

ONLINE LEARNING

Advantages of Nocturnal Bracing



Spinal.Tech/OnlineLearning

This e-book is designed as a companion piece to our Online Video Training.



Visit [YouTube.com/@SpinalTechnology](https://www.youtube.com/@SpinalTechnology) to watch the full video.

Advantages of Nocturnal Bracing

This is Spinal Technology's guide on the advantages of nocturnal scoliosis bracing.

It was created by **David Collins**, a certified orthotist with over 32 years of experience and a passion for the treatment of scoliosis.



Full-time bracing presents several disadvantages when trying to de-rotate and medially translate a curve, along with balancing and dealing with gravity in standing, walking, and sitting.

Nocturnal bracing presents multiple advantages:

- No gravity to deal with
- Natural elongation of the spine
- No muscle activity
- The righting reflex isn't active
- Elongation in both directions, not just against gravity

When the body is in the recumbent position, it's more flexible—there's no muscle activity, no righting reflex, and no effect of gravity. This also helps with in-brace irritation as patients are not sitting, standing, or walking in the brace. When patients are in the recumbent position the spine naturally elongates, allowing greater access to corrective forces.

Several studies have been done on in-brace correction.

The Milwaukee brace boasts a 55–60% in-brace correction.	The Boston brace has a 50% in-brace correction.	The Wilmington brace has a 50% in-brace correction.
The Miami brace has a 50% in-brace correction.	The Charleston brace has a 73% in-brace correction.	The Providence brace has the highest in-brace correction, at 98%.

One of the key components in nocturnal bracing is the Hueter-Volkman law, which explains the response of growth plate physiology and how it occurs during this cycle of growth.

Growth occurs at the inferior and superior borders of the vertebra. On the concave side, the pressure that is exerted on the vertebral growth plates slows the growth, and on the convex side, it allows it to grow at a natural rate. This shows that if the curve is untreated, it will only worsen.

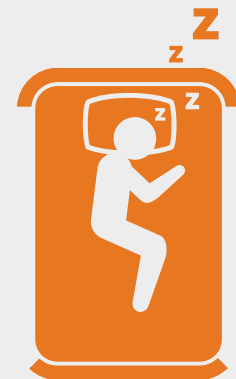
Nighttime bracing capitalizes on several relevant factors. One of them is that the human growth hormone is at its peak between 12 a.m. and 2 a.m. This means that the corrective action taken during this period stands the best chance of improving the growth plates' outcomes. Full-time bracing is not for everyone.

How effective can full-time bracing be with tissue displacement?

A patient with a high BMI count who could not tolerate a full-time brace. See the image of the initial X-ray with a right thoracolumbar curve. However, this patient was able to tolerate a nocturnal brace. In the image, note the correction and slight overcorrection of his right thoracolumbar curve.

Physiological advantages of nocturnal bracing:

- No gravity is in play
- Ground reaction forces
- There's no skeletal axial loading
- No active muscle groups
- The patient is more flexible



The growth plate physiology, as established in the Hueter-Volkman law, shows that in a corrective state, the growth plates will grow at a natural rate. The adolescent growth hormone schedule enables the human growth hormone to peak and help the growth plates grow between 12 a.m. and 2 a.m. during REM sleep. Therefore, the nocturnal brace is more comfortable even while it corrects more aggressively.

The psychological advantages of nocturnal bracing include greater patient acceptance, higher compliance, and social acceptance in peer groups. Patients can also participate in athletic events, and there are no issues with clothing or hiding it under the brace. It is important to note that compliance is fundamental to corrective bracing.



Spinal.Tech/OnlineLearning

Phone: (508) 957-8292

