Threshold resistance sensitivity (TRS) was calculated online using adaptive psychophysical methods and expressed as % tube compression.

Results RRST was well tolerated in both HC and LC, and median (range) TRS was 80.2 (71.7–91.7)% in HC and 73.9 (69.4–81.6)% in LC. Similar TRS values were obtained between two occasions in three HC participants (TRS1 = 83.9 (71.7–87.8)%, TRS2 = 80.9 (73.9–82.9)%).

Conclusions These early data indicate that RRST is feasible for studying respiratory interoception in LC, and that TRS is reproducible in HC. Currently there are no clear differences in TRS between HC and LC participants, but ongoing recruitment targeting breathless LC patients should allow more definitive conclusions to be drawn.

**P97 CPET’S UTILITY IN UNDERSTANDING UNEXPLAINED EXERTIONAL DYSPNEA IN MILITARY PERSONNEL**

1HM McLay, 1HM Martin, 1AJ Johnston, 1MT Thomas. 1Queen Elizabeth Hospital Birmingham, Birmingham, UK; 2Heartlands Hospital, Birmingham, UK

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**Introduction** Cardiopulmonary exercise testing (CPET) is a useful tool for investigating unexplained dyspnea. CPET is non-invasive, and assesses patients’ respiratory, cardiovascular, and metabolic function during exertion. It can assess patients with exertional symptoms whose previous diagnostic investigations at rest were normal. Physical fitness is assessed in military personnel; consequently, pathological exertional dyspnea is more frequently identified. We present a case series that demonstrates the utility of CPET in identifying the cause of unexplained dyspnea in military personnel. The aim is to, guide appropriate future management and enable individuals to be fit for work.

**Methods** The case series is a retrospective analysis of CPETs performed between June 2022 and June 2023 from the Military Respiratory Clinic. Patients in the clinic with persistent symptoms despite normal basic investigations were referred for CPET with or without concurrent laryngoscopy. We reviewed how patients presented, their initial investigations and management, what they were referred for, the outcome of their CPET, and subsequent management.

**Results** Eleven patients underwent CPET. Definitive diagnosis were obtained of. A range of explanations for their symptoms were found including deconditioning following COVID-19 infection (n=3), exercise induced laryngeal obstruction (n=2), breathing pattern disorder (n=2). In four cases it did not provide a definitive diagnosis but guided further investigation. Including cardiac MRI, an echocardiogram and one possible tracheobronchomalacia diagnosis. Following CPET and appropriate management, all patients referred were able to return to full duties and fitness training.

**Conclusions** We have demonstrated how CPET is a useful tool in understanding unexplained exertional dyspnea. In this cohort, we frequently confirmed suspected diagnosis from clinical assessment, but in several cases identified unexpected pathology. CPET offers the unique ability to investigate abnormal exertional symptoms. This is especially important in patients whose employment depends on physical fitness and has application to individuals outside the military also.

**P98 VENTILATORY DYNAMICS AND CLINICAL STATUS DURING CARDIOPULMONARY EXERCISE TESTING IN PATIENTS WITH INTERSTITIAL LUNG DISEASE**

1,3LW Tomlinson, 1L Markham, 1BL Wollerton, 2CA Williams, 1JM Gibbons, 1C Scotton. 1Department of Clinical and Biomedical Science, University of Exeter, Exeter, UK; 2Department of Public Health and Sport Science, University of Exeter, Exeter, UK; 3Academic Department of Respiratory Medicine, Royal Devon University Healthcare NHS Foundation Trust, Exeter, UK

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**Introduction** Cardiopulmonary exercise testing (CPET) is a feasible, valid, repeatable, and prognostically important tool in the management of interstitial lung disease (ILD). However, due to the progressive nature of declining pulmonary function in ILD, it is unclear if clinical status has an underlying effect upon ventilatory dynamics during CPET. Differences, should they exist, could therefore guide pulmonary rehabilitation regimens.

**Objectives** To characterise differences in ventilatory dynamics, specifically breathing frequency (Bf) and tidal volume (Vt), which combine to produce minute ventilation (Ve) during CPET in patients with ILD, based upon GAP Score and forced vital capacity (FVC).

**Methods** Twenty-four patients with ILD (7 female, 69.7 ± 7.6 years) underwent incremental CPET to volitional exhaustion on a cycle ergometer. Data on Bf and Ve were recorded breath-by-breath, then exported and analysed in 10-second averages. Data were assessed at five metabolically matched points (baseline, 50% gas exchange threshold (GET), GET, 50% and VO2peak) and normalised to peak values, thereby accounting for individual variations in lung volumes. Patients were grouped around median GAP Score and FVC. Independent samples t-tests identified differences between groups for peak values. Repeated measures analysis of variance (ANOVA) identified interaction effects between time and group.

**Results** When split by median GAP Score (high vs low), no differences existed between groups for VO2peak (p = 0.31) or Vtpeak (p = 0.77). ANOVA showed no effect of group for Bf (p = 0.07) or Ve (p = 0.27), nor any interaction effect for Bf (p = 0.10) or Ve (p = 0.13). When split by median FVC (high, 97±14%; low, 71±8%), no differences existed between groups for VO2peak (p = 0.56) or Vtpeak (p = 0.18). ANOVA showed significant differences between groups for Ve (p = 0.008) but not Bf (p = 0.97). An interaction effect was present for Ve (p = 0.004) but not Bf (p = 0.23).

**Conclusions** These data indicate that differences in ventilatory dynamics in ILD are driven by reduced FVC, resulting in impaired Ve during CPET. Therefore, these data indicate that patients may compensate for FVC impairment through increased Ve to maintain physiological ventilation and VO2peak.

**P99 EFFICACY OF THE BRITISH THORACIC SOCIETY GUIDANCE ON PRE-FLIGHT ASSESSMENT OF PATIENTS WITH RESTRICTIVE LUNG DISEASE PLANNING A COMMERCIAL FLIGHT**

IJ Cliff, N Mustfa, H Stone. University Hospitals of North Midlands NHS Trust, Stoke-on-Trent, UK

10.1136/thorax-2023-BTSabstracts.251

**Introduction** The British Thoracic Society (BTS) clinical statement on air travel for passengers with respiratory diseases in
2022 advocates for an assessment based on an algorithm that uses routine clinical data to risk-stratify patients planning commercial flights. The possible outcomes are as follows: ‘no in-flight oxygen required’, ‘consider Hypoxic Challenge Test’ (HCT), ‘consider in-flight oxygen at 2 L/min greater than the long-term oxygen therapy prescription (LTOT)’, or ‘consider in-flight oxygen at 2 L/min’.

Methods We evaluated the accuracy of the pre-flight assessment algorithm for patients with restrictive lung disease who had undergone a Hypoxic Challenge Test (HCT) prior to the implementation of the current clinical statement.

Results Seventy-four patients, comprising of 49 males, with a mean age of 70 years, were included in the study. The mean, standard deviation, and percent predicted values for various respiratory parameters were as follows: forced expiratory volume in 1 second (FEV₁) of 2.05 litres (0.81), 77% predicted; forced vital capacity (FVC) of 2.52 litres (0.80), 72% predicted; total lung capacity (TLC) of 4.01 litres (1.12), 67% predicted; and transfer factor of 3.93 ml/min/kPa (1.00), 51% predicted.

Among the patients identified as not requiring in-flight oxygen, eleven individuals failed the hypoxic challenge test (HCT). Twelve patients who were considered to require in-flight oxygen were able to maintain adequate oxygen levels (PaO₂ > 6.6 kPa) while breathing the hypoxic mixture (table 1).

Conclusions The algorithm is a useful and pragmatic tool in identifying patients requiring HCT/oxygen during air travel. However, clinicians need to be aware that some patients advised not to use oxygen may fail an HCT and others in whom oxygen is recommended but not needed may unnecessarily be deterred from travelling. It is important to conduct studies with larger patient cohorts to further investigate these aspects.

Abstract P99 Table 1 Comparison of BTS algorithm vs HCT

<table>
<thead>
<tr>
<th></th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>No HCT</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Consider HCT</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Consider in-flight O₂</td>
<td>12</td>
<td>22</td>
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Background The COVID-19 pandemic caused >750 million infections and just under 7 million deaths worldwide, along with shutdowns in social and economic activities. Respiratory particles produced during non-vocalised activities such as breathing, and vocal activities including singing and speaking

Abstract P99 Table 1

Abstract P100 Figure 1

Box and whisker plots showing time averaged aerosol particle number concentrations in #/cm³ (blue), minute ventilation in L/min (grey), and exhaled carbon dioxide in L/min (red) for the same series of activities (breathing at rest (n = 33), vigorous exercise (n = 25), very vigorous exercise (n = 25), speaking (n = 33), singing at 70–80 dBA (n = 8), and singing at 90–100 dBA (n = 8) across all relevant participants.

Boxes