



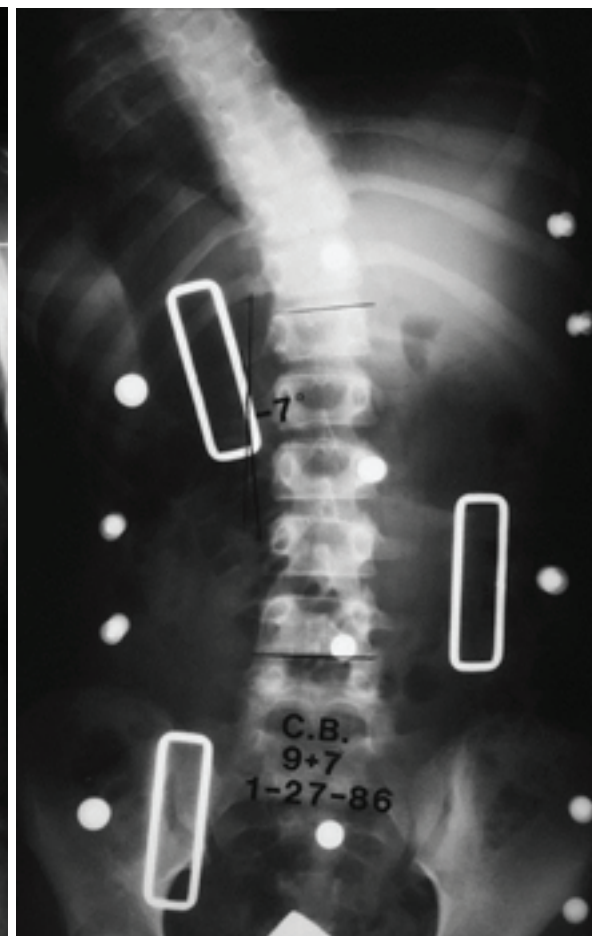
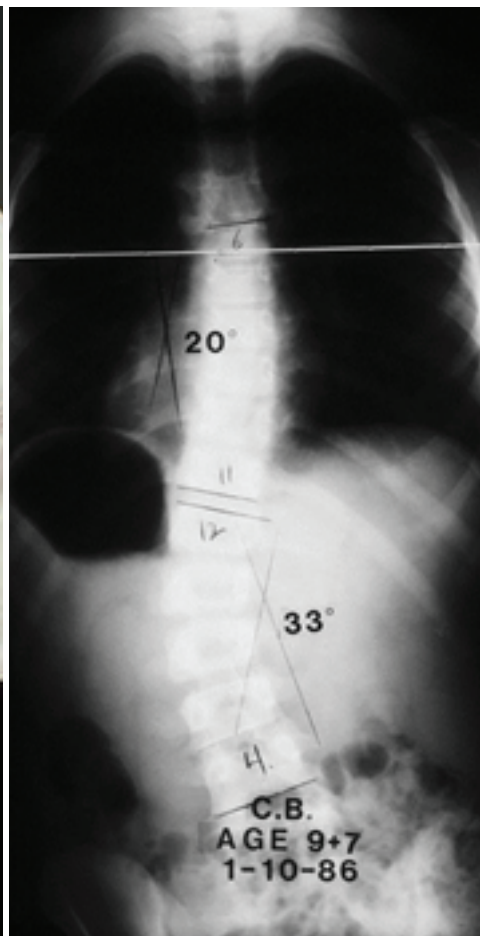
**Charleston
Bending Brace®**

524 Barbados Drive
Charleston, SC 29492
843-884-2202
www.cbb.org



Non-Surgical
Nighttime
Scoliosis Management

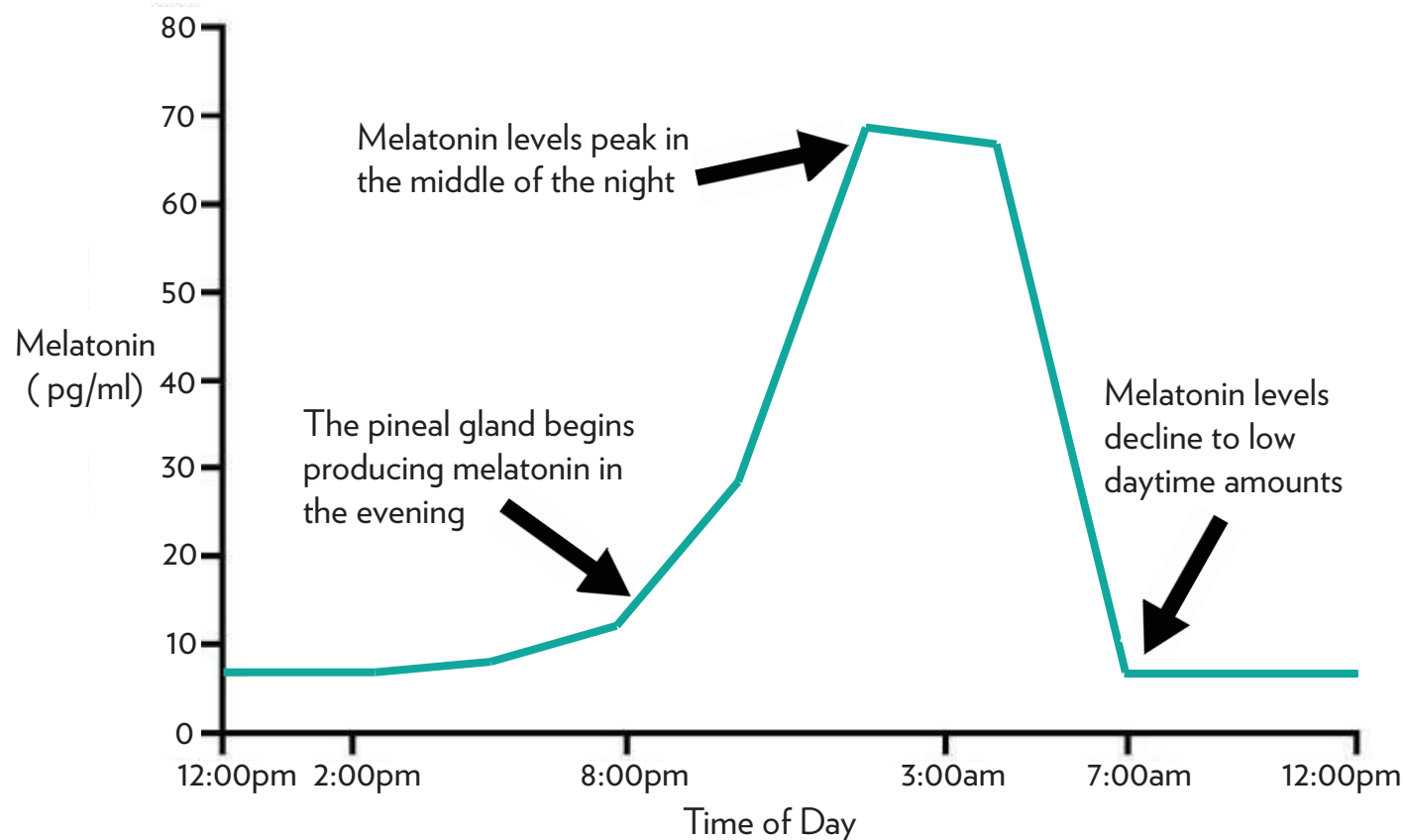
Bending Brace: Growth



Gravity vs. Growth

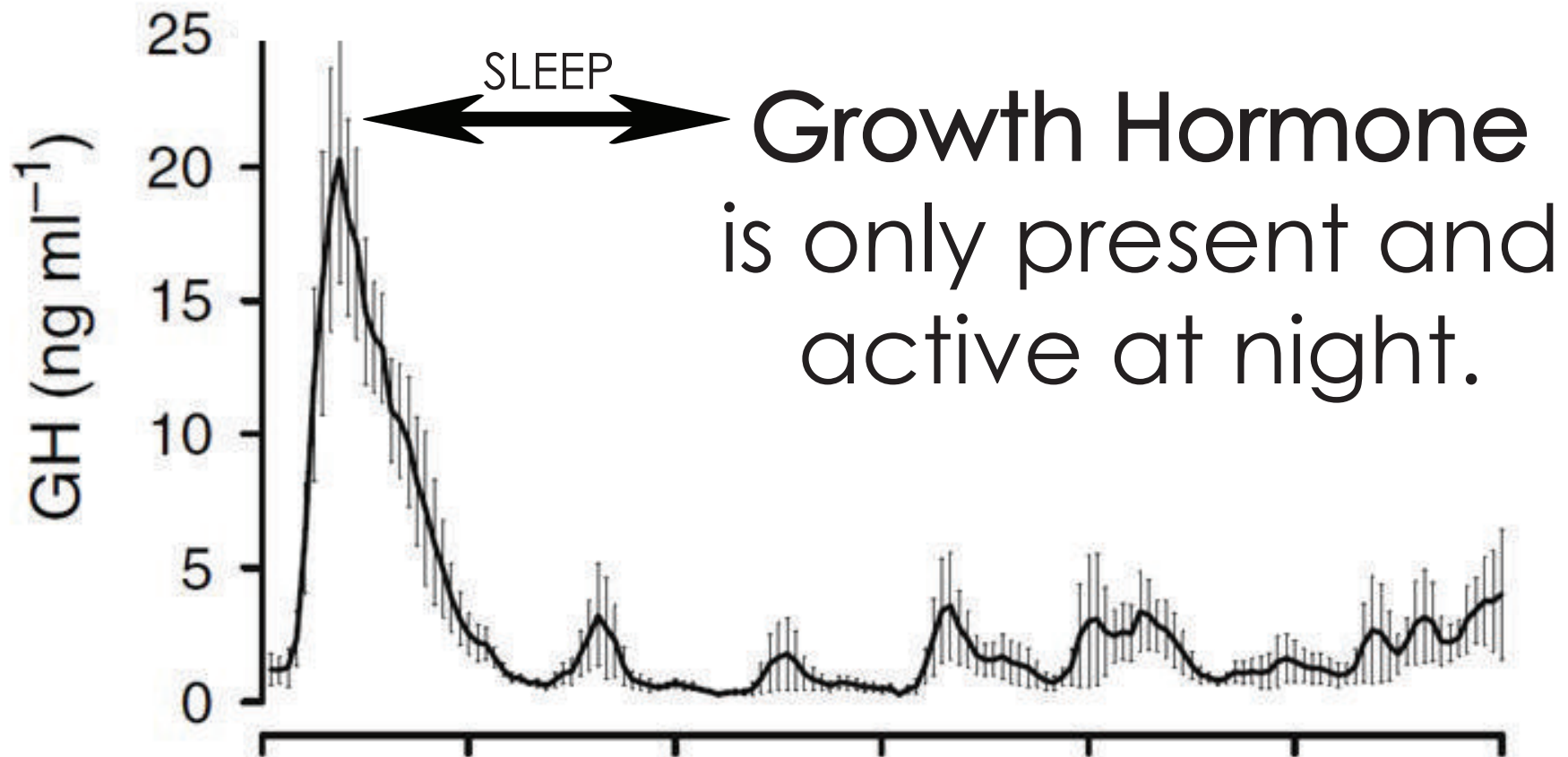
- **IF** scoliosis is a disorder of **GRAVITY** then **daytime** support is necessary.
- **IF** scoliosis is a disorder of **GROWTH** then **nighttime** bracing may be all that's required.

MELATONIN



- Levels are high at **night** - minimal levels during the day
- Levels are low in patients with progressive ALS

Growth Hormone



Brandenberger G, "The 24-h growth hormone rhythm", J Sleep Res. 2004 Sep;13(3):251-5.

Tibial Growth in Lambs



“...at least 90% of **bone elongation occurs during recumbency** and almost no growth occurs during standing or locomotion. The authors hypothesize that growth may also occur in children during rest or sleep.”

Noonan KJ, et al. JPO 2004;
24(6):726-31

Spinal Growth Modulation by Compression

1. Villemure I. Aubin CE. Dansereau J. Labelle i. H. European Spine Journal. 13:83, 2004
2. Newton PO, et.al. Spine. 30:2608, 2005
3. Stokes IA, Aronsson DD, et.al. Journal of Orthopaedic Research. 24:1327, 2006

In-Brace Correction

Correlates to Biomechanical Effectiveness of Brace Treatment in AIS

“In the framework of the **Hueter-Volkman principle**...in brace correction predicts long-term outcome of the treatment and provides insights in the understanding of brace biomechanics.”

Clin J, Aubin CÉ, Sangole A, Labelle H, Parent S Spine 2010

Biomechanical Study

- This study quantified the Charleston Bending Brace's biomechanical effect, which consists in inverting the asymmetrical compressive loading in the major scoliotic curve
- The reduction of the major scoliotic curve varied between 58% and 97% and was in the range of published clinical data.
- Internal compressive stresses up to 1 MPa were generated on the convex side of the major scoliotic curve and tensile stresses up to 1 MPa on its concavity

**Labelle H, Clin J, Aubin CE, Parent S Spine 2010
1;35(19):E940-710**

Early Intervention Study

- Early intervention treatment with the CBB may reduce progression to full-time bracing threshold.
- This study focused specifically on curve magnitudes between 15-25 degrees in skeletally immature, pre-menarchal females.
- 100% of patients in the control group (observation) resulted in curves progressing to standard criteria for full-time bracing.
- 29% of patients randomized to night time wear were maintained without curve progression. (Statistically significant).

Growth Modulation



- Bending increases pressure on convex vertebral growth centers to reduce growth
- Can be used for high thoracic curves
- Double curves are difficult to brace but can be treated by

New Evidence. New Solutions.



CBB Standard

- MPE (Modified Polyethelene)
 - Anterior Opening
- Dynamic Lumbar Pad (CBB Type II Curve Only)



CBB - Lite

- Softer Polyera Material
- Recommended for Smaller Patients
 - Neuromuscular Anomolies



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For all ordering information call Jackie
Hooper at 843-884-2202
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