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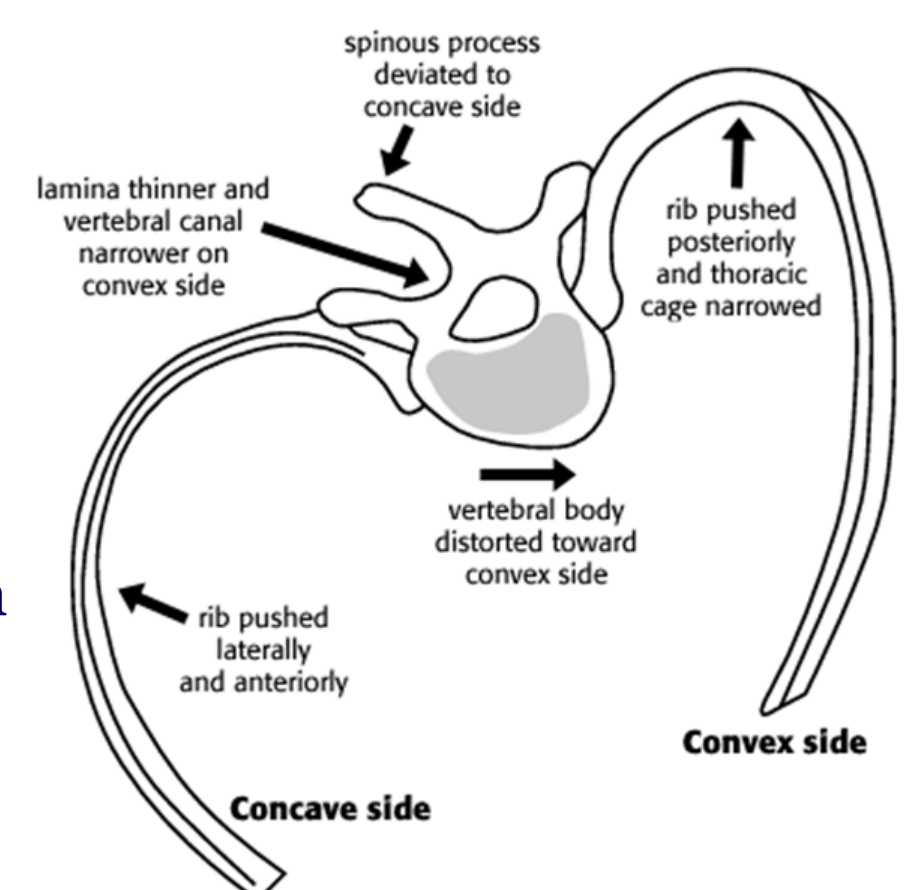
SOSORT Award Winner 2017: The Relationship Between Spinal Rotation and Lung Function in Patients with Scoliosis

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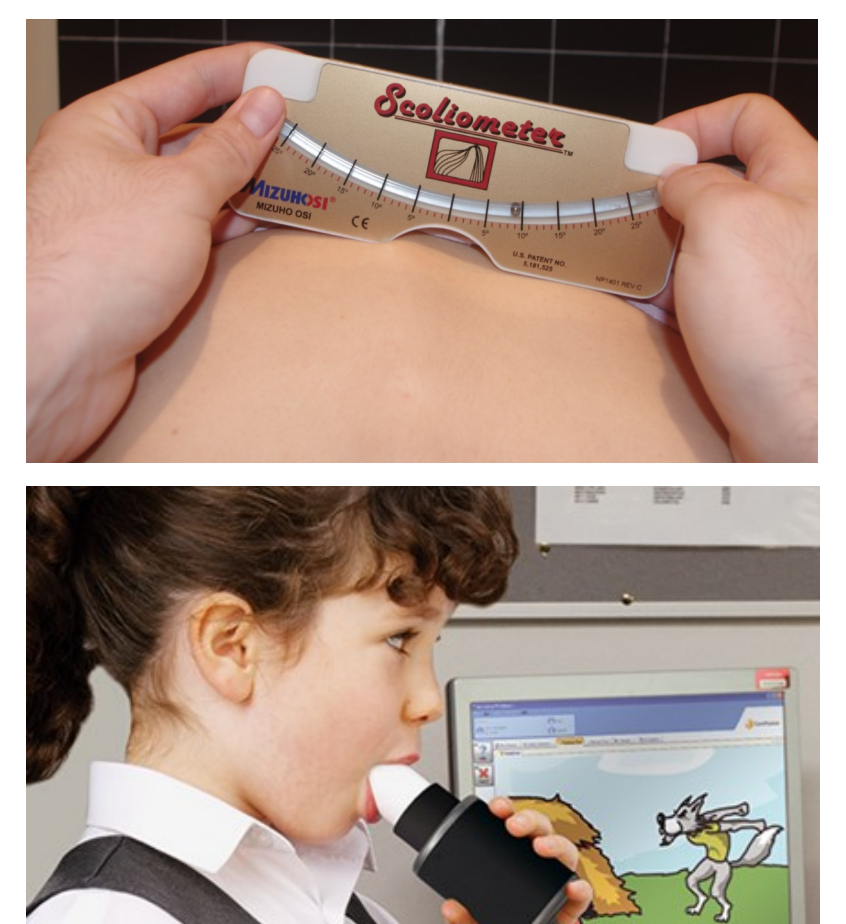
Introduction

- Scoliosis is a condition of the spine that causes deformity in the transverse, sagittal and coronal planes.
- Pulmonary function is widely documented as a factor that is affected by scoliosis.
- Lung function impairment tends to be common in patients with severe scoliosis (Cobb angle >70 degrees).
- There has been little research that examines pulmonary function in the transverse plane.
- The aim of this retrospective, cohort design study was to investigate the relationship between thoracic spinal rotation as measured by thoracic angle of trunk rotation (ATR) and lung function in patients with scoliosis**



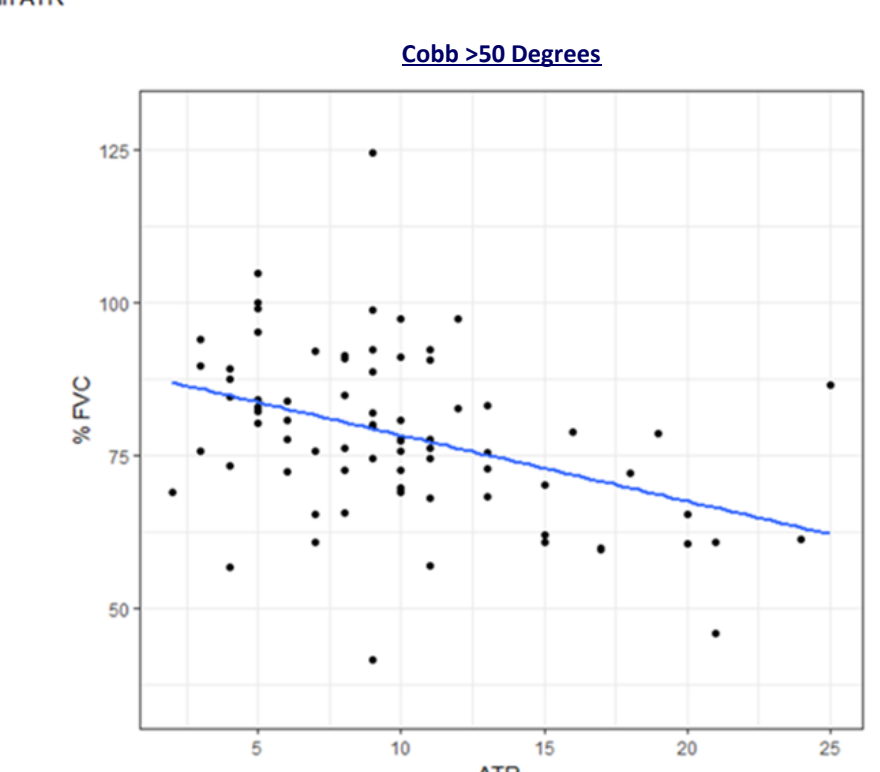
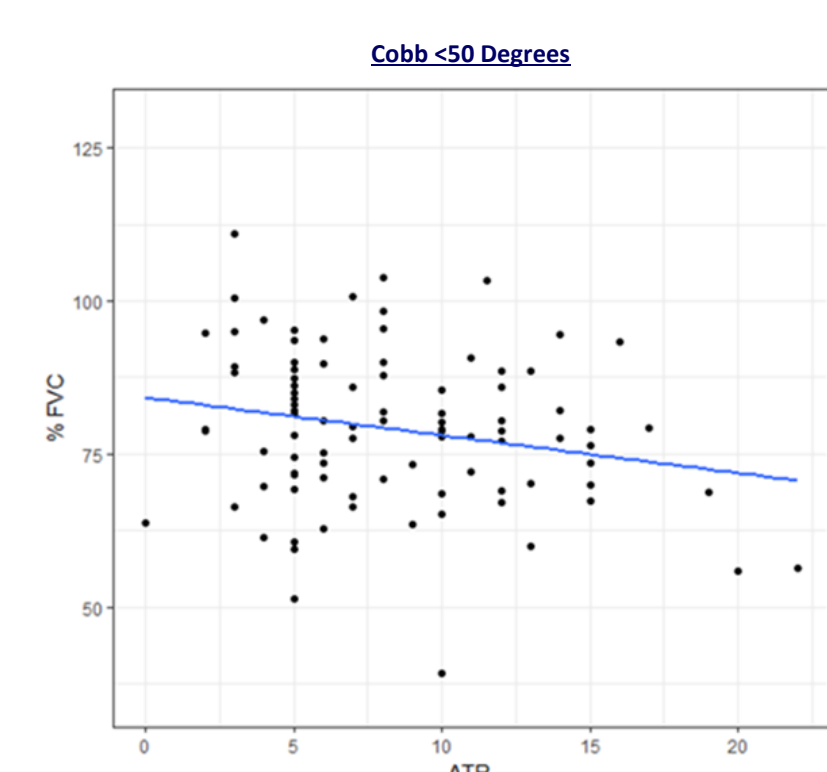
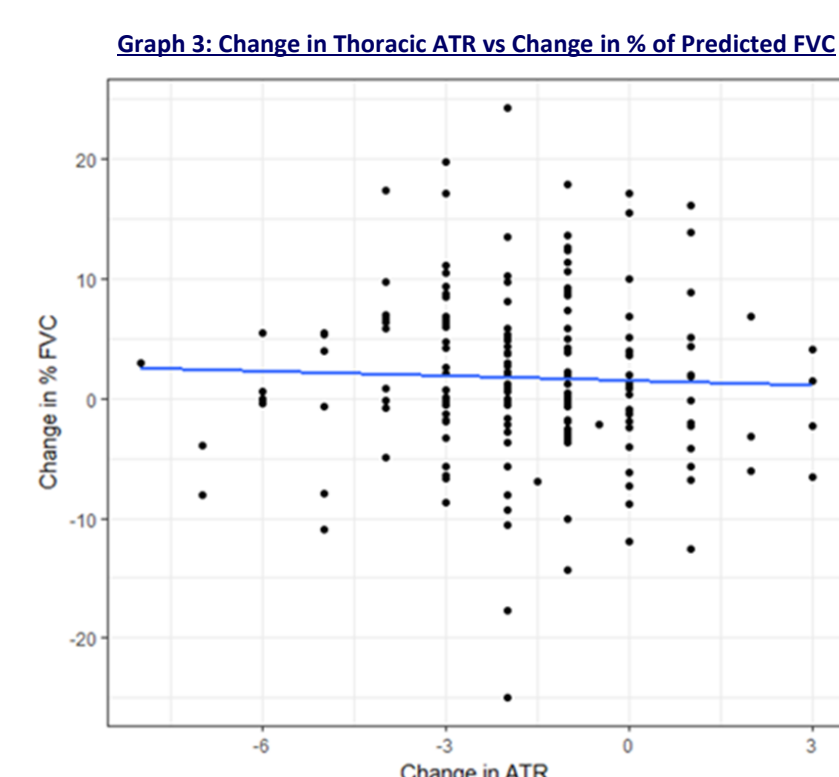
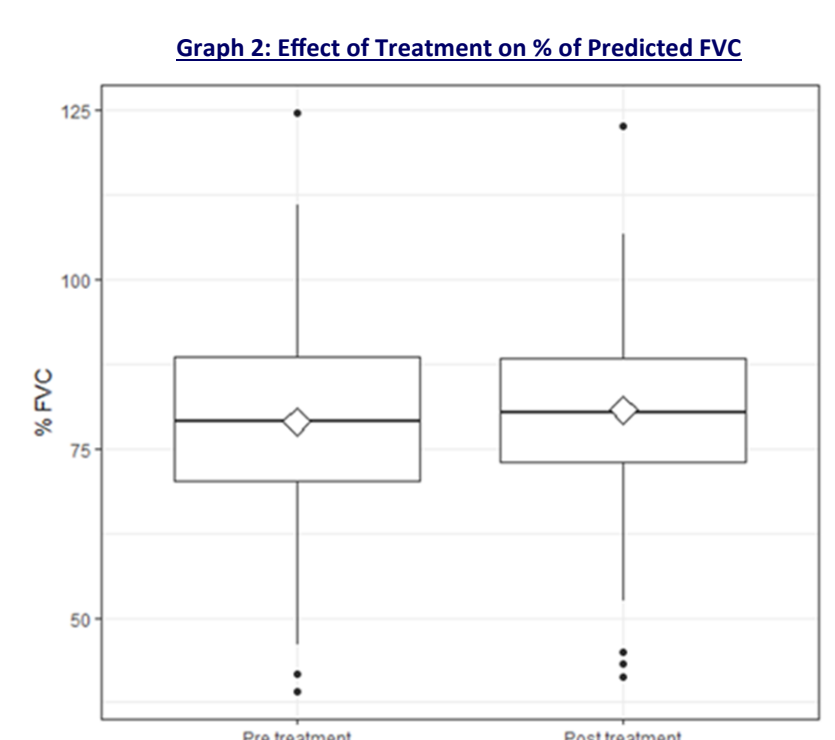
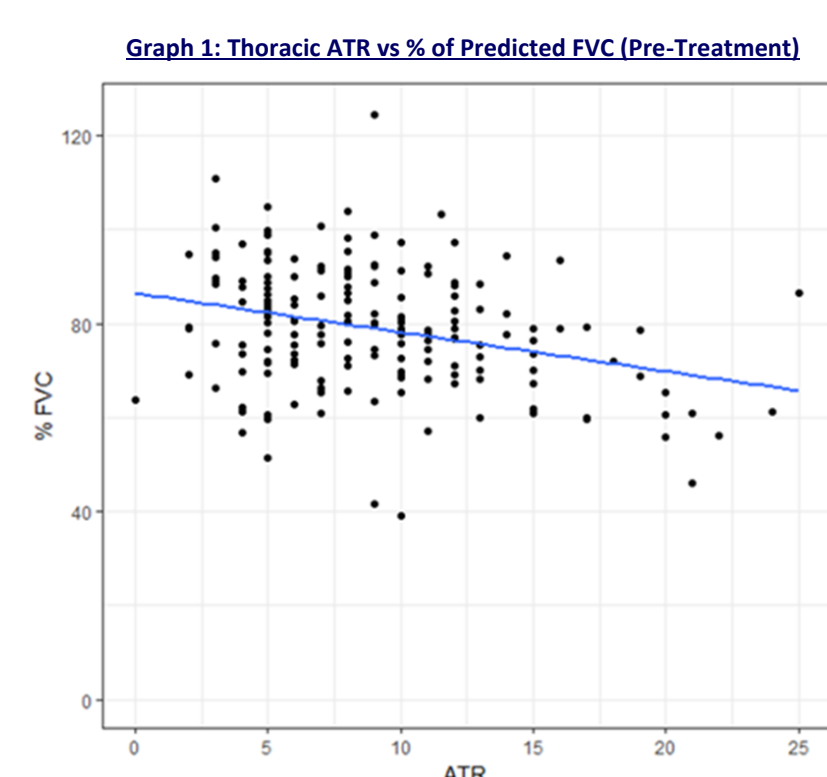
Method

- 179 patients with thoracic scoliosis were included in the study.
- Thoracic spinal rotation was measured as thoracic ATR using the Bunnell Scoliometer.
- Lung function was measured as Forced Vital Capacity (FVC) using Spirometry Software.
- Data was collected retrospectively from routine assessment of all patients between January 2015 and August 2016
- Analysis was completed on the relationship between the thoracic ATR and patients' percentage of predicted FVC values in relation to the normal predicted FVC of each patient.



Results

- Pre-treatment average thoracic ATR of the patients was 9.07 degrees (SD=4.75) and the average percentage of predicted FVC was 79% (SD=13%). (Graph 1)
- There was a significant negative relationship between thoracic ATR and percentage of predicted FVC (1 degree decrease in thoracic ATR was associated with a 0.83% increase in percentage of predicted FVC ($p < 0.05$)). (Graph 2)
- There was a statistically significant increase in percentage of predicted FVC of 1.67% post-treatment ($p < 0.05$), however this was not all attributable to a change in thoracic ATR (1 degree decrease in thoracic ATR was only associated with a 0.16% increase of percentage of predicted FVC ($p > 0.05$)). (Graph 3)



Conclusion

- Prior to treatment, there was a strong relationship between thoracic ATR and percentage of predicted FVC.
- The percentage of predicted FVC was shown to be improved with the treatment programme; however these improvements cannot be fully attributed to decreasing the thoracic ATR.