# *Supplementary Material*

**Supplementary table 1** Neonatal characteristics of the enrolled extremely preterm born adults who had undergone patent ductus arteriosus surgery

| ***Characteristics*** | **PDA-surgery** | | | | | | |
|---|---|---|---|---|---|---|---|
| | LVCP n = 14 | | No LVCP n = 13 | | Other pathology n = 3 | | *p* |
| Female gender, *n (%)* | 5 | (36) | 7 | (54) | 2 | (67) | 0.45 |
| Birthweight, *grams, mean (SD)* [1)] | 767 | (174) | 820 | (197) | 786 | (144) | 0.47 |
| Age of gestation, *weeks, median (range)*[2)] | 25 | (23-27) | 26 | (23-29) | 25 | (24-26) | 0.32 |
| Small for gestational age, *n (%)* | 2 | (14) | 2 | (8) | 0 | (0) | 1.00 |
| Prenatal steroids, *n (%)* | 9 | (64) | 9 | (69) | 2 | (67) | 1.00 |
| Surfactant, *n (%)* | 13 | (93) | 12 | (92) | 2 | (67) | 1.00 |
| Postnatal steroids, *n (%)* | 12 | (86) | 5 | (38) | 3 | (100) | 0.02 |
| Invasive ventilation, *n (%)* | 14 | (100) | 12 | (92) | 3 | (100) | 0.48 |
| Invasive ventilation, days, *median (range)* [2)] | 15 | (1-85) | 10 | (2-87) | 17 | (15-83) | 0.30 |
| CPAP treatment, days, *median (range)* [2)] | 32.5 | (0-92) | 27 | (2-58) | 31 | (23-50) | 0.58 |
| Age PDA surgery, *median (range)* [2)] | 7.5 | (4-31) | 11 | (4-35) | 23 | (11-27) | 0.31 |
| Bronchopulmonary dysplasia, *n (%)* | 12 | (86) | 10 | (77) | 2 | (67) | 0.65 |
| Normal cerebral ultrasound, *n (%)* | 7 | (50) | 9 | (69) | 2 | (67) | 0.44 |

*Abbreviations:* CPAP: continuous positive airway pressure; EP: extremely preterm (gestational age < 28 weeks or birthweight < 1000 g); LVCP: left vocal cord paralysis; OP: other pathology; PDA: patent ductus arteriosus.

Bronchopulmonary dysplasia defined by oxygen supply and/or ventilatory support at gestational age 36 weeks. Small for gestational age was defined as under the 10$^{th}$ percentile for gestational age. Prenatal steroids were recorded if given at least 24 hours before delivery.

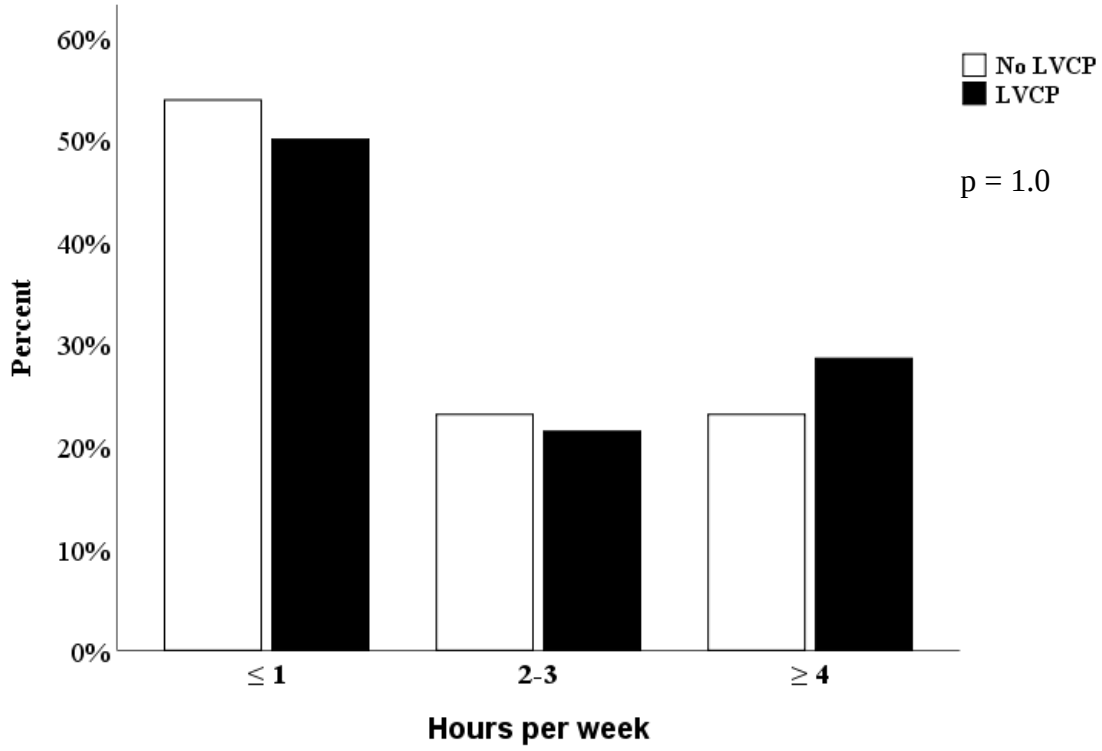
p) Fisher's exact test were used unless 1) independent t-test (equal variance not assumed) or 2) Mann-Whitney U test is specified.

**Supplementary table 2** Differences in lung function and cardiopulmonary exercise measures between the group of young adults born EP with- or without LVCP, EP-born controls and term-born control

| | **Within PDA-surgery group: LVCP vs. no LVCP** | | | **PDA-surgery group vs. EP-born controls** | | | **PDA-surgery group vs. term-born controls** | | | **EP-born controls vs. term-born controls** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Spirometry variables*** | Mean diff | 95%CI | p | Mean diff | 95%CI | p | Mean diff | 95%CI | p | Mean diff | 95%CI | p |
| FVC, *z-score* | 0.24 | -0.83, 1.32 | 0.64 | -0.77 | -1.37, -0.16 | 0.02 | -0.83 | -1.39, -0.27 | 0.005 | -0.06 | -0.45, 0.34 | 0.77 |
| $FEV_1$, z-score | -0.06 | -1.19, 1.08 | 0.92 | -1.08 | -1.75, -0.42 | 0.002 | -1.48 | -2.08, -0.89 | <0.001 | -0.40 | -0.85, 0.05 | 0.08 |
| $FEV_1$/FVC, z-score | -0.05 | -1.10, 1.00 | 0.92 | -0.69 | -1.32, -0.05 | 0.03 | -1.14 | -1.70, -0.57 | <0.001 | -0.45 | -0.91, 0.01 | 0.06 |
| ***CPET variables*** | | | | | | | | | | | | |
| Peak heart rate, *beat/min* | 0.2 | -12.3, 12.6 | 0.98 | -2.0 | -8.8, 4.7 | 0.54 | -3.9 | -10.8, 3.1 | 0.27 | -1.8 | -6.3, 2.7 | 0.43 |
| RER at peak exercise, units | -0.05 | -0.12, 0.02 | 0.16 | -0.03 | -0.08, 0.02 | 0.24 | -0.02 | -0.06, 0.02 | 0.36 | 0.01 | -0.03, 0.05 | 0.65 |
| Ti/Ttot, % | 3.0 | 1.1, 4.9 | 0.004 | 1.3 | -0.2, 2.7 | 0.09 | 1.5 | 0.1, 2.8 | 0.03 | 0.2 | -1.1, 1.5 | 0.75 |
| Breathing reserve, *%* | 7.5 | -4.1, 19.2 | 0.19 | 0.3 | -7.2, 7.9 | 0.93 | 5.8 | -1.5, 13.1 | 0.12 | 5.5 | -1.3, 12.2 | 0.11 |
| Peak minute ventilation, *L/min* | 0.7 | -19.2, 20.6 | 0.94 | -11.9 | -24.7, 0.9 | 0.07 | -44.4 | -58.4, -30.5 | <0.001 | -32.5 | -45.9, -19.2 | <0.001 |
| Females | -7.9 | -29.3, 13.6 | 0.43 | -11.9 | -25.0, 1.1 | 0.07 | -24.9 | -36.7, -13.1 | <0.001 | -12.9 | -24.6, -1.3 | 0.03 |
| Males | -0.9 | -34.8, 33.0 | 0.95 | -16.7 | -34.3, 0.9 | 0.06 | -51.0 | -67.7, -34.2 | <0.001 | -34.3 | -48.4, -20.2 | <0.001 |
| Distance, *meter* | 100 | -57, 257 | 0.19 | 34 | -91, 159 | 0.59 | -225 | -354, -96 | 0.001 | -258 | -393, -124 | <0.001 |
| Females | 152 | -466, 769 | 0.50 | 78 | 162, 319 | 0.49 | -61 | -301, 178 | 0.59 | -140 | -286, 7 | 0.06 |
| Males | 57 | -73, 188 | 0.35 | -50 | -224, 124 | 0.55 | -316 | -457, -174 | <0.001 | -266 | -463, -68 | 0.01 |
| Peak $VO_2$, *ml/kg/min* | 2.0 | -3.3, 7.3 | 0.43 | -0.6 | -4.5, 3.3 | 0.76 | -6.1 | -9.8, -2.4 | 0.002 | -5.5 | -9.5, -1.6 | 0.007 |
| Females | 4.0 | -10.1, 18.1 | 0.48 | -0.7 | -6.4, 5.1 | 0.82 | -2.7 | -8.3, 2.9 | 0.32 | -2.1 | -7.0, 2.9 | 0.40 |
| Males | -1.0 | -6.9, 4.8 | 0.70 | -1.2 | -6.9, 4.6 | 0.67 | -7.4 | -11.7, -3.1 | 0.001 | -6.2 | -12.1, -0.3 | 0.04 |
| Peak $VO_2$, *% of predicted* | 1.3 | -11.3, 13,8 | 0.83 | -3.4 | -12.2, 5.3 | 0.44 | -10.6 | -18.2, -3.0 | 0.007 | -7.2 | -15.1, 0.8 | 0.08 |
| Females | 9.5 | -24.5, 43.6 | 0.49 | -2.4 | -16.3, 11.6 | 0.73 | -7.1 | -20.5, 6.2 | 0.28 | -4.8 | -16.6, 7.0 | 0.41 |
| Males | -2.3 | -13.3, 8.7 | 0.65 | -2.7 | -13.5, 8.1 | 0.60 | -14.4 | -22.6, -6.3 | 0.001 | -11.7 | -22.7, -0.63 | 0.04 |

*Abbreviations:* Diff: difference; RER: respiratory exchange ratio; Ti/Ttot: Inspiratory time/Total inspiratory and expiratory time ratio; $VO_2$: oxygen consumption.
Breathing reserve is the difference between maximal voluntary ventilation ($FEV_1$ x 35) and peak minute ventilation as percentage of maximal voluntary ventilation;
95%CI: 95% confidence interval.
p) Independent sample t-test (equal variance not assumed).
Number of subjects: LVCP: n = 13 (5 females), No LVCP: n=12 (7 females), PDA-surgery: n=25 (12 females), EP-born controls: n=30 (17 females), term-born controls: n=36 (13 females). Mean difference = the first mentioned group minus the last-mentioned group.

**Supplementary figure 1** Self-reported physical activity among the EP-born participants who underwent neonatal PDA surgery with and without left vocal cord paralysis (LVCP)

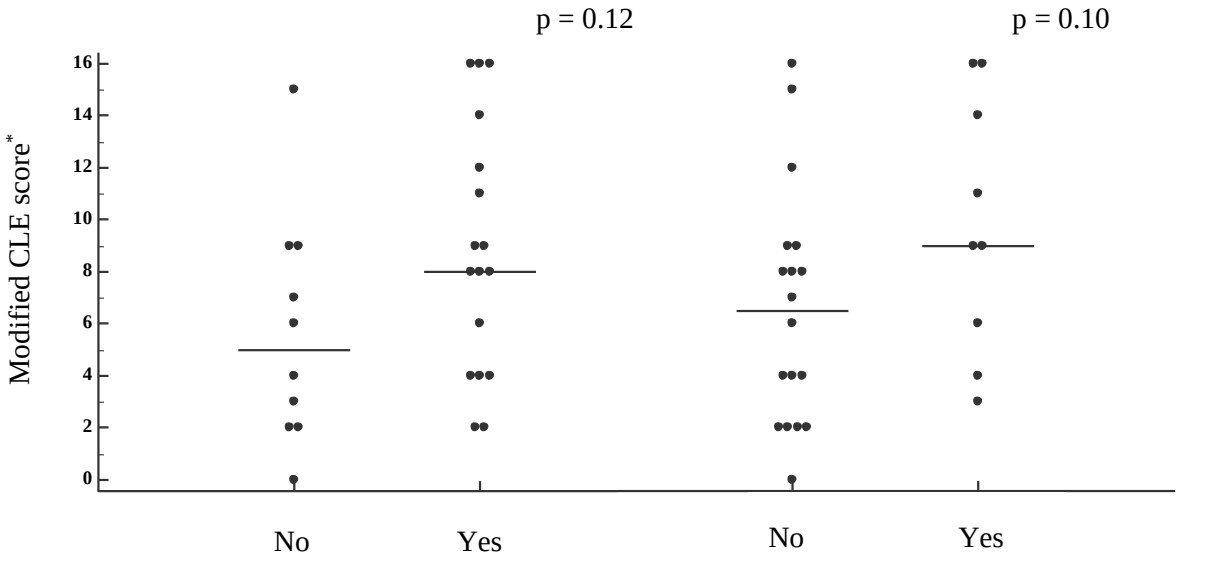



Answer to the self-reported question *"How many hours per week do you attend sports, exercise, or exert yourself so much that you get out of breath and/or sweat?"*

Response rate: No LVCP: n = 13/13, LVCP: n = 14/14,

p) Fisher's exact test

**Supplementary figure 2** Comparison of visually assessed laryngeal obstruction during exercise (modified CLE score) according to self-reported breathing symptoms in extremely preterm born adults that underwent neonatal patent ductus arteriosus surgery




*) Higher modified CLE score indicate more laryngeal obstruction

Median values are indicated by vertical lines

p) Mann-Whitney U test