Rigshospitalet

Are Current EOS Treatments Really Better than Fusion or Natural History for Pulmonary Function?

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Disclosures

- Research support:
- Medtronic
- K2M
- Globus Medical

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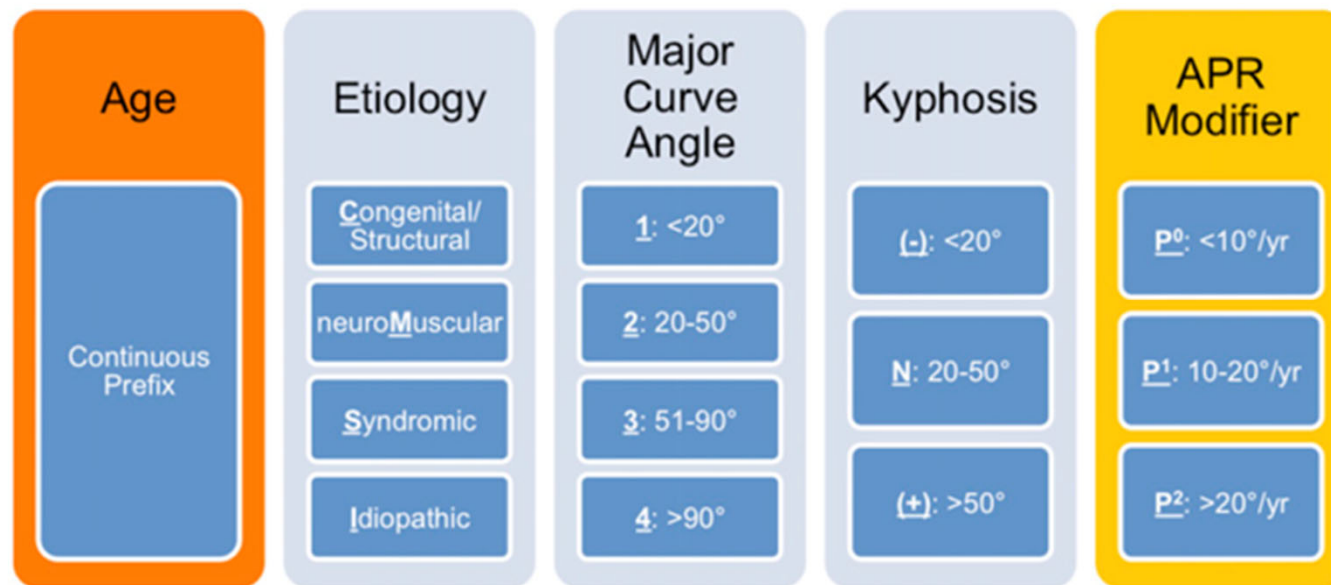
September 2014

- "There is no agreed upon definition of EOS …."

September 2014

- "There is no agreed upon definition of EOS ...."

Classification of EOS

- Scoliosis with onset < ten years of age
- Regardless of etiology

Age	Etiology	Major Curve Angle	Kyphosis	APR Modifier
Continuous Prefix	Congenital/Structural	1: <20°	(-): <20°	P⁰: <10°/yr
	neuroMuscular	2: 20-50°	N: 20-50°	P¹: 10-20°/yr
	Syndromic	3: 51-90°	(+): >50°	P²: >20°/yr
	Idiopathic	4: >90°		

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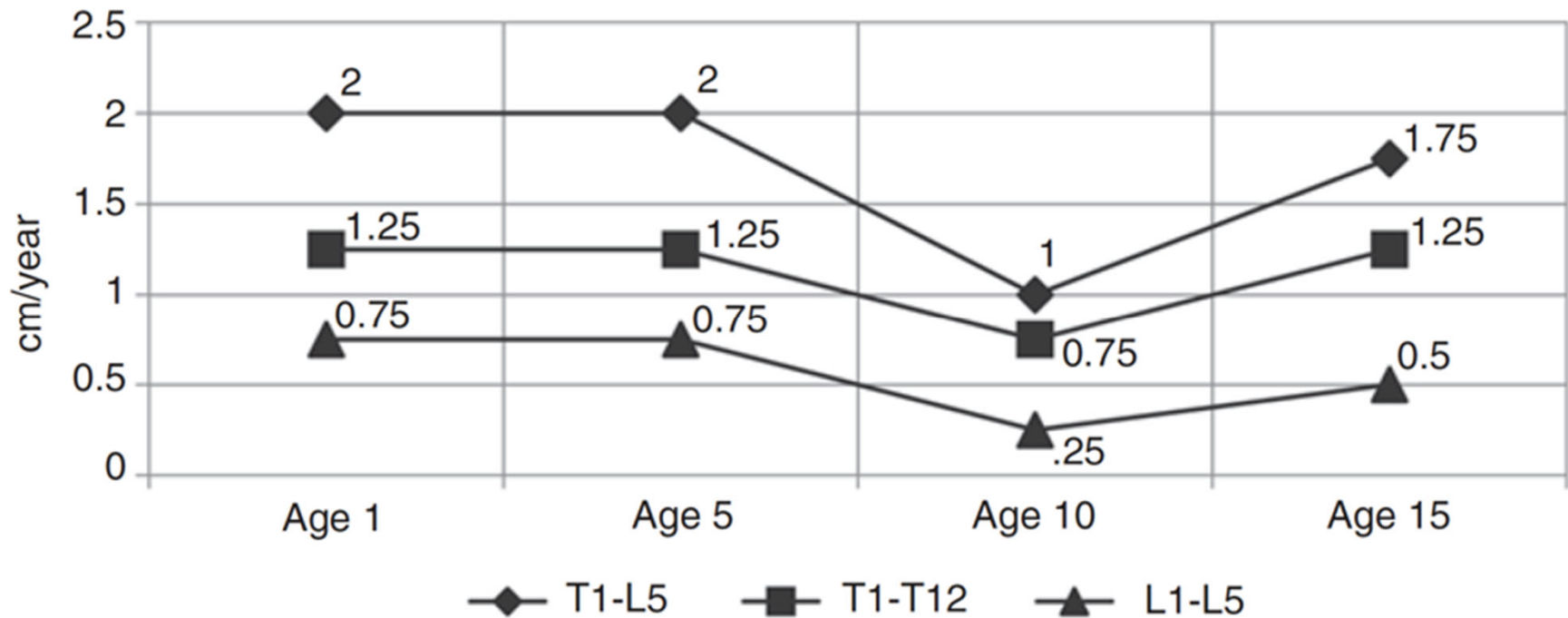*Natural History for Pulmonary Function?*

Campbell et al. 2007
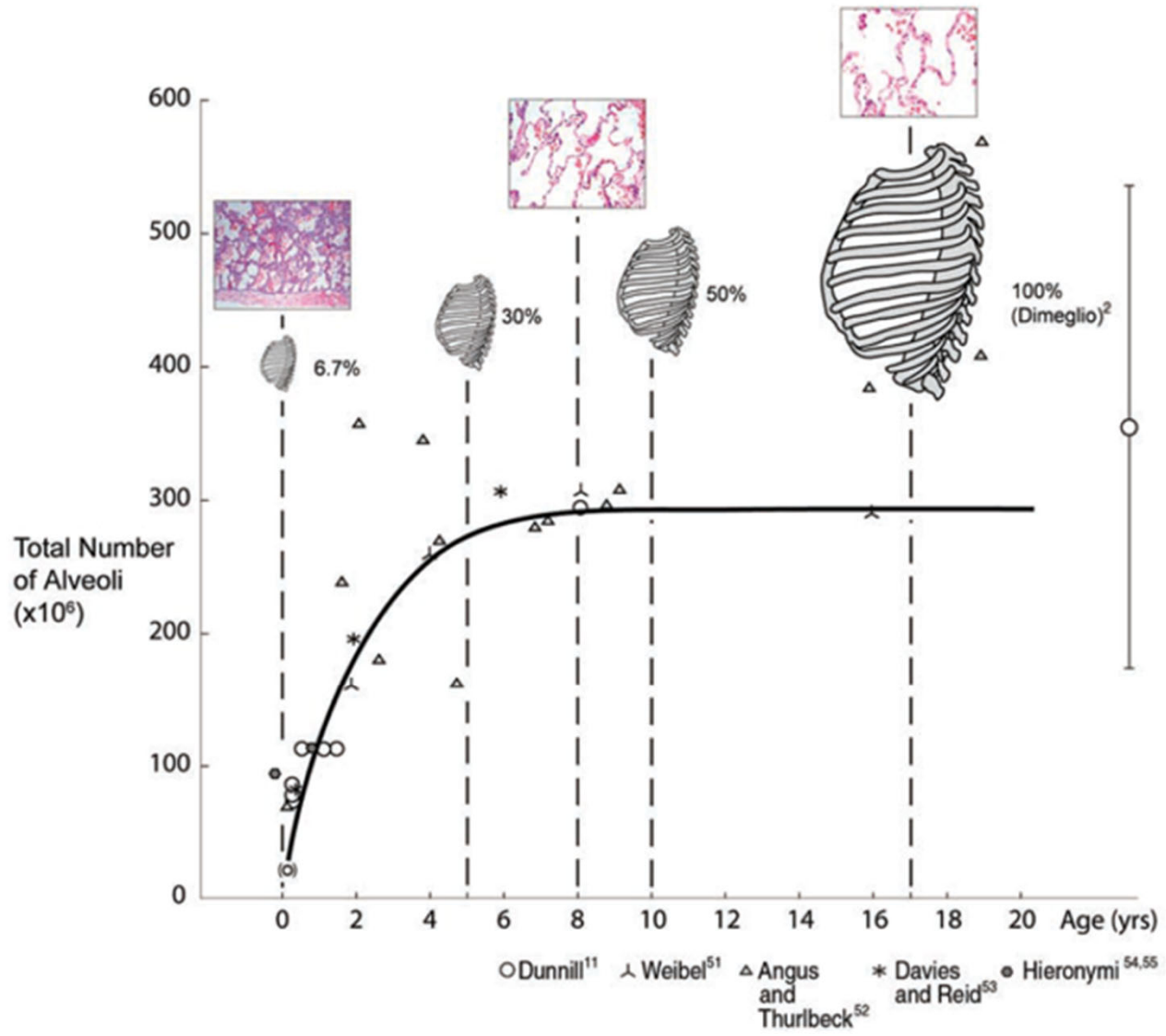
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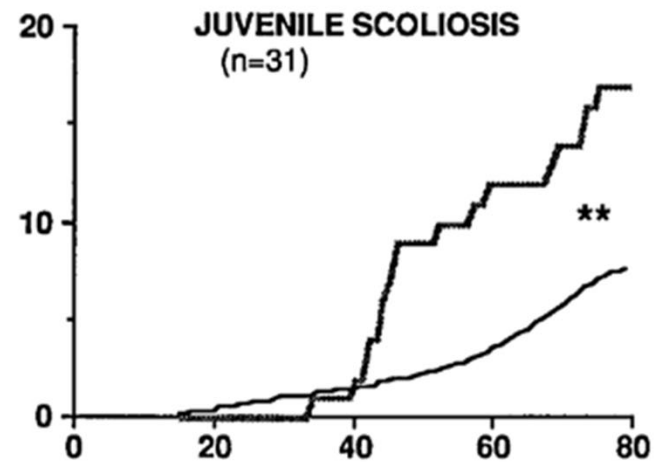
Spinal growth
Dimeglio A. J Pediatr Orthop B 1993;1:102-107

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Natural history
Pehrsson et al. 1992

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Succes criteria

- Survival
- Pulmonary function
- Cardiac function
- HRQL
- Reduce caregiver burden

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Pulmonary Function Test

- FVC (forced vital capacity)
- FEV1 (forced expired volume in 1 second)
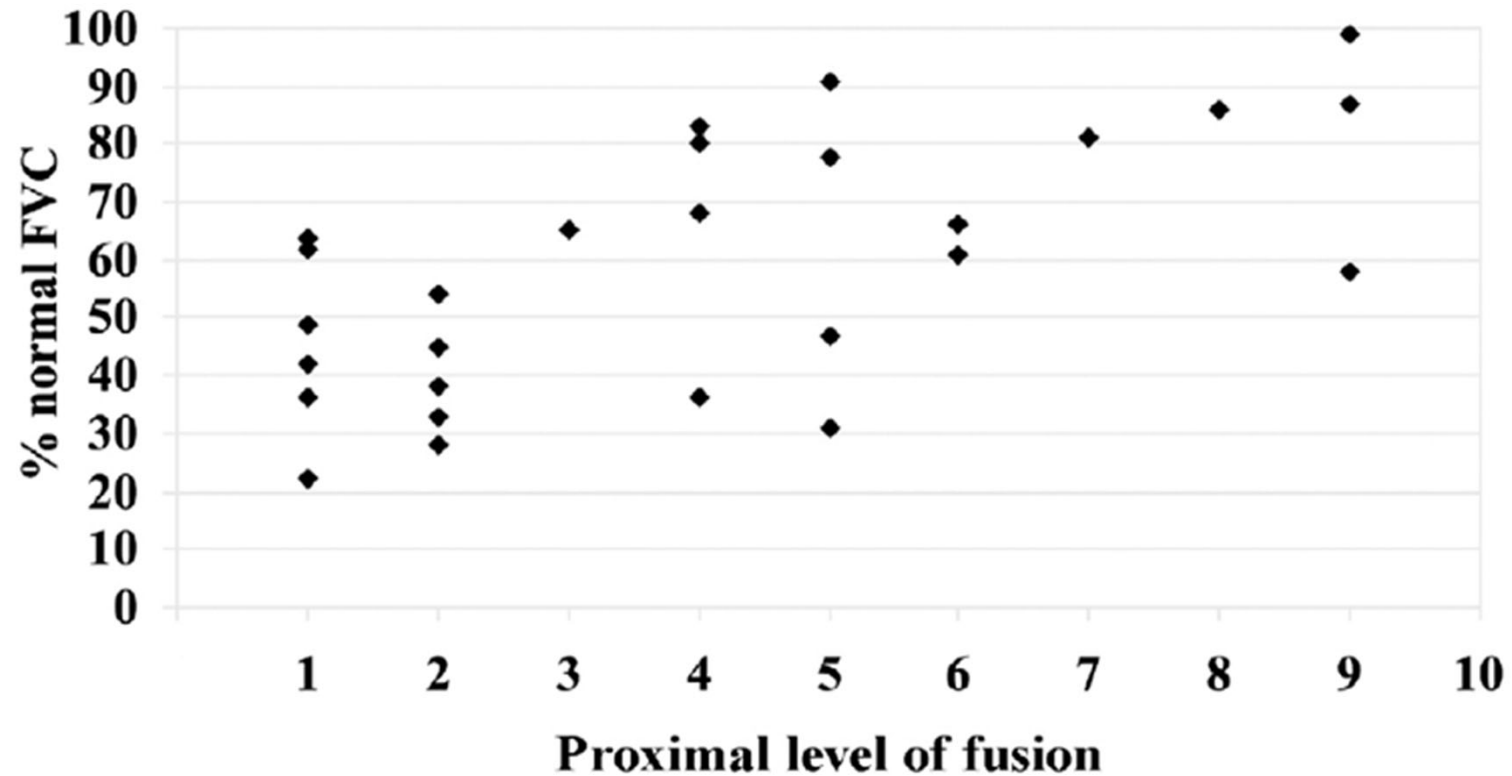- TLC (total lung capacity)
- VC (vital capacity)

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Pulmonary Function Test

- FVC (forced vital capacity)
- FEV1 (forced expired volume in 1 second)
- TLC (total lung capacity)
- VC (vital capacity)
- Lung clearance index?
- Diffusion capaticy?

Early fusion

- Goldberg et al. Spine 2002;27:619–628.
- Karol et al. J Bone Joint Surg Am. 2008;90:1272-81.
- Vitale et al. Spine 2008;33: 1242–1249.

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Karol et al. J Bone Joint Surg Am. 2008;90:1272-81

$(r = 0.62, p = 0.0004)$

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A Retrospective Cohort Study of Pulmonary Function, Radiographic Measures, and Quality of Life in Children With Congenital Scoliosis

An Evaluation of Patient Outcomes After Early Spinal Fusion

Michael G. Vitale, MD, MPH,*†‡ Hiroko Matsumoto, MA,*†‡ Michael R. Bye, MD,§¶
Jaime A. Gomez, MD,*† Whitney A. Booker, BS,*†‡ Joshua E. Hyman, MD,*†
and David P. Roye, Jr, MD*†

- n = 21
- Worse PFT
- Worse HRQL
- Shorter spines
- More pain

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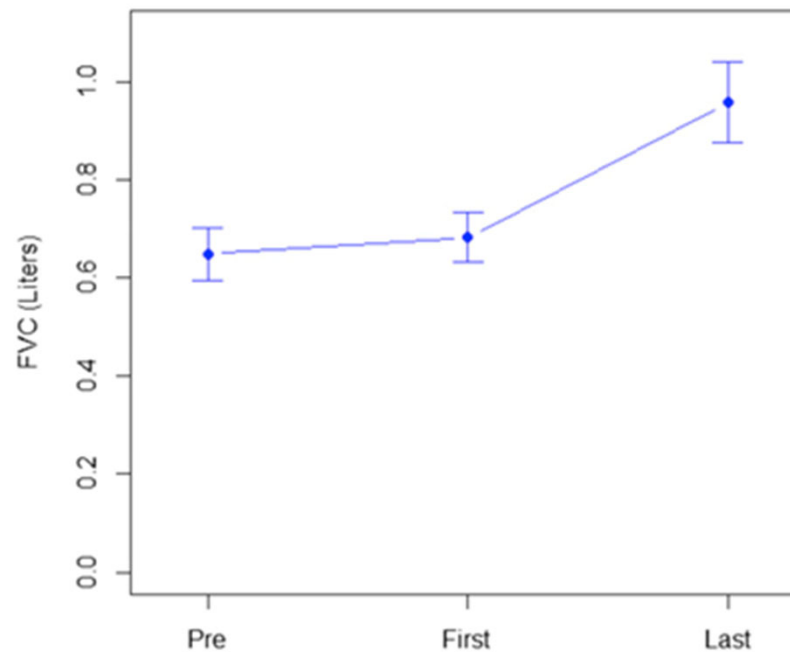
Current EOS treatments

- Observation
- Casting
- Surgery
  - hemiepiphysiodesis
  - growing rods
  - expandable rods
  - staples and tethers
  - guided growth

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Pulmonary and Radiographic Outcomes of VEPTR (Vertical Expandable Prosthetic Titanium Rib) Treatment in Early-Onset Scoliosis

Ozgur Dede, MD, Etsuro K. Motoyama, MD, Charles I. Yang, MD, Rebecca L. Mutich, RT, Stephen A. Walczak, RRT, Austin J. Bowles, MS, and Vincent F. Deeney, MD

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ELSEVIER

CrossMark
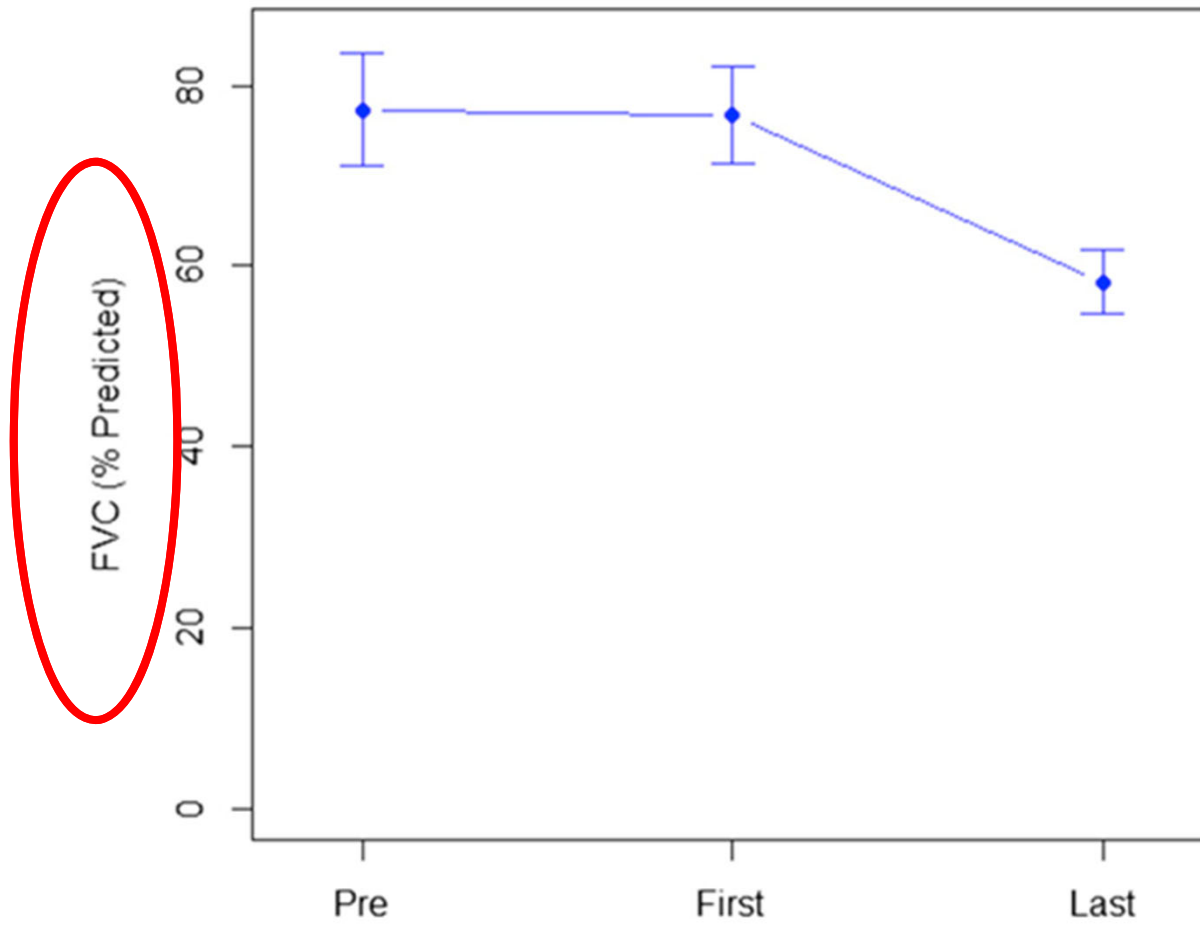
CME Review

How to avoid misinterpreting lung function tests in children: a few practical tips
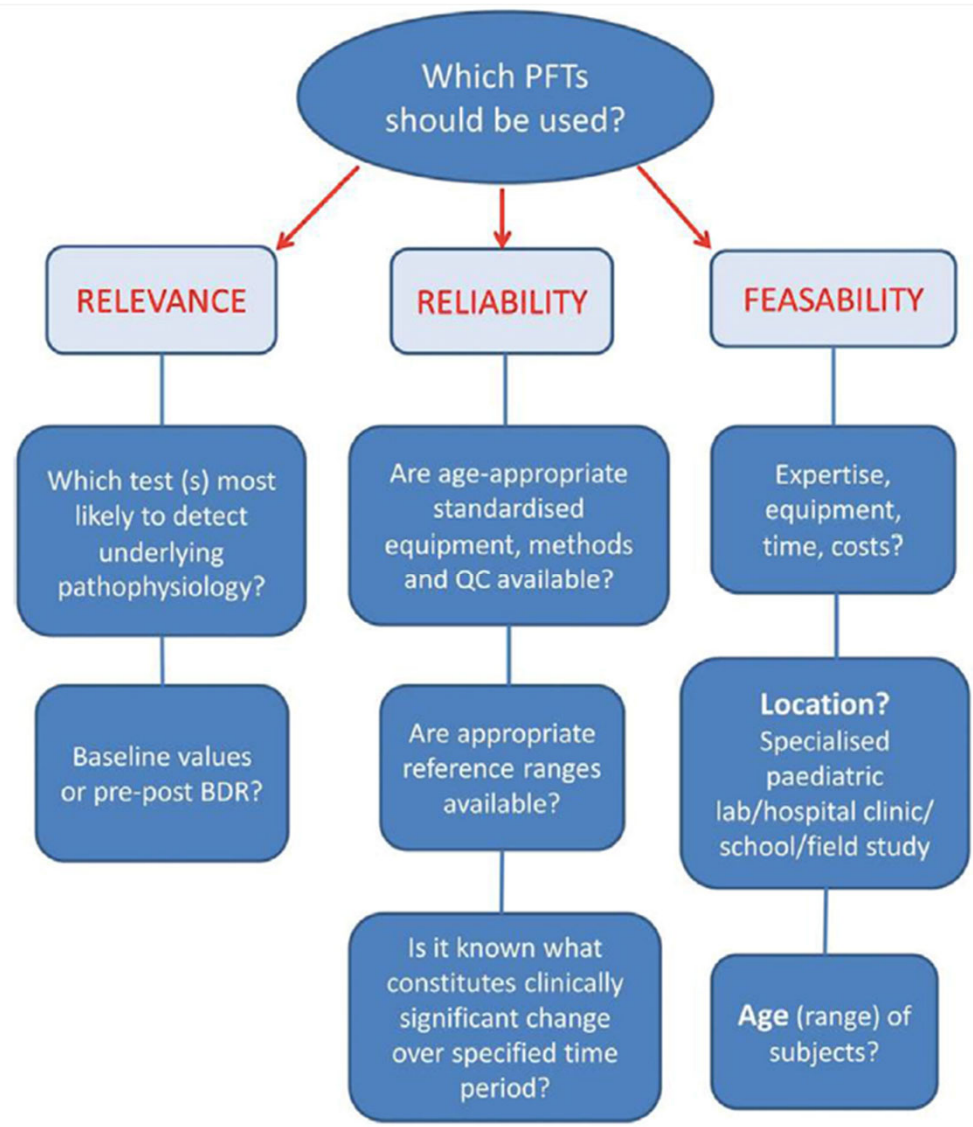
Janet Stocks [1,*], Jane Kirkby [1,2], Sooky Lum [1]

[1] Portex Respiratory Unit, UCL, Institute of Child Health, London, UK
[2] Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK

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Is pulmonary function the best variable?
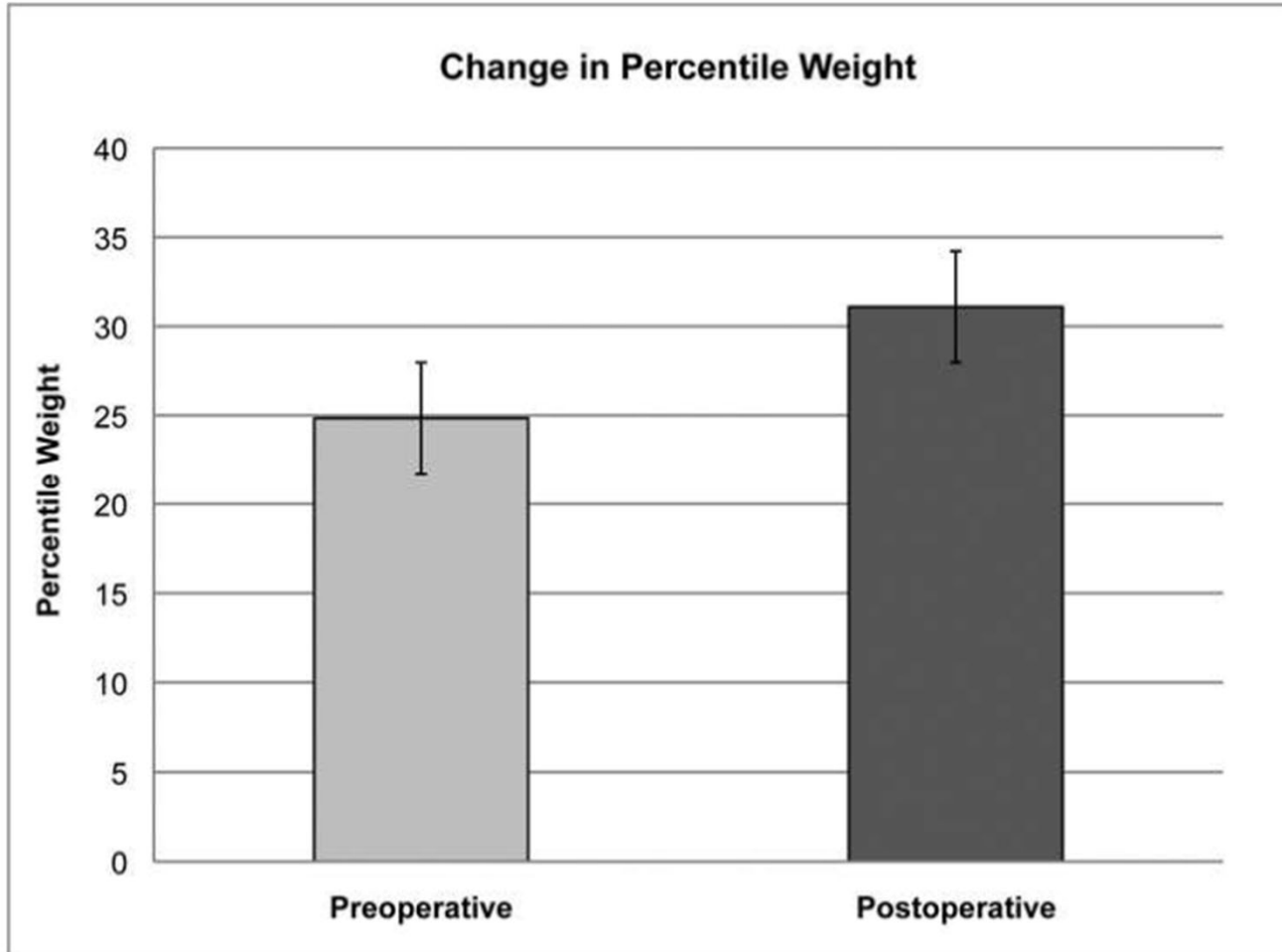
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Spine

DEFORMITY

Is There a Relationship Between Thoracic Dimensions and Pulmonary Function in Early-Onset Scoliosis?

Michael Glotzbecker, MD,* Charles Johnston, MD,† Patricia Miller, MS,* John Smith, MD,‡
Francisco Sanchez Perez-Grueso, MD,§ Regina Woon, MPH,¶ John Flynn, MD,‖ Meryl Gold, BA,*
Sumeet Garg, MD,** Gregory Redding, MD,†† Patrick Cahill, MD,‡‡ and John Emans, MD*

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Conclusion

- Prospective studies needed

- Reference values

- PFT in children

- Is PFT a proxy variable?

- PFT and clinical relevant changes

- Surgical treatment principles

- Health economy

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Thank you

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Long term prognosis
Infantile IS

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Congenital scoliosis.
Hemiepiphysiodesis age 5. T3-T6 right side

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Long term prognosis Infantile IS

- Born 1991

- Growing rod 1999

- Final fusion 2004

- Thoracic anterior fusion 2007

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