Sticking to the Facts

Elastic therapeutic taping for children with neurological conditions gains evidence

By Jonathan Bassett

While any recent addition to the therapy repertoire must undergo a degree of scrutiny as to its effectiveness, the application of elastic therapeutic tape for chronic pain conditions may have more robust evidence behind it than most. However, when the attention turns to the value of this method in improving function in children with neurological complications and developmental disabilities, the evidence becomes less definitive.

Results of small-scale studies have been conflicting at best. A 2006 study completed at the University of Findlay in Ohio and published in *Pediatric Physical Therapy* saw no differences in gross motor function measures in two groups of children with cerebral palsy — one that received physical therapy plus therapeutic taping, and one that received therapy only.

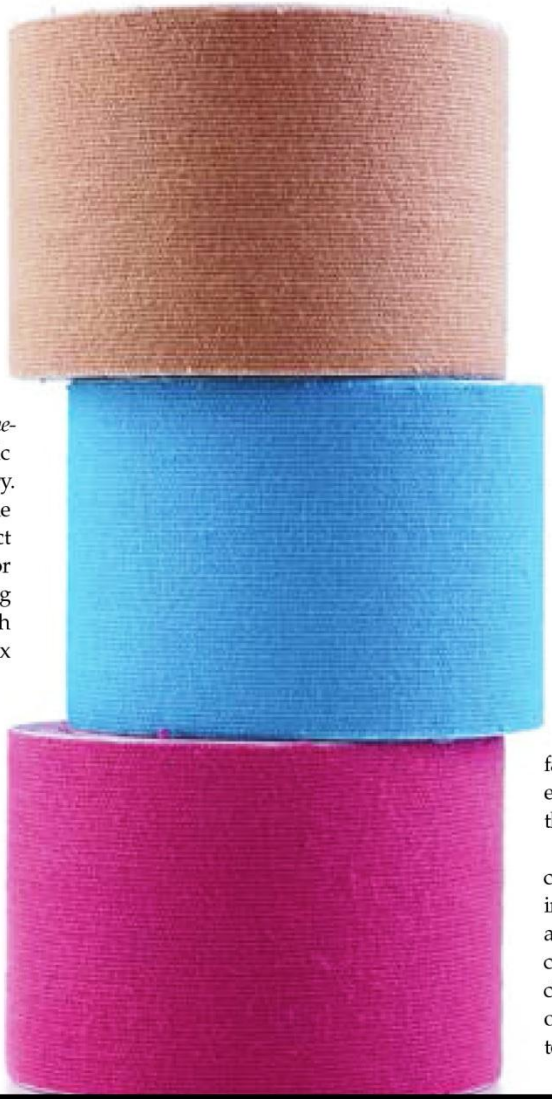
"Therapeutic taping does not evoke a positive functional change in the seated postural control of children with quadriplegic cerebral palsy," the author wrote.[1]

However, a 2010 study in *Physiotherapy Theory and Practice* claimed value in therapeutic taping for a child with brachial plexus injury. Also completed at the University of Findlay, the project followed a two-year old female subject whose X-rays demonstrated severe inferior subluxation of the humeral head and winging of the scapula on the left. She was fitted with a shoulder brace with surgery scheduled in six months.

After removing the brace, the research team provided parent education on exercise and taping, and applied elastic therapeutic tape to facilitate rotator cuff and scapular stabilizers. Typical wear time was 2-3 days on, 1-2 days off.

"After two weeks, there was prominent deltoid definition," wrote author Sharon Fleming Walsh, DSc, associate professor and chair of Findlay's PT department. "The shoulder was in 20 degrees of abduction, shoulders level with less scapular winging. Scapular stabilizers were then taped. At 4 weeks, her arm was held to her side displaying a stable symmetrical scapula. The arm displayed increased fine motor use and initiation of activities."

After a discharge at 10 weeks returned a decline toward baseline clinical levels, taping was resumed and function returned to prior level. At 20 weeks, the patient's clinical signs, angle of scapula and clavicle, and mineralization of the humerus improved to the point that surgery was cancelled.



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Therapeutic Applications

As the modality of therapeutic taping continues to be investigated, experts in the method recommend placing individual studies into a larger treatment context.

"This is rarely an intervention you perform in isolation," explained Trish Martin, PT, CKTI, manager of therapy satellite services at the Cleveland Clinic Children's Hospital, a division of the Cleveland Clinic, a comprehensive nonprofit health system comprised of a main campus near downtown Cleveland, eight community hospitals, 18 Family Health Centers and specialty clinics across the world. "Therapists each have interventions that they're skilled at.

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—Trish Martin, PT, CKTI
Manager of Therapy Satellite Services, Cleveland Clinic Children's Hospital

This is a way to help facilitate the treatments that you're providing."

As an example, if a child with cerebral palsy can't bring their wrist up because of resistance from opposing muscles, taping alone won't facilitate this movement. But stabilizing the core and the extremity might help facilitate the passive motion and strengthening interventions being applied by the therapist.

As a pediatric specialist, Martin advocates elastic therapeutic taping as an intervention that can help lengthen, relax and support fascia, and will apply it in cases of cerebral palsy, brain injury, brachial plexus injury, and a range of developmental issues. She became exposed to the modality in the late 1990s through

pediatric therapist Beverly Cusick, PT, MS, who was investigating the biomechanical benefits of splinting and casting in children with developmental disabilities, and who began to look into the use of rigid tape in this population. Martin has been using it with severely involved patients for 15 years, and estimates that she uses it in some capacity in 90 percent of her caseload.

"I've found through the years that where I place my hands is generally where I place the tape," Martin said.

Special Considerations in Pediatrics

Applying elastic therapeutic tape in the pediatric population has subtle differences with using it on adults. "Less is more," advised Martin, who splits her time between management responsibilities and time in the clinic. "[Therapeutic tape] is very powerful and provides strong sensory feedback. You only need a small amount of force on the tape since they're wearing it 5-6 days per week and completing hundreds of repetitions as they move throughout the day. You're providing a small force over a long time."

Another special consideration in the pediatric population is skin sensitivity — therapists should closely monitor for any allergic skin reaction and cease treatment immediately if noted.

A final difference is the length of treatment. "In your typical orthopedic population, you might use it for a few weeks," said Martin. "Some of our kids have been on and off [the modality] for years." Because children with neurological issues or developmental conditions undergo growth spurts and have larger muscle imbalances, treatment must be longer-term in scope.

Martin travels the country teaching Kinesiotaping® courses and co-authored the textbook *Kinesiotaping for Pediatrics* with Audrey Yasukawa, OTR, chief of occupational therapy at La Rabida Children's Hospital in Chicago. She teaches courses on therapeutic taping in pediatrics.

Yasukawa is also a published researcher, and led a 2006 study published in the *American Journal of Occupational Therapy* that looked into the role of therapeutic taping for the upper extremity in enhancing functional motor skills in children admitted into an acute rehabilitation program.

Researchers tested 15 children admitted to inpatient rehabilitation for a variety of diagnoses including encephalitis, brain tumor, cerebral vascular accident, traumatic brain injury, and spinal cord injury. Researchers tested upper limb function with a well-established clinical function measure at regular intervals.

Yasukawa found the improvement from pre- to post-taping "statistically significant" and wrote that the intervention "may be associated

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with improvement in upper-extremity control and function in the acute pediatric rehabilitation setting. The use of Kinesio Tape as an adjunct to treatment may assist with the goal-focused occupational therapy treatment during the child's inpatient stay."

Further Investigation

As Martin looks to the future, she's excited by innovations in the field, such as lighter, more adhesive models of tape that are designed specifically for sensory feedback. Patients that experience pain and swelling in a localized area respond more favorably to the gentle sensory feedback it provides, said Martin.

Also on the horizon are more in-depth studies into specific pediatric applications. "[Cleveland Clinic] has a big research push right now," she said, including a large-scale study on babies with torticollis using surface EMG. With this project — which already has a pilot study completed and is now before the institutional review board — researchers hope to be able to pinpoint precisely where therapeutic tape should be applied to return maximum therapeutic results.

"To me as an instructor, that's very exciting," said Martin. "Cleveland Clinic is very open to investigating new treatments and expanding the field of evidence-based research." Martin also notices a surge in interest among the therapeutic community as she travels the country as an instructor.

"Above all, I'd stress to [my colleagues] to keep an open mind," said Martin. "Don't make up your mind about an intervention until you've had an opportunity to apply it yourself." ■

References are available at www.advanceweb.com/pt under the Toolbox tab.

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