An Algorithm for Optimizing the Effectiveness of the TheraTogs Wunzi System

Babies build trunk and neck control and strength before they gain functional skills. Trunk control problems that occur in infancy can lead to long-term developmental deficits in limb use and movement. Postural control acquisition is a necessary component of early intervention, particularly in the presence of hypotonia, ligament laxity, and other postural features that are common in prematurity.

The Wunzi resembles the 1-piece cloth garment that is a hallmark of infant attire, and is designed to deliver the sensory input and gentle compression of a customized body hug while improving core stability. Like all TheraTogs systems, the Wunzi can support therapy goals both during and between therapy sessions, providing essential carry-over.

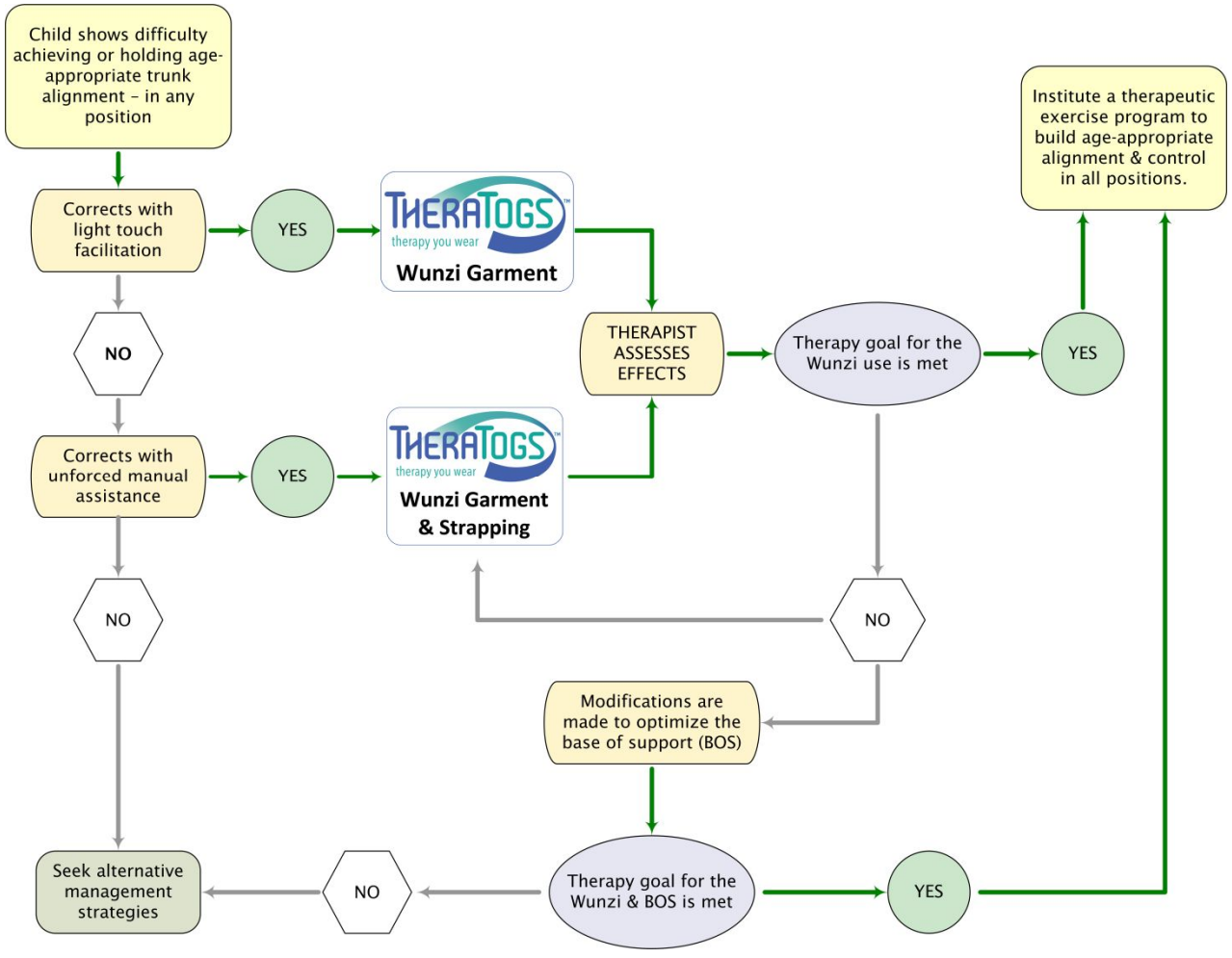
Wear it, live it, learn it!

Beverly Cusick, PT, MS, C/NDT, TheraTogs Inventor and Chief Medical Officer

TheraTogs Wunzi System – Intervention Algorithm

The nervous system matures along with antigravity muscle control in a proximal-to-distal (core-to-limbs) sequence. To support this developmental sequence, we built the algorithm (below) and provide illustrated donning instructions to escort the clinician and caretaker through a process of progressive intervention using the Wunzi Basic System and, if needed, the supplemental Limb Kit.

For best outcomes, **optimize the base of support** in each play position so that the wearer gains the most benefit from the Wunzi *(see next page).*



Optimizing the Base of Support

Infants who are developing as expected sit independently with a vertical sacrum and lumbar spine at age 6 to 7 months of age. This posture might not be possible without adapting the base of support by a) raising the seat surface; b) tilting the seat surface forward with a small wedge (not shown); c) increasing the seat surface resistance to sliding, and so forth. Here are two examples or optimizing the sitting support base:

Ideal sitting posture at age ~7 months.

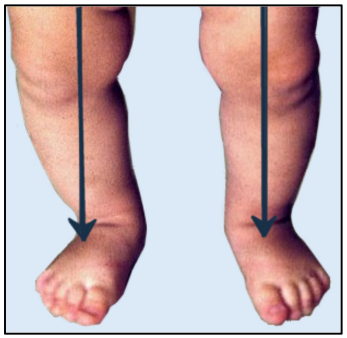
Amelia, age 8 months S/P prematurity: The floor imposes too much flexion force on her hip muscles. Lower trunk extensors are too long and weak to shorten. Moving onto Mom's thigh relieves the flexion force so the pelvic can rotate forward and the TheraTogs strapping can work.

A slip-resistant layer might be needed to prevent the Bobby from slipping.

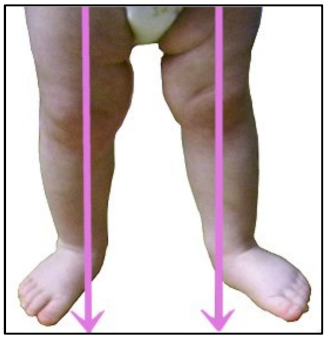
Campbell, age 6 mos corrected, 24 weeks gestation. She is unstable in supported sitting. We found a corner of a sofa, her Boppy, and a piece of Dycem to stabilize the Bobby against sliding. Turning the Bobby open-end-to the corner, we seated her pelvis in the center opening, adjusted the width of the supporting wings on the Boppy to fit... Success!

When a young child with developmental delay is standing, if the feet are not well aligned, we suggest using orthotic devices and/or Kinesio Taping to improve weight-loading on the heels and outer foot regions. For example:

IDEAL	MILD PRONATION ▶	OPTION	MODERATE ▶	OPTION
12 months	12 months Mild pronation		32 months Moderate Pronation	



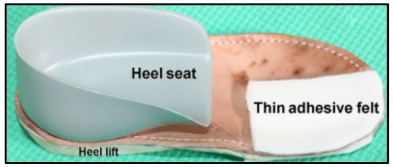
Feet a bit closer together than knees --> weight (arrows) is on the whole foot. Rectangular shape; feet straight or turned out slightly. Toes parallel to the borders and to each other. Toddlers' legs are aligned to minimize weight loading on the inner feet.



Weight is on the inner regions of the feet. Heels are tilted inward. Inner arches are strained and flattened. Poor foot joint stability compromises upright balance & walking skills.

Heel Seats & Shoes
The flattened bottom and heel-grabbing cup help to rock the loaded heel into more vertical alignment.

Weight is on the inner forefeet--> toes deviate outward & grasp for stability. Outer foot muscles shorten.



Heel Seat Source: www.gaitways.com

Better: Taped with orthosis inserted.

KinesioTaping facilitated partial reduction of foot pronation.[1] Foam toe spreader helped to move weight back to heel.

Heel seat was added to a varus-posted insole. Heel lift reduced loading strain on midfoot ligaments.

Managing Fatigue: The TheraTogs Wunzi System, worn daily, might induce fatigue in the wearer in the first few days or weeks, as muscles are recruited for postural control at new lengths, even while the strapping affords assistance. During this early period, if simply letting the child nap is not feasible, the key to relieving fatigue is to reset the straps to reduce the tension. It is not necessary to remove the Wunzi system.

[1] Martin P, Yasukawa A. *Kinesio Tapping for Pediatrics: Fundamentals and Whole Body Taping* 2nd edition.