickness; PWV: pulse wave velocity; SBP: systolic blood pressure; DBP: diastolic blood pressure; MAP: mean arterial pressure.

**Supplemental Table 5. Sub-analysis for level of injury (LOI) of cardiorespiratory and left ventricular (LV) measures at baseline and post-intervention.**

|                                      | Group | High LOI ( $\geq T6$ ) |              |                   |             | Low LOI ( $< T6$ ) |              |                   |             |
|--------------------------------------|-------|------------------------|--------------|-------------------|-------------|--------------------|--------------|-------------------|-------------|
|                                      |       | Baseline               | Post         | gr. $\times$ time | Cohen's d   | Baseline           | Post         | gr. $\times$ time | Cohen's d   |
| <b>Peak aerobic performance</b>      |       |                        |              |                   |             |                    |              |                   |             |
| VO <sub>2peak</sub> (L/min)          | PA    | 1.10 (0.46)            | 1.19(0.47)#  | <b>0.05</b>       | <b>1.67</b> | 1.27 (0.20)        | 1.48 (0.29)* | <b>0.010</b>      | <b>2.01</b> |
|                                      | CON   | 0.87 (0.24)            | 0.81 (0.25)  |                   |             | 1.43 (0.49)        | 1.35 (0.36)  |                   |             |
| VO <sub>2peak</sub> (ml/kg/min)      | PA    | 16.1 (4.5)             | 17.4 (5.1)** | <b>0.0016</b>     | <b>1.40</b> | 15.7 (4.2)         | 18.5 (4.9)** | <b>0.0064</b>     | <b>2.42</b> |
|                                      | CON   | 11.6 (3.3)             | 10.4 (3.3)*  |                   |             | 18.9 (5.6)         | 18.1 (4.6)   |                   |             |
| PO <sub>peak</sub> (W)               | PA    | 73 (31)                | 77 (31)#     | <b>0.011</b>      | <b>6.86</b> | 95 (12)            | 104 (19)*    | <b>0.014</b>      | <b>5.28</b> |
|                                      | CON   | 45 (19)                | 41 (21)      |                   |             | 98 (32)            | 93 (28)      |                   |             |
| RPE <sub>peak</sub>                  | PA    | 19.2 (1.4)             | 17.8 (2.3)   | 0.96              | -           | 17.2 (1.9)         | 17.2 (2.3)   | 0.83              | -           |
|                                      | CON   | 17.7 (1.5)             | 16.3 (3.3)   |                   |             | 18.6 (1.9)         | 18.4 (1.5)   |                   |             |
| <b>LV volumes &amp; hemodynamics</b> |       |                        |              |                   |             |                    |              |                   |             |
| EDV (ml)                             | PA    | 81 (17)                | 82 (14)      | 0.24              | -           | 103 (6)            | 98 (1)       | 0.19              | -           |
|                                      | CON   | 83 (20)                | 80 (15)      |                   |             | 86 (21)            | 86 (21)      |                   |             |
| ESV (ml)                             | PA    | 35 (9)                 | 36 (9)       | 0.34              | -           | 46 (4)             | 44 (4)       | 0.51              | -           |
|                                      | CON   | 35 (8)                 | 34 (6)       |                   |             | 37 (11)            | 37 (10)      |                   |             |
| SV (ml)                              | PA    | 46 (8)                 | 47 (5)       | 0.23              | -           | 57 (5)             | 54 (3)       | 0.15              | -           |
|                                      | CON   | 48 (13)                | 46 (10)      |                   |             | 49 (11)            | 49 (11)      |                   |             |
| EF (%)                               | PA    | 57 (3)                 | 57 (4)       | 0.61              | -           | 55 (3)             | 55 (3)       | 0.38              | -           |
|                                      | CON   | 57 (3)                 | 57 (3)       |                   |             | 57 (3)             | 58 (1)       |                   |             |
| Q (L/min)                            | PA    | 3.06 (0.73)            | 2.99 (0.64)  | 0.82              | -           | 3.70 (0.84)        | 3.55 (0.43)  | 0.79              | -           |
|                                      | CON   | 2.72 (0.83)            | 2.85 (0.99)  |                   |             | 3.47 (0.79)        | 3.50 (0.86)  |                   |             |
| HR (bpm)                             | PA    | 66 (8)                 | 64 (9)       | 0.21              | -           | 64 (10)            | 66 (8)       | 0.55              | -           |
|                                      | CON   | 57 (7)                 | 61 (12)      |                   |             | 71 (7)             | 72 (10)      |                   |             |

**Supplemental Table 5 (continued). Sub-analysis for level of injury (LOI) of cardiorespiratory and left ventricular (LV) measures at baseline and post-intervention.**

|                                      | Group | High LOI ( $\geq T6$ ) |             |                   |                  | Low LOI ( $< T6$ ) |              |                   |                  |
|--------------------------------------|-------|------------------------|-------------|-------------------|------------------|--------------------|--------------|-------------------|------------------|
|                                      |       | Baseline               | Post        | <i>gr. x time</i> | Cohen's <i>d</i> | Baseline           | Post         | <i>gr. x time</i> | Cohen's <i>d</i> |
| <b>LV structure &amp; dimensions</b> |       |                        |             |                   |                  |                    |              |                   |                  |
| LVID <sub>a</sub> (mm)               | PA    | 41 (6)                 | 42 (5)      | 0.41              | -                | 43 (1)             | 45 (2)#      | <b>0.027</b>      | <b>0.78</b>      |
|                                      | CON   | 46 (4)                 | 45 (3)      |                   |                  | 44 (4)             | 44 (4)       |                   |                  |
| LV length (mm)                       | PA    | 80 (5)                 | 80 (4)      | 0.63              | -                | 86 (7)             | 85 (6)       | 0.16              | -                |
|                                      | CON   | 78 (7)                 | 78 (6)      |                   |                  | 81 (7)             | 81 (7)       |                   |                  |
| Sphericity Index                     | PA    | 1.98 (0.33)            | 1.92 (0.22) | 0.80              | -                | 1.98 (0.14)        | 1.88(0.11)#  | <b>0.049</b>      | <b>0.70</b>      |
|                                      | CON   | 1.71 (0.13)            | 1.72 (0.07) |                   |                  | 1.83 (0.21)        | 1.86 (0.25)  |                   |                  |
| PWT (mm)                             | PA    | 10 (1)                 | 9 (1)       | 0.87              | -                | 10 (1)             | 9 (1)        | 0.10              | -                |
|                                      | CON   | 10 (2)                 | 10 (1)      |                   |                  | 10 (1)             | 10 (1)       |                   |                  |
| RWT (mm)                             | PA    | 0.47 (0.10)            | 0.44 (0.09) | 0.68              | -                | 0.47 (0.05)        | 0.39 (0.05)# | <b>0.046</b>      | <b>0.79</b>      |
|                                      | CON   | 0.43 (0.08)            | 0.44 (0.04) |                   |                  | 0.44 (0.01)        | 0.46 (0.06)  |                   |                  |
| LV mass (g)                          | PA    | 128 (46)               | 128 (44)    | 0.75              | -                | 143 (17)           | 146 (20)     | 0.73              | -                |
|                                      | CON   | 158 (62)               | 153 (57)    |                   |                  | 141 (37)           | 143 (41)     |                   |                  |

Values are means (SD). Sub-analysis of peak cardiorespiratory data and left ventricular (LV) structure at baseline and post-intervention for participants with higher level of injury (LOI;  $\geq T6$ ) and lower LOI ( $< T6$ ). In each LOI cohort, data were analyzed using repeated-measures ANCOVA with main effects for group and time, and baseline relative  $VO_{2peak}$  as covariate. Interaction statistics are reported under “*gr. x time*”. Effect sizes are for comparisons between pre- and post-intervention in the PA group. See Supplemental Tables 2 and 3 for additional abbreviations. \* $p < 0.05$ ; \*\* $p < 0.01$ ; # $p \leq 0.08$  vs baseline.

**Supplemental Table 6. Main effects and covariate statistics for all dependent cardiovascular measures.**

|   | MAIN AND INTERACTION EFFECTS |              |             |              |                     |              | COVARIATE EFFECTS                               |              |
|---|------------------------------|--------------|-------------|--------------|---------------------|--------------|---|--------------|
|   | <i>group</i>                 |              | <i>time</i> |              | <i>group x time</i> |              | <i>VO<sub>2peak</sub> (ml/kg/min), baseline</i> |              |
|   | <i>F</i>                     | <i>p</i>     | <i>F</i>    | <i>p</i>     | <i>F</i>            | <i>p</i>     | <i>F</i>  | <i>p</i>     |
| <b>LV volumes, hemodynamics &amp; structure</b> |                              |              |             |              |                     |              |   |              |
| EDV (ml)  | 0.023                        | 0.88         | 0.011       | 0.92         | 0.41                | 0.53         | 1.99  | 0.17         |
| ESV (ml)  | 0.075                        | 0.79         | 0.29        | 0.60         | 0.59                | 0.45         | 3.54  | 0.074        |
| SV (ml)   | 0.0019                       | 0.97         | 0.055       | 0.82         | 0.20                | 0.66         | 0.89  | 0.36         |
| EF (%)  | 0.090                        | 0.77         | 0.60        | 0.45         | 0.019               | 0.89         | 2.66  | 0.12         |
| Q (l/min)                                       | 0.16                         | 0.69         | 0.33        | 0.57         | 1.60                | 0.21         | 3.83  | 0.063        |
| HR (bpm)  | 0.97                         | 0.34         | 0.0049      | 0.94         | 2.10                | 0.16         | <b>6.87</b>                                     | <b>0.016</b> |
| LVID <sub>a</sub> (mm)                          | 2.23                         | 0.15         | 0.36        | 0.55         | 2.07                | 0.16         | 0.010   | 0.92         |
| LV length (mm)                                  | 0.53                         | 0.47         | 0.096       | 0.76         | 0.17                | 0.68         | <b>4.41</b>                                     | <b>0.047</b> |
| Sphericity Index                                | 4.14                         | 0.054        | 0.021       | 0.89         | 1.25                | 0.27         | 1.96  | 0.18         |
| PWT (mm)  | 1.48                         | 0.24         | 0.76        | 0.39         | 1.28                | 0.27         | 1.26  | 0.27         |
| RWT (mm)  | 0.051                        | 0.82         | 0.26        | 0.62         | 1.56                | 0.22         | 1.02  | 0.32         |
| LV mass (g)                                     | 1.27                         | 0.27         | 1.28        | 0.27         | 0.0041              | 0.95         | 0.65  | 0.43         |
| E (m/s)   | 0.066                        | 0.80         | 0.66        | 0.43         | 0.63                | 0.44         | 3.52  | 0.075        |
| A (m/s)   | 0.040                        | 0.84         | 0.12        | 0.73         | 0.15                | 0.70         | 0.65  | 0.43         |
| E/A   | 0.27                         | 0.61         | 0.57        | 0.46         | 0.15                | 0.70         | 0.42  | 0.53         |
| S' (mm/s)                                       | 0.071                        | 0.79         | 0.14        | 0.71         | 0.52                | 0.48         | 0.51  | 0.48         |
| E' (mm/s)                                       | 0.015                        | 0.90         | <b>4.61</b> | <b>0.042</b> | 3.30                | 0.082        | 1.11  | 0.30         |
| A' (mm/s)                                       | 1.03                         | 0.32         | <b>5.72</b> | <b>0.025</b> | 3.46                | 0.076        | <b>6.14</b>                                     | <b>0.021</b> |
| E'/A'   | 0.89                         | 0.35         | 0.092       | 0.76         | 0.0013              | 0.97         | 0.50  | 0.49         |
| <b>LV twist and strain mechanics</b>            |                              |              |             |              |                     |              |   |              |
| Twist (°)                                       | 0.67                         | 0.42         | 0.00004     | 0.99         | 0.098               | 0.76         | 0.00003   | 0.99         |
| Untwisting velocity (°/sec)                     | 2.73                         | 0.12         | 1.14        | 0.30         | <b>4.62</b>         | <b>0.047</b> | 0.79  | 0.39         |
| Apical rotation (°)                             | 3.24                         | 0.086        | 0.032       | 0.86         | 0.56                | 0.46         | 0.0020  | 0.96         |
| Basal rotation (°)                              | 0.098                        | 0.76         | 0.55        | 0.47         | 0.86                | 0.37         | 0.074   | 0.79         |
| Circumferential strain, apex (%)                | 0.87                         | 0.36         | 0.027       | 0.87         | 0.39                | 0.54         | 0.91  | 0.35         |
| Circumferential strain, base (%)                | 1.42                         | 0.25         | 1.55        | 0.23         | 4.44                | 0.051        | 0.0031  | 0.96         |
| Longitudinal strain (%)                         | 3.15                         | 0.092        | 0.11        | 0.75         | 0.0037              | 0.95         | 0.10  | 0.75         |
| <b>Blood pressure and vascular measures</b>     |                              |              |             |              |                     |              |   |              |
| SBP (mmHg)                                      | 1.07                         | 0.32         | 0.63        | 0.44         | 2.72                | 0.12         | 0.023   | 0.88         |
| DBP (mmHg)                                      | 0.17                         | 0.69         | 1.30        | 0.27         | 1.25                | 0.28         | 0.017   | 0.89         |
| MAP (mmHg)                                      | 0.60                         | 0.45         | 1.05        | 0.32         | 2.08                | 0.17         | 0.00024   | 0.99         |
| CCA IMT (mm)                                    | 1.78                         | 0.20         | 0.030       | 0.86         | 0.53                | 0.47         | 0.16  | 0.70         |
| PWV (cm/s)                                      | <b>4.94</b>                  | <b>0.042</b> | 1.99        | 0.18         | 1.65                | 0.22         | 0.16  | 0.70         |

Detailed statistics for repeated-measures ANCOVA analyses, with main (*group*, *time*) and interaction (*group x time*) effects. Covariate effects of baseline relative peak oxygen uptake (VO<sub>2peak</sub>) are also provided. Significant effects ( $p < 0.05$ ) are highlighted in bold. See Supplemental Tables 4 and 4 for abbreviations.