

[TAPING USES]



This photo shows "Matty" with the kinesiotape placed at his paraspinals and abdominals to correct his posture.

athetoid movements of his extremities, and decreased initiation of movements.

He was tested only on subsection B (sitting) of the Gross Motor Function Measure (GMFM). His primary physical therapist used the "Y" technique to facilitate his obliques, and the "I" technique was applied to his paraspinals bilaterally to assist with upright posture.

Prior to taping, he scored 11/60 or 18.3 percent, and after taping he scored 21/60 or 35 percent. Thus, he made significant changes in his ability to sit independently and reach for a toy without upper-extremity support.

Case 2: This is a one-and-a-half year-old female with spina bifida and Arnold Chiari malformation 2. Her medical history is significant for a C1 and C2 laminectomy with Chiari decompression, closure of lumbosacral myelomeningocele, and a VP shunt placement. She clinically presents with weak abdominals, bilateral hip abduction and external rotation.

The standardized test used with this patient was the GMFM. Her primary physical therapist assessed her abdominals and bilateral hips and decided to use the "Y" technique for abdominal facilitation, the "I" technique for bilateral hip adduction facilitation, and the "I" technique in a serpentine manner for aligning the patient's bilateral hips into neutral.

Without the tape, the patient's GMFM score for items A-C: 76/153. However, with the measured tape, the patient's GMFM score for items A-C increased to 84/153. This patient was much more willing to initiate movements independently due to improved hip alignment, increased proprioception, and an improved ability to recruit her abdominals.

Case 3: This is a 3-year-old male with Prader Willi syndrome. He presents with generalized hypotonia, decreased gross skills and decreased fine motor skills. His primary physical therapist assessed the patient and decided to use the "I" method for bilateral obliques facilitation, gluteal muscles activation and bilateral feet alignment.

The standardized test used with this patient is the GMFM. His total score pre-taping was 65.8 percent and post-taping was 71.5 percent. The results are as follows: the

COURTESY OF TEXAS CHILDREN'S HOSPITAL

Tales of the Tape

Case studies on using taping in pediatric care

By Gaurika Bhagi, DPT, and Anjali Gupta, MSPT

As physical and occupational therapists, we incorporate newly learned knowledge into our treatment repertoire based on courses we have taken and the experiences we have with these techniques. Convincing other medical and allied health care practitioners to use these methods often requires more than classroom or clinical experience. This leads to a need for evidence-based research.

This article looks at pre-sold measured tape, which has become an integral part of treatments at Texas Children's Hospital, Houston, TX. The tape is a lightweight, flexible tape that can be used to support muscle, remove congestion to the flow of body fluids, activate endogenous analgesic systems and correct joint problems. Although the idea of pre-sold measured tape was initially created in the early 1970s, as with most new concepts, fine-tuning of this instrument was needed and good results were acquired on a group of athletes in the late 1980s.

At Texas Children's Hospital, measured tape is used for all of the above functions in

order to aid the treating therapists in both the inpatient and outpatient settings. Additionally, as the patient wears the tape outside the facility, it provides an increased opportunity for the patients to receive continued benefit from the tape.

At this time, there are not many studies performed in the pediatric population that demonstrate the benefits. This article illustrates 10 case studies, done to exhibit functional outcomes.

At Texas Children's Hospital, we enlisted 10 patients of different ages and diagnoses. The children's primary therapists applied the taping; all have completed the K1-K3 courses offered by the Kinesiotape Association. The standardized tests were administered pre- and post-taping by one therapist to ensure the intra-rater reliability.

Cases Identified

Case 1: This is a 2-year-old male with a diagnosis of developmental delay with no significant past medical or surgical history. He presents with generalized hypotonia,

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patient showed slight improvement in dimension B=sitting, and dimension E=walking, running and jumping; however, he exhibited vast improvement in dimension D=standing. Therefore, the patient was more stable through his trunk and his lower extremities, and thus demonstrated an increased willingness to try more advanced skills.

Case 4: This is a 7-year-old male with DiGeorge syndrome and spina bifida occulta. His medical history is further complicated by a stroke that occurred during a cardiac surgery repair. He now clinically presents as a patient with right hemiparesis, a dislocated right hip and right-sided hypertonicity. His primary occupational therapist assessed his right upper extremity and decided to use the "Y" and fan technique for his right wrist and fingers into extension. The standardized test used for this patient is the Melbourne Assessment of Unilateral Upper Limb function.

Based on total raw scores both pre- and post-taping, the patient showed improvement in function with the tape applied in the following items: reaching forward, reaching forward and reaching sideways to an elevated position, grasping a pellet, pointing and reaching to brush from forehead to back of neck.

The pre-taping percentage score was 26.2 percent, and the post-taping percentage score was 32.8 percent. Therefore, the patient demonstrated an increase in range of motion, target accuracy and fluency of motion on the right side.

Case 5: This is a 6-year-old male with perinatal frontal lobe stroke.

His medical history includes the PERCs procedure to bilateral hamstrings, bilateral triceps sura and bilateral adductors. The patient still clinically presents with a crouched gait; however, according to his primary physical therapist, the patient has gained significant range of motion due to the PERCs procedure.

The standardized test administered for this patient was the Pedograph. The patient does need to use his posterior rolling walker in order to ambulate. The primary physical therapist assessed the patient's bilateral quadriceps and decided to use the "Y" technique in order to facilitate the muscles. Without the tape, the patient demonstrated a velocity of 5.54 sec/cm and a cadence of 0.33 steps/sec for a 914.4 cm distance.

With the tape, his velocity improved to 10.16 sec/cm and his cadence also improved to 0.4 steps/sec. Additionally, the patient demonstrated decreased trunk flexion throughout the gait cycle and his gait is less labored.

Case 6: This is a 3-year-old male with bilateral clubfeet. His medical history includes completing Botox and serial casting several weeks prior to this intervention and is currently using nighttime braces to maintain the range. He clinically presents as a healthy 3-year-old with balance issues.

He was tested using the Bruininks-Oseretsky Test of Motor Proficiency (BOT) Subtest 2: Balance. His primary physical therapist used the "I" technique for dorsiflexion assistance. He improved in four of the eight items with the tape as follows: standing on preferred leg on floor for six seconds instead of four seconds; walking forward on balance beam with five steps instead of zero steps; walking forward heel-to-toe on balance beam for two steps instead of zero steps; and being able to step over the response speed stick on the balance beam. Therefore, this patient demonstrated increased balance and function after the tape was applied.

Other Cases

In addition to the above cases, two other patients who were taped did not demonstrate a change in their standardized test results. These particular patients are higher functioning and were able to achieve the highest scores per tested item without the tape for the Peabody.

However, in both cases, a significant change in the quality of their movements did occur based on observation by their primary physical therapists. Subjectively, these children demonstrated decreased effort for gross motor tasks, increased speeds and fluency for completing the tasks.

As demonstrated with six case studies above, pre-sold measured tape is a useful treatment modality in pediatrics. This article demonstrates quantifiable changes in performance on standardized testing using this treatment option.

Although further studies in all populations are warranted, medical and allied health care practitioners should consider using taping in their patients' plans of care. ■

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