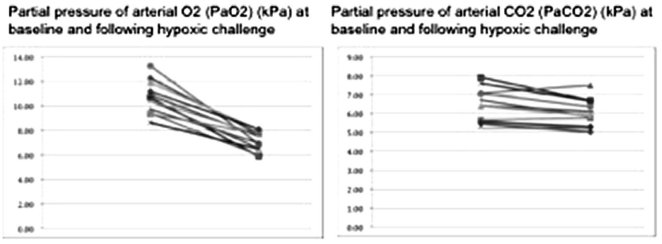
(2.5 vs 2.41 l) between patient with positive or borderline HCT and patients with negative HCT. SNIP was lower in those who were positive or borderline than those who were negative (median 28.5 vs 43 cmH_2O).

Conclusions Patients with NMD and respiratory muscle weakness are prone to develop hypoxia irrespective of their baseline oxygen saturation, FEV_1 and FVC. SNIP may be better at predicting the risk of hypoxia during air travel.



Abstract P131 Figure 1

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P132 CARBON DIOXIDE SENSITIVITY IN PATIENTS WITH HYPERVENTILATION SYNDROME

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Background Many body systems may be affected by chronic hyperventilation and symptoms may be wide-ranging. There is no obvious cause, no gold standard test and not all patients with Hyperventilation Syndrome (HVS) demonstrate characteristic low resting $PaCO_2$. No previous studies were found that reported the breath-hold time of HVS subjects at functional residual capacity, subjects' end-tidal carbon dioxideat the breakpoint of breath-hold, the subjective experience of breath-hold or the effect of carbon dioxide inhalation on the perception of breathing discomfort in HVS subjects.

Methods Five HVS patients, diagnosed by a respiratory physician, with no organic cause for breathlessness and referred for physiotherapy assessment (females, aged 21–70) and five healthy controls (females, aged 21–28) were studied. Breath-hold tests at total lung capacity (TLC) and functional residual capacity (FRC). Incremental inhalation of CO_2 was performed, whilst breathing frequency and volume was unconstrained ('free') and when 'fixed' by a breathing circuit and metronome. Components of minute ventilation were recorded via inductive plethysmography, in addition to end-tidal carbon dioxide ($P_{ET}CO_2$). A 100-mm visual analogue scale (VAS) was used to obtain a measure of breathing discomfort during breath-hold tests and CO_2 inhalation. The breathlessness experience associated with each CO_2 inhalation was assessed with the previously-published D-12 questionnaire.

Results The HVS group demonstrated a lower breath-hold time at TLC (32 vs 68 s, p=0.03) and could not hold their breath at FRC compared with controls. During the incremental CO_2 inhalation tests there was a borderline significant increase in $P_{ET}CO_2$ at the limit of tolerance in the HVS group during free breathing (1.5 kPa, p=0.07), but not fixed (2 kPa, p=0.1). Controls described feelings of air hunger following both inhalation tests: HVS patients tended to rate higher on work and effort descriptors.

Conclusions These data suggest that patients with HVS may be more sensitive to changes in CO_2 than controls. Breath-hold time at TLC and FRC may also be useful identifying patients with HVS and monitoring response to physiotherapeutic intervention. Breakpoint $P_{ET}CO_2$ during incremental CO_2 inhalation requires further validation in larger cohorts.

P133 PREDICTION EQUATIONS FOR PULMONARY FUNCTION VALUES IN HEALTHY IRANIAN CHILDREN (AGED 4–10 YEARS)

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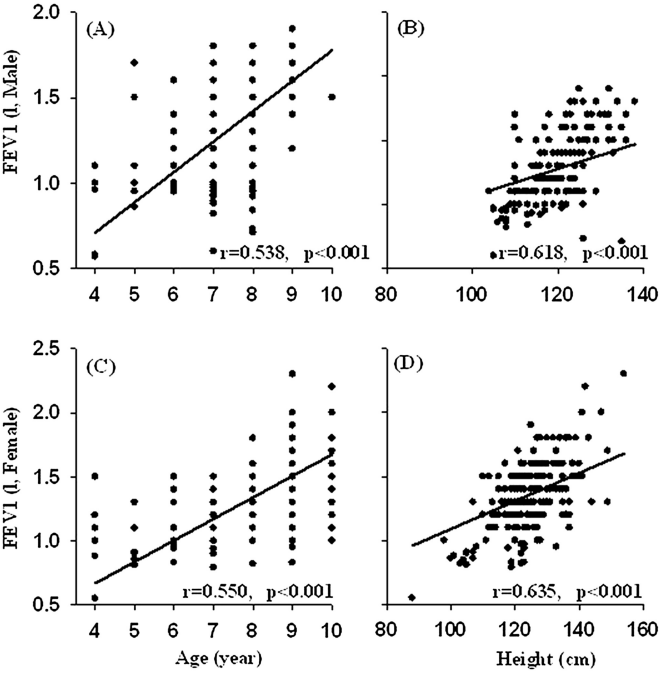
Pulmonary function test variables (PFTs) are dependent on height, age, and gender and there is evidence of PFT variation in different ethnic groups. Therefore prediction equations for PFTs were derived from healthy, urban children in the city of Mashhad (northeast Iran). Predicted equations for normal PFT values have been derived from 414 healthy children including 192 boys and 222 females (aged 4–10 years). The subjects underwent measurement of following spirometric variables: forced vital capacity (FVC), forced expiratory volume in 1 s (FEV_1), maximal mid-expiratory flow (MMEF), peak expiratory flow (PEF), maximal expiratory flow at 75%, 50% and 25% of the FVC (MEF_{75}, MEF_{50}, and MEF_{25} respectively). Regression analysis using height and age as independent variables was applied to provide predicted values for both sexes. There were positive correlations between each pulmonary function variable with height and age. The largest positive correlations were found for FEV_1 with height and age in both sexes. Comparison of PFTs derived from the equations of the present study showed significant differences with those of several previous studies ($p<0.001$ for most cases) (Abstract P133 Figure 1). A set of PFT reference values and prediction equations for both sexes has been derived using relatively large, healthy, Iranian children which has generated results that differ from several other prediction equations.



Abstract P133 Figure 1