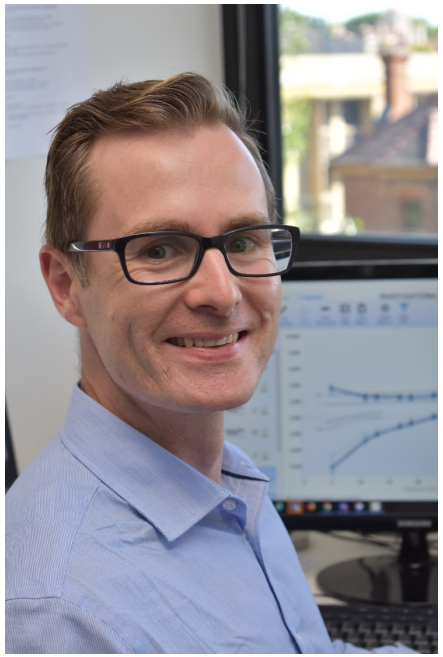
ATS 2019 Highlights

Respiratory Structure and Function Early Career Professionals

Get to know members of the RSF Assembly



David G Chapman, PhD

Chancellor's Postdoctoral Research Fellow
School of Life Sciences
University of Technology Sydney
https://www.uts.edu.au/staff/david.chapman

Is your research clinical, basic science or translational?

Translation (and clinical)

Tell us about your research?

I consider myself a translational physiologist with research interests predominantly in obstructive airway diseases and their interaction with obesity. I use both conventional and complex measures of lung function, as well as advanced imaging, to try to understand the development, progression and underlying pathophysiology of asthma and COPD. I have recently become interested in the interaction between abnormal lung function and co-morbidities such as poor sleep quality.

Where do you see yourself in 5 years?

I hope to continue as a research-focussed academic leading a small (but productive) research team. I also look forward to being involved in teaching.

What do you find is the major benefit of RSF Assembly Membership?

The RSF Assembly is supportive and collegial, and my research has greatly benefited from the constructive and expert feedback provided by many of the RSF assembly members. I've also met many new friends through the RSF Assembly and catching up (for a drink) is always a highlight of the annual meeting.

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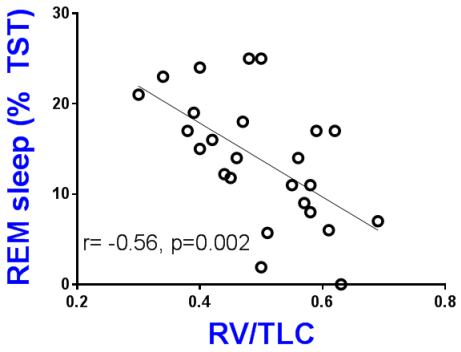

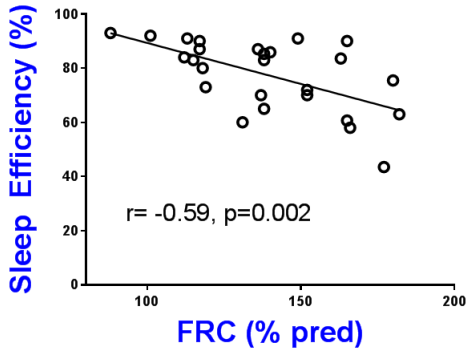

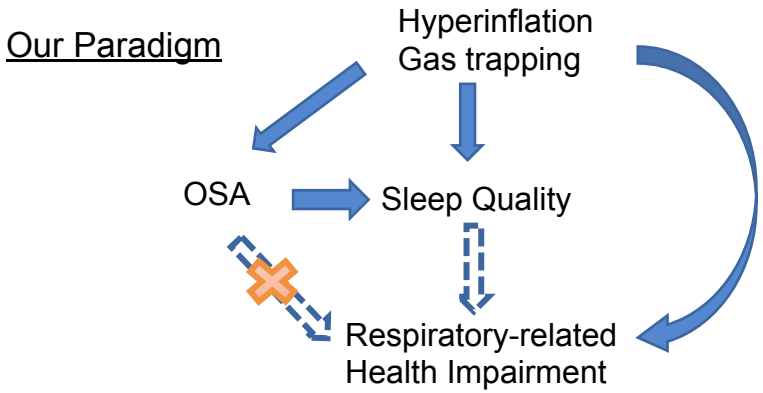

Reduced Sleep Quality Correlates with Worse Hyperinflation in Patients with COPD

Objective: Poor sleep quality is a major contributor to the reduced quality of life in patients with Chronic Obstructive Pulmonary Disease (COPD) yet the association between poor sleep and COPD is poorly understood. Therefore the aim is to determine the prevalence of poor sleep in patients with COPD and the relationship between sleep quality and lung function.

Methods: 27 COPD patients completed the Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) questionnaires to determine self-assessed sleep quality and sleepiness. Spirometry and body plethysmography were measured before participants underwent a full overnight polysomnogram to quantify the degree of Obstructive Sleep Apnoea (OSA), assessed by the Apnea-Hypopnea Index, and measure sleep quality, assessed by percent of Rapid Eye Movement (REM) sleep, Sleep Efficiency (total sleep time as a percent of total time in bed) and arousal index (EEG arousals/ hour). The correlation between lung function, expressed as percent predicted, and sleep quality was analysed by Pearson correlations.

Results: Poor sleep (PSQI ≥5) was reported in 24/27 and sleepiness (ESS ≥10) was reported in 8/27. 15 patients had mild or no OSA (AHI < 15), 6 had moderate OSA (AHI 15-30) and 6 had severe OSA (AHI ≥30). Percent REM sleep correlated with FEV1, FRC and RV (r= 0.39, p=0.05; r= -0.41, 0.04; r= -0.64, p<0.001, respectively). Sleep Efficiency correlated with FRC (r= -0.59, p=0.002) but not FEV1 or RV (p=0.3 and 0.12, respectively). Arousal Index correlated with FRC (r= 0.4, p=0.05) but not FEV1 or RV (p=0.9 and 0.7, respectively). In multiple regression analyses, both increased AHI and increased FRC were independent predictors of reduced sleep efficiency (r2=0.51, p < 0.001). In contrast, in multiple regression analyses, increased RV but not AHI predicted reduced percent REM Sleep (r2=0.39, p<0.001).

Conclusion: Almost all patients with COPD experienced poor sleep quality despite the presence of predominantly mild OSA. Hyperinflation contributed to reduced sleep quality, independent of sleep apnea, suggesting that hyperinflation may be a potential target for improving sleep quality in COPD.

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