patients (48±8 yr; 8 male, FEV1 90±4% predicted), 14 patients with chronic obstructive pulmonary disease (COPD) (63±2 yr; 10 male, FEV1 59±3%), and 12 patients with cystic fibrosis (21±4 yr; 8 male, FEV1 60±3%) we compared Calv and Jno with the variation of total NO production at 50 and 200 nL/s [Vno50-200 (nL/s)]. Vno was measured by calculating the average area under the curve (NO concentration/time) of two successive exhalations at each flow rate.

Results: Vno50-200 was strongly correlated with Jno in normal subjects (p=0.94, p<0.001), asthma (r=0.98, p<0.001), COPD (r=0.93, p<0.001), and CF patients (r=0.74, p<0.05). This agreement was confirmed by the Bland and Altman test.

Conclusions: The flow dependent component of exhaled NO is determined by its bronchial production which can be estimated by measuring Vno50-200. This method is simple, does not require sophisticated equipment or mathematical models and is in agreement with Jno calculated mathematically with the conventional linear regression method.

P2201 Endogenous and exogenous metabolites in exhaled breath condensate in asthma

E.K. Anaev1, T.N. Anokhina1, I.A. Revelsky2, A.A. Rudonov2, A.I. Revelsky2, A.G. Chuchalin3. 1Clinical Department, Research Institute of Moscow, Russian Federation; 2Chemistry Faculty, M.V. Lomonosov Moscow State University, Moscow, Russian Federation

Profile of metabolites in different biological fluids reflects the physiological and pathophysiologic processes in the human organism initiated by internal and external factors. Exhaled breath condensate (EBC) analysis can provide information about the state of metabolic processes in the respiratory tract.

Aim: To investigate various metabolites in EBC in asthma patients and healthy controls.

Methods: EBC was collected from 20 asthma patients and 30 healthy subjects using an ECoScreen condenser. Metabolites were determined in EBC using gas chromatography - mass-spectrometry method (GC-MS) and identified in NIST-2005 library.

Results: There were found semi-volatile metabolites (SVMs) in EBC in asthma patients and healthy subjects. SVMs belong to different classes of chemical compounds: saturated fatty acids (SFAs), hydrocarbons, alcohols, aldehydes, ketones, esters, phenols and alkaloids. The limit of compounds detection was 0.1-10 ppb. SVMs are presented in the Human Metabolome Database (HMDB): 13 endogenous metabolites and 5 exogenous metabolites. SVMs were determined earlier in blood, urine, but there is still no information in HMDB about these metabolites in EBC. The most representative group consisted of 12 SFAs, 11 of them are endoge- nous metabolites. The content of stearic and palmitic acids in EBC of patients with asthma was significantly decreased in compared with healthy. We found negative correlations between SFAs in EBC and spirometry parameters (FVC, FEV1 and FEV1/FVC) (p<0.05) in asthma patients.

Conclusion: The pathological process in the respiratory tract changes the expression of SFAs in EBC, indicating the involvement of these metabolites in the pathogenesis of asthma.

P2202 Exercise increases the hydrogen peroxide release in exhaled breath condensate

Jiche Maximilian Marek1, Juliane Volke2, Wolfgang Marek3, Petra Platen2.
1Department for Clin. and Exp. Occupational Dermatology, Institute for Prevention and Occupational Medicine of the German Social Accident Insurance, Institute of the Ruhr-Universität Bochum (IPA), Bochum, North Rhine-Westphalia, Germany; 2Department of Sports Medicine and Sports Nutrition, Ruhr-Universität Bochum, North Rhine-Westphalia, Germany; 3Institute of Occupational Physiology, Augusta Teaching Hospital, Bochum, North Rhine-Westphalia, Germany

Background: Exhaled breath condensate (EBC) contains numerous mediators of oxidative stress (NO, H2O2). Exercise is characterised by an increase of reactive oxygen species (ROS), which can also be found in EBC. Building of hydrogen peroxide (H2O2) can be induced by ROS. In order to get inside into the correlation of H2O2 release in EBC and exercise, we investigated H2O2 release at rest and at different levels of exercise.

Methods: 20 healthy subjects, (23.3±1.5 years), were investigated, during resting conditions as well as at 60%, 75%, and 90% of maximal work capacity (pmax) (each lasting 5 minutes) on a cycle ergometer. 100 L exhaled air along with capillary blood samples were collected under stationary load conditions. EBC was obtained by cooling the exhaled air volume to -20°C. H2O2 was analyzed using the EcoCheck device (EcoCheck, FILT). H2O2 was analyzed using the EcoCheck device (EcoCheck, FILT). In further analysis the release per minute and the release for the total amount of water from 100 L exhaled breath were calculated.

Results: At rest H2O2 concentration in EBC was 216±52 nmol/L. H2O2 release in the collected EBC was 115±45 pmol/min. At 60%, 75% and 90% of pmax, H2O2 concentration in EBC increased to 288±80, 322±71, 334±95 nmol/L (p<0.01). Taking the theoretical water volumes of 4.4 ml EBC derived from 100 L exhaled air into account, H2O2 release increased to 160±75, 250±88 and 357±162 pmol/min (p<0.001). The correlation of H2O2 release and ventilation can be described by r=0.9.

Conclusions: In healthy subjects, a nearly 3-fold increased of H2O2 release in
EBC was found during relaxing exercise. The elevated levels of H$_2$O$_2$ may be interpreted as an increase of ROS during relaxing exercise.

P2023

Protein markers in the exhaled breath condensate of lung carcinoma patients

Georgiy Aksenok$^{1}$, Alexey Konyukh$^{1}$, Vladimir Bagrov$^{1}$, Eldar Anayev$^{1}$, Oleg Prik$^{1}$, Igor Popov$^{1}$, Eugene Nikolai$^{1,2}$, Sergey Vorhulev$^{1}$, Kinet. and Mech. of Emcy. and Cat. Reactions, IBCP RAS, Moscow, Russian Federation; $^{1}$On and Molecular Physics Laboratory, INECP RAS, Moscow, Russian Federation; $^{2}$Pulmonary Oncology Department, Gertsen Moscow Research Institute of Oncology, Moscow, Russian Federation; $^{3}$Clinical Department, Research Institute of Pulmonology, Moscow, Russian Federation

Background: Analysis of exhaled breath condensate (EBC) is an emerging method of non-invasive diagnosis of respiratory diseases. The growing number of biomarkers identified in the EBC, allow to diagnose a wide range of diseases. The aim of this study was to identify protein markers in EBC of lung cancer patients by mass spectrometry.

Materials and methods: EBC of 25 patients (mean age ±5 years) with different forms of lung cancer were collected using R-TableTM, freeze dried, treated by trypsin. Bathes were analyzed by nanoFlow LC-MS/MS with a 7-Tesla Finnigan LTQ-FT mass spectrometer. The list of direct peptide mass and mass of their fragments, with following identification of proteins in the Mascot databases was generated by means of BioWorks BROWSER 1.1 SR. Previously obtained data from healthy volunteers served as a control.

Results: Proteins which are non-specific for healthy people EBC were identified at more than half samples e.g. Keratin II-Z-protein used in the test-systems for the differentiation of epithelial origin cells circulating in blood of cancer diseased persons. Collagen α - the protein that reflects the degradation of connective tissue cells. Hemoglobin subunits - characterized bleeding, as evidenced by clinical disease. In 31% of EBC samples detected proteins are also not typical of the healthy volunteers. Raised levels in EBC of the proteins were detected in 22% of samples.

Conclusion: The present study showed increased presence of specific proteins in EBC of lung cancer patients compared with healthy people.

P2024

Particle content in exhaled air depending on breathing maneuver

Per Johansson$^{1}$, Björn Bake$^{1}$, Ekaterina Mirogrodskaya$^{2}$, Anna-Charlotte Almstrand$^{1}$, Anna Bredberg$^{1}$, Anna-Carin Olin$^{1}$, $^{1}$Occupational and Environmental Medicine, Sahlgrenska Academy at University of Gothenburg, Gothenburg, Sweden; $^{2}$Respiratory Medicine and Allergology, Sahlgrenska Academy at University of Gothenburg, Gothenburg, Sweden

The airway opening generates particles in the distal airways. At high exhalation flows, particles can be formed due to dynamic compression in more central airways. The aim with the present study was to compare particle number and size distributions as well as concentrations of SpA in EBC formed during tidal breathing, slow expiration and maximal expiratory compression (slow expiration), Dynamic compression (DC): maximal exhalation followed by airway opening and dynamic compression using forced exhalations.

In 27 steroid-naive patients with high-controlled asthma, the TNN in EBC was 6.24±2.93 mkM. In 28 patients with controlled BA taking IKS, TNN was 4.66±2.34 mkM (p=0.03). In patients with partially controlled BA, TNN level was 23.62±6.82 mkM in patients with bad control - 6.52±2.62 mkM. The correlation between TNN and ACQ scores was found in the whole group (p=0.047), however, the significance was varying in groups with different therapy. In the group of steroid-naive patients, p=0.02; in patients treated with IKS, p=0.024. The interpretation of TNN in patients with BA, if it is performing for the additional characterization of the control level, should include the consideration of therapy taking by patients.

P2025

Exhaled breath temperature in COPD patients

Gabriel Garcia$^{1}$, Miguel Bergna$^{2}$, Orlando Lopez Jové$^{2}$, $^{1}$Pneumology, CENASMA, La Plata, Argentina; $^{2}$Pneumology, Hospital Antonio Cetrángolo, Tucumán, Argentina

Introduction: Chronic obstructive pulmonary disease (COPD) is a common airway inflammatory disorder with structural degradation of the airway tissue. Previous reports showed that patients with COPD had EBT lower than normal subjects. Recently, a new combined COPD assessment was established based on the spirometric classification and risk of exacerbation (GOLD 2011).

Objectives: Evaluate the EBT in COPD patients according to the new combined COPD assessment and compare to healthy subjects.

Methods: EBT was corrected (using the X-halo, Delmedica, Singapore) in 80 COPD patients (FEV1: 54±14, age 60±8 years, 46 males) and 80 healthy controls. Lung function, COPD Assessment Test (CAT), exacerbations and previous treatment was performed.

Results: There was no differences EBT between COPD patients 34.2°C vs healthy subjects 33.3°C. There was no correlation between EBT with FEV1% (r=0.23) and EBT with CAT (p=0.01) but patients with previous exacerbations had EBT more than patients without exacerbations (34.7°C vs 33.9°C, p<0.001). According to the new combined COPD assessment (20 subjects for each group), the EBT was: Group A 34.1°C, Group B 33.9°C, Group C 34.7°C and Group D 34.8°C (p<0.001 between Group B vs Group C and D).

Conclusion: Our results showed that COPD patients with frequent exacerbations, 2 or more per year, had increased Exhaled Breath Temperature, therefore may reflect inflammation in the COPD lung.

P2026

Concentrations of nitric oxide metabolites in the exhaled breath condensate in children with different bronchial asthma control

Svetlana Soudarova$^{1}$, Igor Klimanov$^{1}$, Tatiana Eliseeva$^{2}$, Nailya Kubysheva$^{1}$, $^{1}$Clinical and Experimental Biophysics, Pulmonology Research Institute, Moscow, Russian Federation; $^{2}$Department of Internal Medicine, The Medical Institute, Nichny Noegorod, Russian Federation; $^{3}$Immunology Laboratory, Municipal Hospital “Aibolit”, Nichny Noegorod, Russian Federation

Although bronchial asthma (BA) is an inflammatory disease, the clinical tools that evaluate asthma control today do not include the qualitative measures of inflammation.

Objective: Determination of correlations between total concentration of nitrates and nitrates (TNN) in the exhaled breath condensate (EBC) and children asthma control level determined using the Asthma Control Questionnaire (ACQ).

Material and methods: 81 patients with atopic BA (from 6 to 17 years old) were clinically evaluated. Patients completed ACQ, underwent spirometry, and measurement of their TNN in EBC. In 55 children, the high BA control (ACQ≤0.29±0.26) was diagnosed. 13 children had partially controlled BA (ACQ=0.96±0.20), and 13 children had only bad BA control (ACQ=1.95±0.33). Among the children with high BA control, 27 had no steroid (IGKS) treatment, 28 had only basic IGKS therapy. All children with partial or bad control had IGKS therapy.

In 27 steroid-naive patients with high-controlled asthma, the TNN in EBC was 6.24±2.93 mkM. In 28 patients with controlled BA taking IGKS, TNN was 4.66±2.34 mkM (p=0.03). In patients with partially controlled BA, TNN level was 23.62±6.82 mkM in patients with bad control - 6.52±2.62 mkM. The correlation between TNN and ACQ scores was found in the whole group (p=0.047), however, the significance was varying in groups with different therapy. In the group of steroid-naive patients, p=0.02; in patients treated with IGKS, p=0.024.

The interpretation of TNN in patients with BA, if it is performing for the additional characterization of the control level, should include the consideration of therapy taking by patients.

P2027

Saturated fatty acids in exhaled breath condensate in COPD patients

T.N. Anokhina$^{1}$, E.K. Aanaev$^{1}$, A.I. Revelsky$^{1}$, I.A. Revelsky$^{1}$, A.G. Chuchalin$^{1}$, $^{1}$Clinical Department, Research Institute of Pulmonology, Moscow, Russian Federation; $^{2}$Chemistry Faculty, M.V. Lomonosov Moscow State University, Moscow, Russian Federation

In recent years suggest that individual saturated fatty acid (SFA) has specific properties which are associated with important biological functions. The composition of SFAs in exhaled breath condensate (EBC) in COPD has not previously been studied.

Aim: To identify SFAs in EBC and to assess their relationship with clinical and functional parameters in patients with COPD.

Methods: We have studied 20 patients with COPD and 30 healthy nonsmokers. EBC was collected using ECOScreen. SFAs in EBC have been identified by gas-chromatography - mass-spectrometry method (GC-MS) and NIST-2005 library.

Results: 12 SFAs (palmitic acid, stearic acid, myristic acid, etc.) have been identified in EBC in COPD patients. There were no differences in the content of SFAs in EBC in COPD patients and healthy subjects. We have found the relationship between EBC content of caproic acid (R=0.46), ematic acid (R=0.61), caprylic acid (R=0.50) and PVC in COPD patients (p<0.05). In addition, the content of myristic acid in EBC significant correlated with oxygen saturation (R=...
Airway calibers are related to changes in Fractional exhaled nitric oxide (FeNO) in asthma; however, this effect is not well understood especially during spontaneous airway obstruction.

**Objective:** The aim of this study was to evaluate whether FeNO levels could be masked by airway obstruction in patients with asthma and COPD.

**Methods:** FeNO and spirometry measurements were performed before and after albuterol inhalation in 20 steroid-naive asthmatics with moderate to severe airway obstruction. For comparison, 15 normal subjects, 16 asthmatics using inhaled corticosteroids/long-acting β2-agonist (LABA) combination therapy and another group of patients with COPD were also studied. All the patients with asthma and COPD recruited had positive bronchodilator test (BDT).

**Results:** FeNO (median [25th-75th percentiles]) increased significantly after albuterol inhalation in steroid-naive asthmatics 61.50 [40.50-85.00] vs. 80.00 [53.00-108.00], P=0.000) but not in non-asthmatics 27.50 [20.25-35.00] vs 25.00 [17.25-38.00], P=0.741, COPD 13.00 [5.00-22.00] vs 11.00 [6.50-16.00], P=0.017) and normal subjects 11.00 [8.00-14.00] vs 11.00 [8.00-13.00], P=0.424. The absolute increase in FeNO correlated significantly with the absolute increase in FEV1 (r=0.48, P=0.000) in whole asthmatic patients. There was no significant correlation between FeNO (excluding pre-and post-bronchodilator) and FEV1 or FVC in all four groups.

**Conclusions & clinical relevance:** Spontaneous airway obstruction reduces FeNO level in patients with steroid-naive asthma but not treated asthma and COPD.

**P2209**

No difference between measured and calculated FENO at low flow with the clinical software for extended NO analysis

Alexandra Thorndalsson1, Pekka Meriläinen1, Marianna Hörman1,2, 1Centre for Research & Development, Uppsala University/Count Council of Gävleborg, Gaukänning, Sweden, 2Department of Respiration, Uppsala University, Uppsala, Sweden

The extended NO analysis, with the calculations of alveolar NO (CawNO), airway wall NO (CawNO), diffusion rate of NO (DawNO), gives more information of the respiratory system than a single value. It demands an exhalation at low flow which is difficult in children.

The aim was to identify the lowest flow to use for the extended NO analysis, non-linear method (Högman & Meriläinen algorithm, HMA1). In addition, the clinical software using the HMA is incorporated in the CLD 865 NO analyser (ECG Monitor AG, Switzerland) was tested with these optimal flow rates. Healthy subjects, smokers and atopic subjects with an age of 18-65 years participated. The lower flow rate of 10, 20 and 30 mL/s was tested in 20 subjects. The HMA was used to calculate the NO parameters and a significant difference was found with different flow rates. It was concluded that 20 mL/s could be used instead of 10 mL/s.

Subjects (n=32) volunteered to exhale at 20, 50, 100 and 350 mL/s with the use of the clinical software. FENO0.05 was calculated from the HMA. There was no statistical difference between the measured and calculated.

**Result**

<table>
<thead>
<tr>
<th>Measured</th>
<th>Calculated</th>
</tr>
</thead>
<tbody>
<tr>
<td>FENO 0.05 ppb</td>
<td>FENO 0.05 ppb</td>
</tr>
<tr>
<td>FENO 0.05 ppb</td>
<td>CN01 ppb</td>
</tr>
<tr>
<td>CN01 ppb</td>
<td>35.6 (32.6)</td>
</tr>
<tr>
<td>35.6 (32.6)</td>
<td>14 (10-19)</td>
</tr>
<tr>
<td>14 (10-19)</td>
<td>674 (527-864)</td>
</tr>
<tr>
<td>Data given as geometric mean and 95% CI, except CN01 given as mean.</td>
<td></td>
</tr>
</tbody>
</table>

In conclusion, the clinical software with the HMA to calculate NO parameters could accurately generate FENO0.05. The flow rates to use for the non-linear model (Häggman & Meriläinen algorithm) can be derived using the optimal flow rates.
cause the variation coefficient was 35.8%. It means that changes of FeNO should be interpreted with caution.

**P2213**

No effect of breathing dry gas on exhaled nitric oxide concentration at rest
Ida Sofie Munksgaard1, Silje Hool1, Einar Thoresen1,2. 1Institute of Medicine, University of Bergen, Norway; 2Dept of Occupational Medicine, Haukeland University Hospital, Bergen, Norway

**Background:** The prevalence of asthma in elite endurance athletes is high, in particular among skiers. Prolonged high ventilatory demands in a cold and dry environment may contribute to the development of, or worsening of the asthma. Training periods often take place at altitudes of 2-3000 meter where ventilatory demand and respiratory heat and water loss are higher. Measurement of exhaled nitric oxide (FeNO) is a non-invasive diagnostic tool for assessing the degree of asthma control which is more correlated with FeNO and FeNO.

**Aim:** To assess the effect of breathing dry air on FeNO.

**Methods:** Nine healthy subjects aged 21 – 27 yrs (4 men) breathed dry air and humidified air for 90 min at rest in random order on separate days. FeNO was measured with a chemiluminescence analyser (Eco Medics AG, Duernten, Switzerland) at an expiratory flow rate of 50 ml·s⁻¹ – 15 min before and – 15 min after the exposures.

**Results:** There was no difference in the baseline FeNO between the two days. After exposure to dry air FeNO decreased from 23.3 (SD=17.5) to 20.9 (SD=15.2) ppb, and after humid air it increased from 24.9 (SD=14.6) to 22.9 (SD=13.6) ppb.

**Discussion:** Breathing dry air at rest did not influence FeNO. Higher ventilatory demands result in larger respiratory water loss, which may be a trigger of a bronchomotor response. The transient reduction in FeNO after exercise must be controlled for when studying the combined effects of exercise and dry air on FeNO.

**P2214**

Fractional exhaled nitric oxide in bronchiectasis
Young-Jae Cho, Hyo-Jeong Lim, Jong Sun Park, Sei Won Lee, Jae Ho Lee, Choong-Jack Lee; 1Internet Health, Seoul National University Bundang Hospital, Seongnam, Korea

Fractional exhaled nitric oxide (FeNO) can be measured easily, rapidly, and noninvasively for assessment of airway inflammation, especially mediated by eosinophil, such as asthma. In bronchiectasis, the pathogenesis has been known as chronic airway inflammation and infection with abnormal airway dilatation; however, there are little studies to evaluate the clinical application of exhaled nitric oxide in bronchiectasis.

From March 2010 to September 2011, 30 patients with bronchiectasis diagnosed by chest high resolution CT performed FeNO, compared with various pulmonary diseases, including asthma (n=24), COPD (n=21) and other infectious diseases (n=25). All patients carried out eosinophil count with chemistry, simple radiograph, spumon examination and spirometry, if indicated.

FeNO (mean, ppb) in patients with bronchiectasis was 19.1, compared to 68.4, 31.7 and 18.9 in asthma, COPD and other infectious diseases, respectively.

There was no difference in the baseline FeNO between the two days. After exposure to dry air FeNO decreased from 23.3 (SD=17.5) to 20.9 (SD=15.2) ppb, and after humid air it increased from 24.9 (SD=14.6) to 22.9 (SD=13.6) ppb.

**Discussion:** Breathing dry air at rest did not influence FeNO. Higher ventilatory demands result in larger respiratory water loss, which may be a trigger of a bronchomotor response. The transient reduction in FeNO after exercise must be controlled for when studying the combined effects of exercise and dry air on FeNO.

**P2215**

The usefulness of the simultaneous measurement of IOS and FeNO in the management of asthma
Nosehiro Hozawa, Michikazu Terada, Maki Hozawa; Allergology, Hiroshima Allergy and Respiratory Clinic, Hiroshima, Japan

**Background:** The evaluation of airway lesions by impulse oscillometry (IOS) is possible to assess the inflammation of various airway diseases, including asthma (n=24), COPD (n=21) and other infectious diseases (n=25). All patients carried out eosinophil count with chemistry, simple radiograph, spumon examination and spirometry, if indicated.

FeNO (mean, ppb) in patients with bronchiectasis was 19.1, compared to 68.4, 31.7 and 18.9 in asthma, COPD and other infectious diseases, respectively. FeNO in bronchiectasis was significantly lower than asthma. FeNO mainly shows the inflammation of the small airway in the bronchiectasis.

**Objective:** To assess the effect of dry breathing on FeNO.

**Methods:** Nine healthy subjects aged 21 – 27 yrs (4 men) breathed dry air and humidified air for 90 min at rest in random order on separate days. FeNO was measured with a chemiluminescence analyser (Eco Medics AG, Duernten, Switzerland) at an expiratory flow rate of 50 ml·s⁻¹ – 15 min before and – 15 min after the exposures.

**Results:** There was no difference in the baseline FeNO between the two days. After exposure to dry air FeNO decreased from 23.3 (SD=17.5) to 20.9 (SD=15.2) ppb, and after humid air it increased from 24.9 (SD=14.6) to 22.9 (SD=13.6) ppb.

**Discussion:** Breathing dry air at rest did not influence FeNO. Higher ventilatory demands result in larger respiratory water loss, which may be a trigger of a bronchomotor response. The transient reduction in FeNO after exercise must be controlled for when studying the combined effects of exercise and dry air on FeNO.
(VOCs) in exhaled air as they can be applied as biomarkers of e.g. oxidative stress and inflammation.

To *in vitro* mimic ILD-related damage, human epithelial cells were exposed to bleomycin and headspace air and supernatants were collected. The supernatants were used to analyze cytotoxicity and markers of oxidative stress and inflammation. The headspace air was analyzed using time of flight GC-MS after which a discriminating VOC profile was composed.

To *in vivo* identify VOC patterns specific for ILD patients, the breath of 50 ILD patients and 50 healthy controls was screened for distinctive VOCs. The *in vitro* volatome consisted of >2000 compounds of which 5 VOCs correctly classified samples with 95% correctness using the original data set and 85% using cross-validated observations. Although chemical identification of these compounds is ongoing, preliminary data suggest that they are oxygen-containing poly-unsaturated hydrocarbons resulting from lipid peroxidation. Additionally, markers of oxidative stress and inflammation were elevated upon bleomycin treatment ($P<0.05$) whereas no cytotoxicity was observed.

The *in vitro* volatome consisted of >6000 compounds that are currently under analysis. Interestingly, preliminary data show that discrimination between patients and controls, as well as between various severity stages of ILD, is possible based on a limited VOC number. VOC analysis appears to be very promising in detecting ILD-like changes *in vitro* and is currently investigated as a new tool for diagnosing ILD *in vivo*.

**P2219**

**Speech breathing pattern analysis in adults with a self reported history of asthma**

Rokhsaneh Tehrany,1, Anne Bruton1, Anna Barney2.1 Faculty of Health Sciences, University of Southampton, Hampshire, United Kingdom; 2 Institute of Sound and Vibration Research, University of Southampton, Hampshire, United Kingdom

**Background:** While speech and breathing patterns are known to alter in acute episodes of respiratory disorders like asthma, it is not known if they alter in respiratory pathology, during stable periods of the disease.

**Aims and objectives:** To compare speech breathing patterns in healthy adults and those with a self reported history of asthma.

**Methods:** Eleven adults with a self reported history of asthma (mean age = 29) and 29 ‘healthy’ adults (mean age = 34) with no history of respiratory disease were recruited from the University of Southampton. Breathing patterns were recorded non-invasively using Respiratory Inductive Plethysmography during 4 minutes each of quiet breathing, and 3 speech tasks: reading, describing and conversation. Offline analysis was performed where 6 breathing parameters were extracted; inspiration and expiration time ($T_I$, $T_E$), breath cycle time ($T_{tot}$), inspiration and expiration magnitude ($I_M$, $E_M$), and respiratory rate (RR).

**Results:** Inspiration time was significantly shorter at the 95% level in the asthma group (mean: 0.52, sd: 0.07) compared with the ‘healthy’ participants (mean 0.66, sd 0.12) ($t$: 3.27, $p = 0.002$). Although no statistically significant differences were found in other parameters, the asthma group had a higher mean RR during all speech tasks compared to the healthy group.

**Conclusion:** These preliminary findings suggest that ventilatory patterns during speech in adults with a self-reported history of asthma are characterised by a shorter $T_I$ and faster RR compared to ‘healthy’ participants. Research with larger samples is needed to confirm these initial findings, as breathing patterns during structured tasks like speech could be useful for monitoring lung health.