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## **Poster P28**

### **Responses to the cardiopulmonary exercise test for upper limbs in children and adolescents with Charcot-Marie-Tooth Disease**

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**Introduction:** Charcot-Marie-Tooth disease (CMT) is a progressive hereditary neuropathy that impairs motor and cardiorespiratory function. Assessing responses to physical exertion can help detect functional decline.

**Objective:** To compare the cardiorespiratory response to exercise in children and adolescents with CMT versus those with typical development.

**Methods:** This cross-sectional study (ethics no. 83382524.0.0000.5440) included 34 participants (17 with CMT and 17 matched controls; mean age:  $12.5 \pm 3.4$  years). Participants performed a maximal incremental exercise test on an upper-limb cycle ergometer (Lode Angio) with a 5 W/min ramp protocol. Cardiorespiratory parameters were collected using a portable gas analyzer (Cosmed K5). Outcomes included peak oxygen consumption ( $\text{VO}_2$ ), total test time, workload, distance, carbon dioxide production ( $\text{VCO}_2$ ), minute ventilation (VE), respiratory exchange ratio (RER), and heart rate (HR) at rest, peak, and delta. Data were analysed using Student's t-test ( $p < 0.05$ ).

**Results:** The CMT group showed significantly lower values than controls for relative  $\text{VO}_2$  peak (19.0 vs. 24.7 mL/kg/min;  $p = 0.005$ ), absolute  $\text{VO}_2$  peak (954.5 vs. 1181.5 mL/min;  $p = 0.027$ ), RER (1.04 vs. 1.10;  $p = 0.037$ ), test time (8:30 vs. 11:06 min;  $p = 0.006$ ), workload (35.5 vs. 51.3 W;  $p = 0.001$ ), distance (560.3 vs. 1077.9 m;  $p = 0.001$ ), HR at rest (95.3 vs. 83.8 bpm;  $p = 0.047$ ), HR peak (142.7 vs. 161.0 bpm;  $p = 0.014$ ), HR delta (49.1 vs. 77.1 bpm;  $p < 0.001$ ),  $\text{VCO}_2$  peak (980.2 vs. 1339.1 mL/min;  $p = 0.006$ ), and VE peak (33.4 vs. 45.8 L/min;  $p = 0.003$ ).

**Conclusion:** Children and adolescents with CMT have reduced cardiorespiratory capacity and physical performance compared to typically developing peers. These findings highlight the importance of promoting exercise interventions, including aerobic training, to support cardiopulmonary and functional health.

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