

The IOPTP Newsletter

The International Organisation of Physical Therapists in Paediatrics

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President's Message

Barbara H. Connolly PT, DPT, EdD, FAPTA USA

WE HAVE TWO NEW MEMBER ELECTS!

I am pleased to announce that two paediatric groups have been approved as MEMBER ELECT by the IOPTP Executive Committee. The **Korean Organization of Physical Therapy in Paediatrics** and the **Association of Paediatric Physiotherapists in Nigeria** were approved on July 10, 2013 as the newest member elects of the IOPTP. According to the Constitution of the IOPTP, both of these organizations can be elected to full membership at the next General Meeting of the IOPTP which will be held in conjunction with the WCPT in May 2015 in Singapore.

We are awaiting applications from several other paediatric groups from other WCPT member countries and look forward to receiving these requests. If your paediatric group is interested in becoming a member of the IOPTP, please contact me at bconnoll@uthsc.edu.

The 2013 meeting of the IOPTP has now been finalized, the conference which will be held in November 2013 in Anaheim, California, USA. We are pleased to have international speakers at this conference and for the opportunity to network with our members. A networking session is planned for November 8th at this conference.

The IOPTP is beginning to plan for programming at the **WCPT meeting** which will be held in May 2015 in Singapore. We are discussing topics of mutual interest with other subgroups in the WCPT and will explore sessions discussing transitioning individuals with life-long disorder from pediatric physical therapy care to adult physical therapy care. If there are topics in which your paediatric group would specifically have an interest please let the IOPTP know. We hope to address topics that are meaningful to our members!

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For submissions or questions regarding the newsletter please contact the newsletter editor Erin Wentzell PT, DPT, PCS at ewentzell@gmail.com



The IOPTP FACEBOOK page is adding members on a weekly basis! If you haven't looked at the page, please do so. You'll see that numerous members are beginning to share links to other web sites that provide resources and clinical information!

Hope to see many of you at our November conference at Disney Land in the US!

Barbara H. Connolly PT, DPT, EdD, FAPTA



IOPTP Committee Reports

The Secretary's Report: The IOPTP Mid-Term Conference



Join us for the IOPTP Mid-term Conference sponsored in collaboration with the American Physical Therapy Associations Section on Pediatrics Annual Conference.

Celebrating Our History as We Create the Future of Pediatric Therapy

November 8-10, 2013

With preconference courses November 6-7

Disneyland Hotel at Disneyland in Anaheim, CA, USA

Register early for reduced rates:

Early bird until August 15

Advanced Registration until October 15

www.sopac.us

The IOPTP Executive Committee and Program Committee have collaborated to bring this opportunity to learn and to network with pediatric therapist colleagues from around the world. This conference offers more than **50 educational sessions in 8 specialty areas** (neonatology, early intervention, school-based, sports and fitness, adolescents and adults with disability, hospital-based, general practice, and academia. **Keynote and general sessions are offered by world-renowned speakers.** In addition there are **three 2-day preconference courses** (electrical stimulation, Neurodevelopmental Treatment, and the APTA Clinical Instructor Education Credentialing Program), **two 1-day courses** (Clinical Reasoning, Childhood Obesity) and a **half day workshop** to adapt power wheels for “radical mobility”.

There will also be a **networking** session based on cases, roundtables for specialty discussions, posters, and exhibits. Social events provide further opportunities for networking with colleagues. **The IOPTP is sponsoring one pre-conference course and 5 other sessions.**

Please visit the website above for registration, housing and more details on this exciting conference for pediatric therapists.

Respectfully submitted,

Sheree York, PT,DPT,PCS

Research Committee Report

An Update on Member Survey Data

The Committee has received the results of our survey of member country researchers, and are discussing the results as they affect our strategic plan. Currently, our strategic initiatives entail

1. Identifying resources and methods for supporting research
2. Implementing 2 strategies (to be determined based on priorities and resources) for supporting international research
3. Provide information related to research, evidence-based practice, and knowledge translation for high priority topics: obesity and measurement.

In that regard our survey results indicate that a significant number of individuals who responded to the survey are conducting clinical research and we will need to take this into account when we **develop initiatives** to support our researchers.

Committee members have **suggested developing an educational session for the 2015 WCPT Congress in Singapore.** The topic for that session has yet to be determined, but one suggestion includes a focus on Obesity research.

Another suggestion to support international research has been to develop a **website** where researchers from member countries can provide current information related to their research program along with contact information. This would enable exchanges among those interested in similar research topics.

Finally the issue of promoting evidence based practice and knowledge translation includes assuring that pediatric therapists in member countries are aware of the [resources available online](#) to support evidence based practice. The committee will continue explore ways to support not just researchers, but also consumers of research in our member countries.

Ann F VanSant, PT, PhD, FAPTA



Meet the IOPTP Committee members: Welcome the newest member of the Practice Committee

Marquerithe Barrée

Currently, I am the liaison between Physiotherapia Paediatrica (PP) and the Swiss Paediatric Physical Therapy Association. In 1989 I graduated as a Physical Therapist in the Netherlands. Two years later, I was certified by the medical board of California worked with children in various settings in California.

In 1992, I moved back to Europe and settled down in Chur, Switzerland where I first became involved in a specialized school for CP Children in Chur. My interest was to work more with infants and I was able to start in a Consultation and Therapy setting for preschool children. I was head of the a physical therapy department for 5 Years. Since 2000, I've managed my own private practice specializing in paediatrics. The last 10 years my special area of interest is incontinence in children. We have a Quality Circle in Zürich in which I have been

moderating the last 4 years. In 2009, I supported a set up and started the first class Multi-disciplinary obesity treatment program "Kinderleicht", which supports the child and parents over one year.

The PP has been a continuous partner for me. I have been active member of a project group continually working at Quality-Management and 3 years of representing our project group (Quality-Management) in the executive Committee of PP.

For questions or inquiries regarding the Practice Committee contact

Esther de Ru at:
estherderu@gmail.com

Congratulations Dr. Ria Nijhuis-van der Sanden recipient of the Paul Helders Lecture Prize!



Our very own Dr Ria Nijhuis-van der Sanden recently received the 'Paul Helders Lecture' prize from Dr. Jan Jaap van der Net, the president of the Dutch Association for Pediatric Physical Therapy. The 'Paul Helders Lecture' is awarded every five years. Ria Nijhuis-van der Sanden works as a Professor of Allied Health Sciences at the Scientific Institute for Quality of Healthcare and the department of Rehabilitation at the Radboud University Nijmegen Medical Centre in Nijmegen. A long selection process precedes the award of this prestigious prize and a selection commission works to critically rate all nominations. Candidates could be nominated for this award if they were extraordinarily deserving in the previous years on the scientific, educational, and professional domain of the Pediatric Physical Therapy. Dr. Ria Nijhuis-van der Sanden presented her lecture on 7 June during the Congress of the Dutch Association for Pediatric Physical Therapy in Zwolle, The Netherlands. In her lecture titled "*Juggling with challenges*" she emphasized the importance of a challenging learning environment for the development of the brain and the movement system in young infants, the challenges to create such a learning environment for children with disabilities, and the challenges for Pediatric Physical therapists to enlighten their added value in special care for children with motor developmental disabilities. Congratulations, it is a well-deserved honor!

Do you know a pediatric physical therapist who is doing amazing work that you would like to recognize? We will be highlighting the accomplishments of our members every newsletter. Please contact:

Erin Wentzell at: ewentzell@gmail.com

Clinical Spotlight: Therapist's Perspective on Congenital Muscular Torticollis (CMT)



CLINICAL GUIDELINES FOR CONGENITAL MUSCULAR TORTICOLLIS

The winter issue of *Pediatric Physical Therapy*, due to be released in early October 2013, will contain the **Clinical Guidelines for Congenital Muscular Torticollis developed by Colleen Coutler, Linda Fetters and Sandra Kaplan, a task force of the Pediatric Section, of the American Physical Therapy Association.** This document provides evidence based recommendations for clinical management of infants and children with congenital muscular torticollis. The document, in its entirety will be freely available online. One need not be a subscriber to access the document. Please don't forget to access this **free resource** at <http://journals.lww.com/pedpt/> in early October 2013.

Congenital muscular torticollis, CMT



There are several studies done about and concerning CMT, however there are many exacting studies left to do. Among other issues that we need to evaluate, are different treatment strategies. It is important to use blinded assessors, randomized groups etc. to get best evidence. A giant work with guidelines is ongoing by the APTA Section on Pediatrics; this will give an opportunity to improve quality in assessment etc.

It seems that the milder cases of torticollis has increased during later years, maybe this partly is attributable to how we handle our infants today. Stellwagen et al found that 16 % had torticollis at birth (1) compared with the earlier reported incidence of 0.3-2 %. Before the "back to sleep campaign", infants probably got more natural tummy time when awake than today, and if there were a minor limitation in rotation and a muscular imbalance in the neck at birth, this may have disappeared thanks to natural strength and movement training in prone. Today many parents are afraid to put their infants on the

tummy also when awake (2), this could give that milder cases of torticollis that earlier had a spontaneous recovery nowadays sometimes develop in a negative direction instead.

In clinic today we can see a lot of infants with minor decrease in range of motion in rotation of the neck and an obvious muscular imbalance in the lateral flexors of the neck. There is also not uncommon with a lack of head control and later motor development in the first six months. Our studies about CMT and motor development showed that there is an effect with later motor development at 2 and 6 months of age for both CMT and less tummy time. However at 10 months of age this was only significant for less tummy time not for CMT (3). And when the same children were evaluated again with a blinded assessor at the age of 3.5 to 5 years of age, both the control group and the group with children that had had CMT had almost identical mean percentile at Movement ABC-2 (4). This indicates that CMT is not the cause of later motor developmental problems.

The majority of infants with CMT or muscular imbalance in the lateral flexors of the neck develop a plagiocephaly (3). With early diagnosis and treatment this could rather easily be prevented. In my experience if an infant with a developmental plagiocephaly is counter positioned before the age of two months, the plagiocephaly will disappear at the age of about three months. However to achieve this there has to be very consequent handling of the infant. Safe ways to accomplish this is needed, side position itself is not dangerous, but there is a risk that the infant fall over to prone when sleeping.

The muscular imbalance in the lateral flexors of the neck may have more influence on the head position than minor limitations in range of motion. With less tummy time there has to be added other ways to train the muscular strength on the weaker side. This can be done in handling e.g. carrying the infant in a tilted position, with the weaker upside. It is also possible to use kinesiology taping as a complement in the treatment. Kinesiology taping can accomplish a relaxation in the stronger side, however there needs to be more studies investigating this. That there is an immediate effect is showed (5), but not if kinesiology taping give shorter treatment time (a study is ongoing). There is several ways that kinesiology taping can be used for CMT, for older children i.e. from about 2-3 years of age I have tested to use a corrective technique on the “non-affected” side. To use this technique on infants is challenging, as the infant mostly has a short neck, a lot of skin and not always cooperate optimally. However I currently test different strategies to accomplish this taping on some of the infants I met. A combination of relaxation on the affected side and correction on the non-affected side may be a good chose, however this has to be further evaluated.

It is no doubt that infants should sleep in supine; this decreased the incidence of sudden infant dead, SIDS. However they also need to have supervised tummy time, elsewhere they are at risk for secondary problems; torticollis, developmental palgiocephaly and brachycephaly, lack of head control and late motor development (6,7,8,9,10,11,12). For many infants these problems can be prevented with information to the parents. To accomplish this the professionals that work with infants in the health care needs to be well educated in this subjects. The advices to parents need to be based on evidence. We have to communicate how important it is with a lot of tummy time, starting already when the infant is newborn. Also that variation of the head position in supine is essentially for prevention of developmental plagiocephaly/brachycephaly.

Anna Öhman PT PhD

Specialist in Pediatrics

References:

1. Stellwagen L, Hubbard E, Chambers C, Lyons Jones K. Torticollis, facial asymmetry and plagiocephaly in normal newborns. *Arch Dis Child*. 2008
2. Majnemer A, Barr RG. Influence of supine sleep positioning on early motor milestones acquisition. *Dev Med Child Neuro*. 2005;47:370-376.
3. Öhman A, Nilsson S, Lagerkvist A-L, Beckung E. Are infants with torticollis at risk of a delay in early motor milestones compared with a control group of healthy infants? *Developmental Medicine & Child Neurology* 2009, 51: 545–550.
4. Öhman A, Beckung E. Children who had congenital torticollis as infants are not at higher risk of delay in motor development at preschool age. *PM R* 2013 May Epub ahead of print.
5. Öhman A. The immediate effect of kinesiology taping on muscular imbalance for infants with congenital muscular torticollis. *PM R* 2012;4(7):504-508.
6. Majnemer A, Barr RG. Association between sleep position and early motor development. *J Pediatr* 2006;149:623-629.
7. McKinney CM, Cunningham ML, Holt VL Leroux B, Starr JR. A case-control study of infant, maternal and perinatal characteristics associated with deformational plagiocephaly. *Paediatric and perinatal epidemiology*. 2009;23:332-345.
8. Hutchison BL, Thompson JM, Mitchell EA. Determinants of nonsynostotic plagiocephaly: a case-control study. *Pediatrics*. 2003 Oct;112(4):e316.
9. Hutchison BL, Hutchison LAD, Thompson JMD Mitchell EA. Plagiocephaly and Brachycephaly in the First Two Years of Life: A Prospective Cohort Study. *Pediatrics* 2004;114 (4):970-980.
10. Cavalier A, Picot MC, Artiaga C, Mazurier E, Amilhau MO, Froye E, Captier G, Picaud JC. Prevention of deformational plagiocephaly in neonates. *Early Hum Dev*. 2011;87:537-543.
11. Van Vlimmeren LA, van der Graaf Y, Boere-Boonekamp MM, L'Hoir MP, Helders PJ, Engelbert RHH. Risk factors for deformational plagiocephaly at birth and at seven weeks of age: a prospective cohort study. *Pediatrics*. 2007;119(2):e408-e418.
12. Cavalier A, Picot MC, Artiaga C, Mazurier E, Amilhau MO, Froye E, Captier G, Picaud JC. Prevention of deformational plagiocephaly in neonates. *Early Hum Dev*. 2011;87:537-543.



Cincinnati Children Hospital Medical Center: CMT Guidelines

Congenital muscular torticollis (CMT) is a postural deformity, diagnosed at birth or shortly thereafter, due to shortening of the sternocleidomastoid muscle. It occurs in an estimated .3%- 16% of newborns and typically presents as a head tilt to one side with rotation to the opposite side due to

shortening of the sternocleidomastoid muscle. Physical therapy is the front-line intervention for CMT and research has shown that conservative management of this condition is highly successful when initiated early. As such, it is vital that physical therapists have access to evidence-based information on this topic in order to inform their referral groups as well as parents. In addition, it is critical that facilities set up and support an appropriate workflow to best manage these referrals in order to minimize the duration of care necessary to achieve optimal outcomes.

At Cincinnati Children's Hospital Medical Center (CCHMC), an initial attempt to integrate an evidence-based care guideline into our clinical practice began with the publication of "Therapy Management of Congenital Muscular Torticollis in Children Age 0 to 36 months" in March 2009. The decision to focus on the development of an evidence-based care guideline was made because this document provides specific recommendations for care delivery. In effect, it allows evidence to be more quickly integrated into practice and have the greatest impact on patient care. The diagnosis of torticollis was chosen first because there was a wide variation in care within the clinical setting, despite there being evidence available to guide a more uniform practice.

Using the evidence-based care guideline for CMT, clinicians at CCHMC developed a baseline competency training program. Physical therapists learn about current evidence and interventions that have been found to be most effective with this patient population. In addition, education materials for families were developed. These provide information on the CMT program, as well as specific home program activities that families receive training in during physical therapy sessions. An information packet was developed for referral sources, which has been widely distributed in the community. These materials emphasize the importance of early referral to achieve an optimal resolution of this condition.

The guidelines can be accessed at:

<http://www.guideline.gov/content.aspx?id=14793&search=torticollis>

During the four years that have passed since the initial publication of the CMT guideline, much work has gone on behind the scenes. In an ongoing effort to improve compliance with the CMT program, the CCHMC team has focused on optimization of workflow and identification of effective outcome measures. At present, the team is at work on revising the guideline to reflect evidence generated from 2008-present. It is anticipated that the revised guideline will include a broader developmental approach in managing CMT and an expanded section related to plagiocephaly.

In addition, the CCHMC team is presently focused on identifying ways to facilitate consistent attendance and caregiver adherence to the prescribed home program. Parents are currently being recruited to join the team and identify caregiver values as well as provide critical feedback on the program. The team will be reassessing models of care to determine the most appropriate and effective frequency and treatment plan, with a goal of shortening the episode of care while optimizing clinical and functional outcomes.

The journey to integrate evidence into the CMT program at CCHMC has been complex, but worthwhile. With the current revision work and emphasis on functional outcomes, CCHMC is focused on continuing to define best practice for this patient population.

Mariann L. Strenk, PT, DPT, MHS

Amy Mischnick, PT, MPT



Is using Elastic Therapeutic (Kinesio) Tape an option for children with Congenital Muscular Torticollis?

Elastic leucoplast, bandages and adhesive strapping tape have been used in the daily clinic for decades. Elastic therapeutic tape (et-tape) was introduced to Europe and the USA in the 1990's. Elastic therapeutic tape was different to the classic brands of elastic tapes and bandages that were known at the time. It is made of elastic cotton, has a hypo-allergenic heat sensitive glue and is applied to paper under a certain amount of stretch. The heat sensitive glue has a wave-like pattern and allows for ventilation and transport of fluids (evaporation). It stretches along its longitudinal axis only.

It is known under many generic names such as: Adhesive Taping, Elastic Taping, Elastic Therapeutic Taping, Elastic Rehabilitative Taping, Fascia Taping, Kinaesthetic taping, Kineotaping, KinesioTaping, Kinesiology Taping, K-active taping, K-taping, KT Taping, Medical Taping, NeuroMuscular Taping en Neuro Structural Taping. To make things more complicated, the tape is available in many brands and colours. According to Kumbrink B¹ there are more than 60 brands available.

Before discussing the possible use of et-tape in children (of various ages) suffering from congenital muscular torticollis (CMT) it is important to take the following into consideration.

- I. The properties of the various tape brands and even their colours differ.
- II. Insufficient knowledge of the skin of the very young child makes tape overuse, skin irritation and 'overstimulation' of the CNS possible.
- III. The various treatment models and therefore the taping applications themselves differ greatly.

The goals of et-taping are diverse and all aimed at assisting the natural healing process and enhancing physical possibilities. We have multiple examples of this tape influencing pain, ROM, blood- and lymph flow, strength and function in the clinic. As is the case in therapeutic taping with adhesive strapping tape, it is rarely used in isolation. Both tapes are often utilized in conjunction with other therapy techniques.²

I. Brands and colours:

In their studies of the mechanical behaviour of the tape Aguado Jödar Z. et al. (2008)³ and Rodríguez J.M. Fernández et al. (2010)⁴ conclude that great variability in the mechanical properties

¹ Kumbrink B. (2009) K-taping An illustrated guide, basics, techniques, indications. 2009 in German: 2011 in English Springer

² Constantinou M & Brown M (2010) Therapeutic Taping for musculoskeletal conditions Elsevier Australia

³ Aguado Jödar Z. et al. (2008) Mechanical behaviour of functional tape: implications for functional taping preparation. 13th Annual Congress of the ECSS Portugal 9-12 July 2008.

⁴ Rodríguez J.M. Fernández et al. (2010) Vendaje neuromuscular: ¿tienen todas las vendas las mismas propiedades mecánicas? Apunts Med.Esport.2010.doi:10.1016/j.apunts.2009.11.001.

(elongation, tensile strength) is found in the different brands and in all colours of a given brand. The authors therefore suggest using one colour and one tape brand when doing research.

Coloured tape in general:

No studies have been undertaken into the effect of various colours on patients so far. In a number of countries (Germany, Austria, Spain and Switzerland) it is considered normal practice to work with various colours. A number of tape manuals recommend using a particular colour for a specific goal. Colours can make a difference. Adverse reactions have been seen in the clinic.

Coloured tape in the paediatric clinic:

When applying tape to babies, toddlers and children with a sensitive skin it is recommended to use beige. Beige is unobtrusive for children with light skins. A coloured tape is more noticeable. Regrettably hardly any brands have the dark skin colour available at this moment.

Be careful with the colours red/pink/orange and black. Adverse reactions have been seen when using these colours. Fierce mood changes and allergic skin reactions have been reported.

It is especially recommended to only use brands that are willing to inform us of the contents of the tape's glue.

II. Skin:

Knowledge of the skin is important for two reasons. It is the surface we tape on and it is the most important sensory organ we are giving a stimulus to. Everything we do with tape has consequences for the skin, in both structural and neurophysiological sense.

Structure skin:

Skin comes in two types, thin and hairy and thick and hairless. It is divided into three layers: the epidermis, the dermis and the subcutis. Thickness of the various layers in epidermis, dermis and subcutaneous fat tissue is related to the mechanical properties. It is the largest organ in our body and is continuously being replaced. Skin thickness varies per age, sex, anatomic region and even time of day. Changes in the skins' hydration can cause this difference as well. Skin is elastic and when stretched it always returns to its normal state and length.⁵ It can be stretched from 10-50% for a few seconds. Prolonged stretching can lead to permanent changes in collagen fibres.

The skin surface and bodyweight ratio is 3:1 in new-borns. The ratio slowly normalizes with age. A young child's skin is very permeable. Substances can easily be transmitted through their skin. The skin is more sensitive and the immune system takes approximately 2 years to develop fully. Medication can cause skin changes. Asthma medication can result in the skin becoming thinner.⁶ Chemotherapy and radiation can cause skin changes and damage to the skin. The skin can be red, sensitive and easily irritated in the days, weeks and months following treatment.⁷ Various conditions can change the skin. Many children suffering from Down syndrome have dry skins. Children suffering from constitutional eczema often develop dry skin. Atopic dermatitis is one of the most frequent inflammatory skin conditions and approximately 15% of all children suffer from this.⁸

⁵ Guimbertea Dr J.C. Video Strolling under the skin.

⁶ Skin Thickness in Children Treated With Daily or Periodical Inhaled Budesonide for Mild Persistent Asthma. The Helsinki Early Intervention Childhood Asthma Study. *Pediatric Research*: February 2010 - Volume 67 – Iss.2 pp 221-225 doi: 10.1203/PDR.0b013e3181c6e574.

⁷ <http://kidshealth.org> accessed 31-12-2011

⁸ Raeve de mw dr L (2003) Atopische dermatitis (AD) Bijblijven. Volume 19, Number 3 (2003), 101-105, DOI: 10.1007/BF03059695

Skin as sensory organ:

Our skin is loaded with mechanoreceptors, thermoreceptors, nociceptors and pruriceptors. Boulais N & Misery L⁹ describes the skin as being an efficient protective barrier but also as being an important sensory organ. Welsch M.¹⁰ describes the bio mechanic basis for perception. Edin et al¹¹ have published a number of articles on cutaneous afferents providing information to the CNS. Tobin¹² has described the human skin as 'our brain on the outside'. Richards S¹³ discusses the importance of touch and the role touch plays during childhood development in *The Scientist*.

III. Treatment models:

- Original Model: hypothesis dr Kenzo Kase¹⁴
- Fascia Model: biotensegrity¹⁵, Anatomy Trains
- Energy Model: meridians, chakra's
- Combination Model: combined with or used as adhesive strapping tape
- Skin-Brain Model: cutaneous nerve endings (DNM¹⁶, organ-zones, physiological skin movement Fukui T¹⁷, Mayor Elasticity Lines (MEL's)¹⁸

According to the different models, et-tape can be applied in many ways and have a variety of effects. Et-tape can be applied to:

- the whole muscle from origin to insertion or v.v. (original method)¹⁹
- myo-fascial chains or specific parts of these chains (anatomy-trains Tom Myers)²⁰
- meridians or certain parts of meridians
- trigger points
- acupuncture points
- entry points of the cutaneous nerves in the skin (DNM Diana Jacobs)
- dermatomes
- skin 'organ- zones '²¹
- muscle belly
- fascia sheaths
- tendons or ligaments
- MEL's

⁹ Boulais N, Misery L. (2008) The epidermis : a sensory tissue. *Eur J Dermatol.* 2008(2):119-27.

¹⁰ Welsch M. (2002) Biochemical basis of touch perception:mechanosensory function of degenerin/epithelial Na⁺ channels *www.jbc.org* vol 277 no 4 25-01-2002 2369-2372

¹¹ Tobin D. (2006) Biochemistry of human skin- our brain on the outside *Che,Soc.Rev.*2006,35, 52-67

¹² Edin B. (1992) Quantitative analysis of static strain sensitivity in human mechanoreceptors from hairy skin. *JNeurophysiol* 675 1105-1113

1992Edin B. (2001) Cutaneous afferents provide information about knee joint movements in humans *www.jp.physoc.org* (2001)531.1. 289-297Edin

B & Abbs J H (1991) Finger movement responses of cutaneous mechanoreceptors in the dorsal skin of the human hand, *J Abbs j.Neurophysiol*

1991/03;65(3) 657-70 Edin B & Johansson N. (1995) Skin strain patterns provide kinaesthetic information to the human central nervous system.

www.jp.physoc.org (1995)487.1.243-251

¹³ Richards S (2012) Pleasant to the Touch. *The Scientist Magazine* Sept.1 2012 www.the-scientist.com accessed 20-05-2013

¹⁴ www.kinesiotaping.com for current hypotheses dr. K. Kase

¹⁵ www.biotensegrity.com

¹⁶ Jacobs Diana DermoNeuroModulation therapy <http://dianejacobs.wetpaint.com/>

¹⁷ Fukui Tsutomu Bunkyo (2011) Skin Movement of the trunk during trunk rotation Poster WCPT Congress Amsterdam

¹⁸ Blow David (2012) Neuromuscular Taping. From Theory to Practice. Edi Ermis *www.ediermes.it*

¹⁹ <http://www.kinesiotaping.com/>

²⁰ <http://www.anatomytrains.com/>

²¹ Holey E & Cook E 2003, Evidence based therapeutic massage: A practical Guide for Therapists, 2nd, Churchill Livingstone, Edinburgh.

Et-tape can also be used as if it were adhesive tape, using compression and decompression techniques for example.

Results are that: all documents must be read with the understanding that the hypothesis behind the application and tape application itself can differ. The use of various brands and colours should be considered as an extra variable.

Research in paediatric taping is not abundant.

Powell F (2001)²² was the first to describe et-tape as a treatment possibility in children with CMT. She presented three cases of children ranging from 2mo 6 days, 4 mo 5 days to 15 months old. Kinesio tape was part of the treatment that consisted of stretching, massage, myofascial release and home instructions. The oldest child presented with fibrosis and muscle waste in the SCM and was also treated by a chiropractor and osteopath, the 4 month old with cranial/sacral therapy.

The theoretical model used was the facilitation/inhibition taping hypothesis meaning the tape was applied on the whole muscle. The SCM was taped in the youngest child, first laterally, later bilaterally for a two months. The second child received tape on the SCM laterally, later bilaterally for 2 months. In the oldest infant tape was applied to the SCM, the upper trapezius muscle and the levator scapulae muscle for two months. Conclusion: 'In these cases studies, two of the three patients were discharged less than mean treatment duration time of 4.7 months. Case I was discharged at three month duration, case two at two months '.

The only other research discussing the use of tape on the sternocleidomastoid muscle in children was published by Ohman ²³ in 2012. In this study 28 infants with congenital muscular torticollis and muscular imbalance in the lateral flexors of the neck were chosen to participate. Goal was to investigate the immediate effects of applying KT for muscular imbalance in the lateral flexors of the neck in infants with CMT. Ages ranged from 2 – 11 months (mean age 6.2 months). The et-tape was applied on the affected side in 22 cases and applied on the unaffected side in 15 cases. In seven cases both sides were taped. The model used was the facilitation/inhibition taping hypothesis meaning the tape was applied on the whole SCM and the superior aspect of the trapezius muscle. The author concludes that: 'KT tape has an immediate effect on muscular imbalance in infants with CMT. Further investigations are needed to determine the best approach and technique. The most important question to investigate is whether KT-tape can decrease treatment time, because if not, the use of KT may be of no value.'

Use of et-tape in children. Do we tape babies and toddlers with CMT?

Research into this area is virtually non-existing. Research published so far has been on tape applications applied using the original hypothesis: taping from origin to insertion or v.v. having either a facilitating or inhibiting effect.

Research into the negative effects of tape on the adult skin has been studied by Mikolajewska E. ²⁴ Alaca N et al ²⁵ reported negative skin reactions to tape in young children.

²² Powell Frances (2001) The effects of Kinesio taping method in treatment of congenital torticollis case studies. Accessed 17-01-2010

www.kinesiotaping.com

²³ Ohman A.M. (2012) The immediate effect of kinesiology taping on muscular imbalance for infants with congenital muscular torticollis. AAPMR 2012 accepted april 11.

²⁴ Mikolajewska E. (2010) Allergy in patients treated with Kinesiology taping: a case report. Mikolajewska E. (2011) Side effects of kinesiotaping – own observations. JoffHealthSc.2011vol1.no1,493-99

Contact allergies can develop to any tape or bandage in time.

Using et-tape on very young children should be done with great care. The smaller the area of glue, the less skin problems can be expected. The size of the tape (or the choice to use a cross patch (photos 2 & 3) or mini-tapes (photos 4 & 5) ²⁶ should be considered carefully. The goals should be clear and may consist of more than only decreasing treatment time.

Goals could also be improving function, strengthening and decreasing possible pain. The model of thought behind the application has to be clearly defined and the application time considered and taken note of. Careful choice of tape brand (and glue) is needed.

Conclusion:

The answer to the question: Is using Elastic Therapeutic (Kinesio) Tape an option for children with Congenital Muscular Torticollis can be yes but careful consideration and assessment is needed beforehand.

Consider the child's problem and assess if applying et- tape could make a difference.

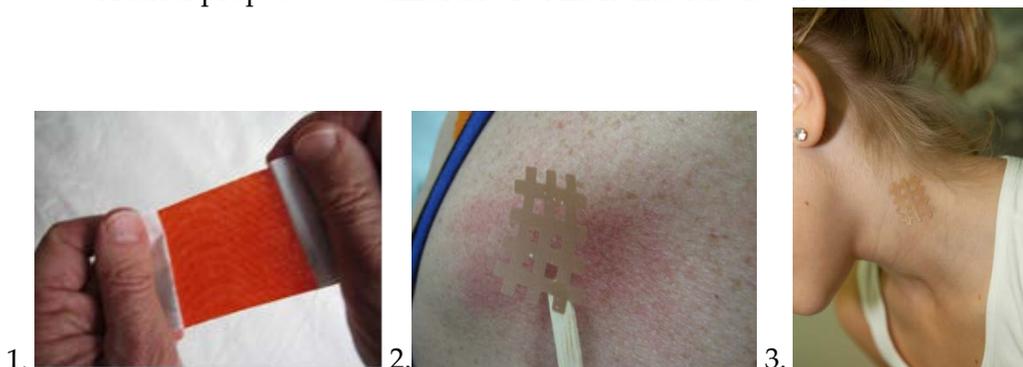
Test the area, check the skin and consider the child's age and health status.

Apply the test patch to check for contact allergy first.

Use very little (mini) tape or use cross patches. Be very aware not to cause pleats in the tape or skinfolds under the tape as these can cause skin irritation. Be aware of any autonomic reactions such as goose bumps, vasoconstriction or negative changes in the child's state. Consider these contraindications for the tape application.

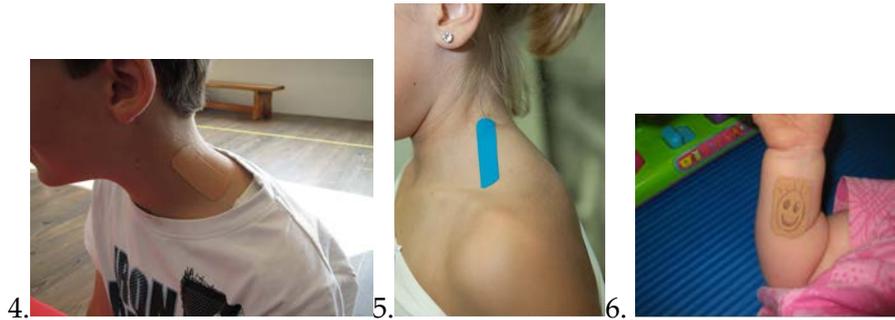
The SCM is a muscle the author prefers not to tape unless deemed really necessary. This area is very sensitive to stimuli and too much of any 'stimulation' can cause negative autonomic reactions very easily.

Author proposes two different treatment models as stated below.



²⁵ Alaca N et al (2012) the subjective effect of kinesiology taping in children with brachial plexus injury. EACD congress Istanbul May 2012.

²⁶ Ru de E (2012) ETTPed bij kinderen. Book in Dutch and Spanish, chapter on mini-tapes



- Photo 1. Tape on paper backing
 Photos 2. Cross patch (not to be touched)
 Photo 3. Example application cross patch lateral side neck
 Photos 4. Mini tape on upper trapezius
 Photo 5. Mini tape on upper trapezius
 Photo 6. Test-patch

The very young child/ baby:

1. formulate tape-treatment goal and the hypothesis behind application
2. apply test-patch of tape brand of your choice, leave this on for at least 1 day
3. assess function that tape must influence/change
4. feel which direction of skin-pull the infant reacts to best
5. apply tape using a very tiny strip of tape (using muscle technique) with base in the direction of the pull, 0-10% stretch of middle part of tape. Use 0% stretch on both anchor and base. Consider using ½ or ¼ cross patch.
6. re-assess.

The older child or toddler:

1. formulate tape-treatment goal and the hypothesis behind application
2. apply test-patch of tape brand of your choice, leave this on for at least 1 day
3. assess function that tape must influence/change
4. feel which direction of skin-pull the infant reacts to best
5. apply a mini- tape on the muscle belly (using muscle technique with base(0% stretch) in the direction of the pull, 0-10% stretch of middle part of tape and apply anchor using 0% stretch. Consider using a cross patch.
6. re-assess.

Conflict of interest: Esther de Ru is developer of the Elastic Therapeutic Taping in Paediatrics course and author of the manual ETTPed. She gives courses on this subject and does not receive external funding. The author alone is responsible for the content and the writing of this paper.

A STUDY TO FOCUS ON PHYSICAL THERAPY FOR CONGENITAL MUSCULAR TORTICOLLIS IN THE USA

Greetings to all pediatric physical therapists! My name is Melanie O'Connell, and I am an APTA board certified pediatric physical therapist in New Jersey. I have been treating infants who have Congenital Muscular Torticollis (CMT) for almost 15 years. During this time, I have experienced both the joys and the challenges of working with some of our youngest patients. From trials of kinesiotape and TOT collars, to engaging babies in song and music, I am very familiar with the multitude of interventions attempted by PTs to promote successful outcomes. As a result of these clinical encounters, I have been drawn to pursue research on CMT. In 2006, I returned to school for a PhD at the University of Medicine and Dentistry of New Jersey (UMDNJ), School of Health Related Professions, now Rutgers Biomedical and Health Sciences. My interest in CMT has guided me in my dissertation work toward the development of the "Heads Up Survey" for PTs in the USA who work with infants with CMT. The goals of this survey are to provide a current description of the physical therapy management of CMT in the United States and compare that description to evidence-based best practices.

The "Heads Up Survey" was developed as the result of an extensive review of the literature on CMT, combined with clinical knowledge and experience in working with this unique population. It is an anonymous and confidential online survey which requires approximately 45 minutes. Pediatric physical therapists who are licensed in the USA and who have treated a minimum of two infants with CMT in the previous six months are being asked to participate. The "Heads Up Survey" consists of 100 questions (mostly multiple choice) that are designed to invoke honest and thoughtful responses from PTs about their management of patients with CMT along a continuum of care, from referral to discharge or discontinuation. To ensure confidentiality, responses are not linked to the individual and results will only be reported as aggregate data. National representation is very important for the validity of this survey, therefore, at least five PTs from each state in the USA are being asked to participate. If you are a licensed PT in the USA who treats CMT, and would be willing to participate in this survey, please e-mail me at headsupcmt@yahoo.com, and I would be glad to send you the link to the online survey. At this time, the survey is ongoing, and therefore, results and observations cannot be reported, however, I have provided a brief synopsis of the literature on CMT below, and hope to publish survey results when the study is completed.

Congenital muscular torticollis (CMT) is an idiopathic condition of infancy in which a newborn postures into ipsilateral neck flexion and contralateral neck rotation due to shortening of the sternocleidomastoid muscle. It is the third most common pediatric orthopedic deformity (Binder, Eng, Gaiser, & Koch, 1987; Öhman & Beckung, 2005; Penz & Bassendowski, 2006) and has become a more frequent diagnosis for referral to pediatric physical therapy (PT). Congenital muscular torticollis has been associated with changes in the skull and facial structure (de Chalain & Park, 2005; Oh, Hoy, & Rogers, 2009; Omid-Kashani, Hasankhani, Sharifi, & Mazlumi, 2008; Yu, Wong, Lo, & Chen, 2004), an increased risk for early motor milestone delays (Öhman, Nilsson, Lagerkvist, & Beckung, 2009; Schertz et al., 2008), as well as later neurodevelopmental disorders (developmental coordination disorder and attention-deficit hyperactivity disorder) (Schertz, Zuk, & Green, 2012), and hip dysplasia (Minihane et al., 2008; von Heideken et al., 2006; Walsh & Morrissy, 1998). Changes in the skull and facial structure have been associated with early neurodevelopmental delays (Schertz, et al., 2008), particularly in motor skills (Speltz et al., 2010), and an increased need for special services in school (Miller & Clarren, 2000). The prevalence of CMT in young infants has been reported to be from 2-16% (Stellwagen, Hubbard, Chambers, & Jones,

2008). It is hypothesized that the “Back to Sleep” campaign, instituted by the American Academy of Pediatrics (AAP) to avoid Sudden Infant Death Syndrome, triggered a “six-fold increase” in plagiocephaly from 1992-1994 (Persing et al., 2003), the most common diagnosis associated with CMT.

Prior research provides evidence for the effectiveness of PT for patients with CMT (Binder, et al., 1987; Cheng et al., 2001; Demirbilek & Atayurt, 1999; Emery, 1994; Kim, Kwon, & Lee, 2009; Öhman & Beckung, 2005; Rahlin, 2005; Taylor, 1997). Treatment success ranges from 69% to 99% of patients achieving resolution of CMT with PT (Binder, et al., 1987; Emery, 1994). Resolution of CMT generally encompasses full passive cervical rotation (Binder, et al., 1987; Cheng, et al., 2001; Emery, 1994) within a relatively short duration of treatment from 1.4 months (Cheng, et al., 2001) to 10.3 months (Petronic et al., 2010). The success of PT for infants with CMT has been associated with the infant’s age at the start of treatment, the type of CMT, and the initial deficit in cervical rotation (Cheng, et al., 2001).

Despite the growing incidence of CMT and related co-morbidities, little is known about contemporary PT examination and treatment of CMT in the USA. It is also not known if pediatric PTs in the USA who treat CMT are practicing according to the best available clinical evidence. Although surveys of PT practice for CMT have been done in New Zealand (Luxford, Hale, & Piggot, 2009) and Canada (Fradette, Gagnon, Kennedy, Snider, & Majnemer, 2011), this has not yet been done in the USA. A description of PT practice in the USA through the “Heads Up Survey”, will not only provide a current description of care but also allow for a comparison of actual practice to the best available evidence. Thank you in advance to those clinicians who are eligible to participate & best wishes to all pediatric physical therapists that treat CMT!

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REFERENCES

- Binder, H., Eng, G. D., Gaiser, J. F., & Koch, B. (1987). Congenital muscular torticollis: results of conservative management with long-term follow-up in 85 cases. *Arch Phys Med Rehabil*, 68(4), 222-225.
- Cheng, J. C., Wong, M. W., Tang, S. P., Chen, T. M., Shum, S. L., & Wong, E. M. (2001). Clinical determinants of the outcome of manual stretching in the treatment of congenital muscular torticollis in infants. A prospective study of eight hundred and twenty-one cases. [Evaluation Studies]. *Journal of Bone & Joint Surgery - American Volume*, 83-A(5), 679-687.
- de Chalain, T. M. B., & Park, S. (2005). Torticollis associated with positional plagiocephaly: a growing epidemic. *Journal of Craniofacial Surgery*, 16(3), 411-418.
- Demirbilek, S., & Atayurt, H. F. (1999). Congenital muscular torticollis and sternomastoid tumor: results of nonoperative treatment. *Journal of Pediatric Surgery*, 34(4), 549-551.
- Emery, C. (1994). The determinants of treatment duration for congenital muscular torticollis. *Physical Therapy*, 74(10), 921-929.
- Fradette, J., Gagnon, I., Kennedy, E., Snider, L., & Majnemer, A. (2011). Clinical Decision Making Regarding Interevention Needs of Infants with Torticollis. *Pediatric Physical Therapy*, 249-256.
- Kim, M. Y., Kwon, D. R., & Lee, H. I. (2009). Therapeutic effect of microcurrent therapy in infants with congenital muscular torticollis. [Controlled Clinical Trial]. *Pm & R*, 1(8), 736-739.
- Luxford, B., Hale, L., & Piggot, J. (2009). The physiotherapy management of infants with congenital muscular torticollis: a survey of current practice in New Zealand. *New Zealand Journal of Physiotherapy*, 37(3), 127-135.

- Miller, R. I., & Clarren, S. K. (2000). Long-term developmental outcomes in patients with deformational plagiocephaly. *Pediatrics*, 105(2), E26.
- Minihane, K. P., Grayhack, J. J., Simmons, T. D., Seshadri, R., Wysocki, R. W., & Sarwark, J. F. (2008). Developmental dysplasia of the hip in infants with congenital muscular torticollis. *American Journal of Orthopedics*, 37(9), E155-158; discussion E158.
- Oh, A. K., Hoy, E. A., & Rogers, G. F. (2009). Predictors of severity in deformational plagiocephaly.[Erratum appears in J Craniofac Surg. 2009 Sep;20(5):1629-30]. *Journal of Craniofacial Surgery*, 20 Suppl 1, 685-689.
- Öhman, A., & Beckung, E. (2005). Functional and cosmetic status in children treated for congenital muscular torticollis as infants. *Advances in Physiotherapy*, 7, 135-140.
- Öhman, A., Nilsson, S., Lagerkvist, A.-L., & Beckung, E. (2009). Are infants with torticollis at risk of a delay in early motor milestones compared with a control group of healthy infants? *Developmental Medicine & Child Neurology*, 51(7), 545-550.
- Omidi-Kashani, F., Hasankhani, E. G., Sharifi, R., & Mazlumi, M. (2008). Is surgery recommended in adults with neglected congenital muscular torticollis? A prospective study. *BMC Musculoskeletal Disorders*, 9, 158.
- Penz, K. L., & Bassendowski, S. L. (2006). Evidence-based nursing in clinical practice: implications for nurse educators. *J Contin Educ Nurs*, 37(6), 251-254; quiz 255-256, 269.
- Persing, J., James, H., Swanson, J., Kattwinkel, J., American Academy of Pediatrics Committee on, P., Ambulatory Medicine, S. o. P. S., & Section on Neurological, S. (2003). Prevention and management of positional skull deformities in infants. American Academy of Pediatrics Committee on Practice and Ambulatory Medicine, Section on Plastic Surgery and Section on Neurological Surgery. *Pediatrics*, 112(1 Pt 1), 199-202.
- Petronic, I., Brdar, R., Cirovic, D., Nikolic, D., Lukac, M., Janic, D., Pavicevic, P., Golubovic, Z., & Knezevic, T. (2010). Congenital muscular torticollis in children: distribution, treatment duration and outcome. *European journal of physical & rehabilitation medicine.*, 46(2), 153-157.
- Rahlin, M. (2005). TAMO therapy as a major component of physical therapy intervention for an infant with congenital muscular torticollis: a case report.[Erratum appears in *Pediatr Phys Ther.* 2005 Winter;17(4):257]. [Case Reports]. *Pediatric Physical Therapy*, 17(3), 209-218.
- Schertz, M., Zuk, L., Zin, S., Nadam, L., Schwartz, D., & Bienkowski, R. S. (2008). Motor and cognitive development at one-year follow-up in infants with torticollis. [Multicenter Study]. *Early Human Development*, 84(1), 9-14.
- Schertz, M., Zuk, L., & Green, D. (2012). Long-term neurodevelopmental follow-up of children with congenital muscular torticollis. *Journal of Child Neurology*, 00(0), 1-7.
- Speltz, M. L., Collett, B. R., Stott-Miller, M., Starr, J. R., Heike, C., Wolfram-Aduan, A. M., King, D., & Cunningham, M. L. (2010). Case-control study of neurodevelopment in deformational plagiocephaly. [Research Support, N.I.H., Extramural]. *Pediatrics*, 125(3), e537-542.
- Stellwagen, L., Hubbard, E., Chambers, C., & Jones, K. L. (2008). Torticollis, facial asymmetry and plagiocephaly in normal newborns. *Archives of Disease in Childhood*, 93(10), 827-831.
- Taylor, J. L. N. (1997). Developmental muscular torticollis: Outcomes in young children treated by physical therapy. *Pediatric Physical Therapy*, 9, 173-178.
- von Heideken, J., Green, D. W., Burke, S. W., Sindler, K., Denneen, J., Haglund-Akerlind, Y., & Widmann, R. F. (2006). The relationship between developmental dysplasia of the hip and congenital muscular torticollis. *Journal of Pediatric Orthopedics*, 26(6), 805-808.

Walsh, J. J., & Morrissy, R. T. (1998). Torticollis and hip dislocation. *Journal of Pediatric Orthopedics*, 18(2), 219-221.

Yu, C.-C., Wong, F.-H., Lo, L.-J., & Chen, Y.-R. (2004). Craniofacial deformity in patients with uncorrected congenital muscular torticollis: an assessment from three-dimensional computed tomography imaging. [Research Support, Non-U.S. Gov't]. *Plastic & Reconstructive Surgery*, 113(1), 24-33.



WCPT News:

- The WCPT announces the newest information and toolkit for **World Physical Therapy Day on September 8th**. The goal of Physical Therapy Day is to promote physical activity. Details can be found at: <http://www.wcpt.org/wptday>



Let us know what you did to celebrate World Physical Therapy Day. Send pictures and write-ups about your celebration and outreach to:

Erin Wentzell at: ewentzell@gmail.com

Our committees are beginning preparations for the amazing programming we will have at WCPT Congress...

Have any ideas or suggestions of topics or events you would like to see in Singapore? Let us know!



We are seeking submissions for the next newsletter. The next newsletter is a diagnosis specific newsletter addressing: Acute Care/ Hospital Based Therapy. We welcome all submissions about guidelines, inventive treatment techniques or programs, use of adjunct therapies, resources, etc.

Submissions are due December 15, 2013.

Please send submissions to Erin Wentzell at ewentzell@gmail.com