Taping for drooling: S-tape: new tool for oral-motor control

London Meeting PDSIG
10th JUNE 2014
Esther de Ru

London PCEN Paediatric Dysphagia CEN

Thank you for the invitation Esther de Ru BPT. OMT. PPT.

Physiotherapist: certified in: geriatrics, sports, neurology, musculoskeletal, paediatrics & oral-motor fields (NDT-Mueller)

worked in: various in/out-patient clinics, hospital, school in Holland, Germany Spain

Chair Cie Practice WCPT-IOPTP

Recent Research

Assessment and intervention in acute and community dysphagia

- The times they are a-changing ♪♪♪
- Research and evidence Elastic Therapeutic (Kinesio) Taping (ETTaping)
- Dual importance of skin in taping (& skincare)
- Development s-tape
- Clinic: s-tape application
- Research s-tape so far.....

From Times of Expert Opinion

To the times of

EBM-EBP-PBE-IECP (+ Expert Opinion ☺)

Guidelines: always behind current situation
http://www.asha.org/members/guidelines.asp

How to keep the perfect balance?

Ask the expert ☺ dr Janneke Kalf

SLP specialized in Dysphagia & PD

Author book EBP in SLP in the Netherlands

Conclusions: last 10 years

1. Awareness
2. Students are learning to use EBM and PBE
3. Practice-based evidence
4. More evidence
5. PubMed = Google
6. More open access
7. Social media
8. Apps
9. Guideline development
10. International cooperation

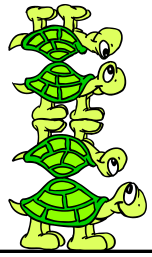
Keypoints:Evidence-based logopedie: wat is erin 10 jaar veranderd?

Dr. Hanneke Kalf. EBP in SLP What has changed in 10 years? Presentation 15th May 2014 Gent Belgium

AND IF THERE IS NO EVIDENCE?

If its dangerous, expensive or effects are only expected in the long term?

Wait for the evidence!



If it is logical, cheap and easy to evaluate?

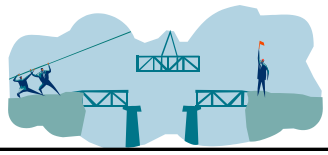
Use!

Document!

Task distribution? In the eyes of the researcher

Researchers generate new knowledge and evidence for effectiveness

Clinician use new knowledge and evidence for effectivenesss



Task distribution in the eyes of this clinician

Researcher needs good **EARS**

& experience in clinic

Communicate

Clinicians need to **SPEAK OUT**

& use available evidence and guidelines

Communicate

When we talk about evidence a lot of us mean.....

	Subjects who rely on AAC		Subjects who do not rely on AAC		
Level	(a) Group Research	(b) Single Subject Research	(c) Group Research	(d) Single Subject Research	(e) Non-Empirical Research
I	•Randomized controlled trial •All or non case series	•#-of-1 randomized controlled trial	•Randomized controlled trial •All or non case series	•#-of-1 randomized controlled trial	
II	•Non-randomized controlled trial •Prospective cohort study with concurrent control group	•ABABA design •Multiple baseline across subjects	•Non-randomized controlled trial •Prospective cohort study with concurrent control group	•ABABA design •Multiple baseline across subjects	
III	•Case-control study •Cohort study with historical control group	•ABA design	•Case-control study •Cohort study with historical control group	•ABA design	
IV	•Case series and registries without control group	•AB design	•Case series and registries without control group	•AB design	
V					•Descriptive case series or case reports •Anecdote •Expert opinion •Theory based on physiology, bench or animal research •Common sense

Table 1: AAC Institute Levels of Evidence classification hierarchy

Lots of criticism on EBM

- **Cochrane RCT** with **parachute story**….
- Not taking **patient** into account
- Not taking **culture** into account
- Study population non compatible with **realistic patient population**
- People **not willing to participate** in research with a control group
- **Dark side** of research and statistics….

Alternative: Integration of Evidence into Clinical Practice

According to **Tonelli** who promotes **integrating evidence into clinical practice (IECP)** "Evidence-based medicine (EBM) has thus far failed to adequately account for the appropriate incorporation of other potential warrants for medical decision making into clinical practice".

Tonelli Mark. R. (2006) Integrating evidence into clinical practice: an alternative to evidence based approaches. Journal of Evaluation in Clinical Practice 12:3;248-256

Alternative: Integration of Evidence into Clinical Practice

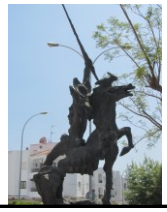
His casuistic alternative to EBM approaches recognizes five distinct topics:

1) Empirical evidence (**clinical research**)
2) Experiential evidence (**expert opinion**)
3) Pathophysiologic rationale (**normal healing process**)
4) Patient goals and values (**patient interaction**)
5) System features are potentially relevant to any clinical decision. (**social, cultural, judicial, and present situation**)

According to Tonneli…

"No single topic has a general priority over any other and the relative importance of a topic will depend upon the circumstances of the particular case".

Personally I welcome this total approach….



'Pitfalls' current research

1. Literature Research and Systematic Reviews only look at articles in the **English language**
2. Authors often read abstracts only
3. Student supervisors sometimes have little knowledge of subject students (Thesis)
4. Clinicians are not reporting results or asking questions
5. Researchers/educators and clinicians not communicating

Now to the clinic & taping





This tape has many names:

Elastic Therapeutic Taping,
Elastic Rehabilitative Taping,
Fascia taping,
Kinaesthetic taping,
Kineotaping,
KinesioTaping,
Kinesiology Taping,
K-active taping,
K-taping,
KT-taping,
Medical Taping Concept,
MyoFascial Taping,
Neuro-Muscular.Taping & Neuro Structural Taping

Brand names

* More than 60 ☺

Availability per country varies with production in Korea, Japan, U.S.A. & more

* Glue adhesion properties vary greatly
* Mechanical properties tape vary

Innovations tape:

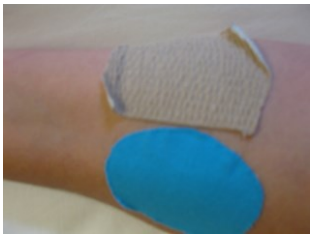
* Cotton and *synthetic fibres
* Stretchable in more directions

****** = many variables research**

Differs from rigid tape

Rigid Tape	ETTape
Not elastic	Elastic ++
Applied short period	Applied for days
ROM decreased	ROM not affected

Does it differ from elastic tape?



Other 'similar' tapes

A number of tapes look very similar to the ET-tape we are discussing….

Differences are:

- Not made of cotton but synthetic material
- Stretchable in more directions
- Very strong glues (outdoor athletes)

Hypothesis & the evidence

What do we know so far?

Original hypotheses & the new theoretical models

Research into the effects of elastic therapeutic tape in children and adults.

Recent SR's

Theoretical models: the original

I. Model K. Kase

- Skin (**convolutions**) causing friction between layers - increased circulation & resulting in….
- **Skin lifting**: making space between dermis and epidermis (decompression).
- **Proprioceptive awareness**
- **Origin-Insertion direction** results in either facilitation or inhibition of underlying muscles

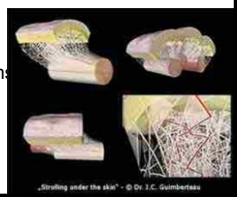
Convolutions

II. Fascia model

Fascia/ biotensegrity /
H. Langevin http://www.uvm.edu/annb/faculty/langevin/

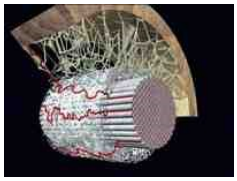
Anatomy trains Tom Myers
http://www.anatomytrains.com

Biotensegrity model 'captured' in work of plastic surgeon dr.J.C.GUIMBERTEAU Paris. Specialized in hand & wrist problems
Thanking him for his permission to use this image.
YouTube: Strolling under the skin



Tensegrity Model

Tensegrity is a type of structure with an integrity based on a balance between tension and compression components. In a tensegrity model the compressive members are connected to each other by tensile members.



III. Skin model

DermoNeuroModulation (DNM) Diana Jacobs (entrapment cunateous nerves)
http://humanantigravitysuit.blogspot.com/

Dermatomes/segmental taping

Organzones (skin technique Teilrich- Leube) bindweefselmassage/ CTM)

Fukui T. **Physiological skin movement** WCPT 2011

Blow D. **Mayor Elasticity Lines** (MEL's) Neuromuscular taping 2012

IV. Energy Model

Meridians & acupuncture points

Chi – Spiral Taping

Chakra Taping

V. Combination Model

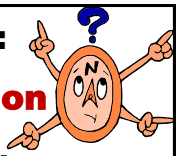
Combination of both rigid and elastic therapeutic tape techniques and manual methods

Examples:

1. Use of ET-tape as if it were rigid tape
2. Using compressive and de-compressive techniques McConnell or Mulligan applications using ETT
3. Bony technique EasyTaping
4. Kinematic Taping/Neurodynamic taping: combination of Maitland and ETT.
5. Dynamic taping, using tape brand that stretches in more directions

Results are:

Babylonian confusion



Causes for misunderstanding are:

1. **Clinical reasoning & hypotheses differ: 5 models** making for many ways of applying tape: anatomically 'correct', Trigger Points, acupuncture points, meridians, fascia-trains, MEL's, dermatomes, cutaneous nerves etc etc
2. **Properties tape brands differ**

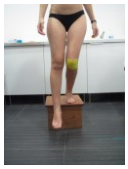
Causes misunderstanding:

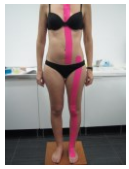
3. Taping goals differ: posture, function, direction of movement, blood & lymph-flow, proprioception, pain.

4. Amount of stretch used differs

5. Names method and brand differ

6. Size varies: very small strips to very long tapes.





Conclusion: tape use multi-variable ☺

****** even more variables research

Break

Evidence ETTaping

Lot on non-elastic (rigid, low-dye) taping

Growing amount on elastic therapeutic taping

Big disadvantage = most research on healthy adult volunteers or athletes!!

Systematic Reviews 21

PEDro Scholarly evidence-based journal articles about physical therapy/physiotherapy. (Systematic Reviews or articles reporting research results)

Total number articles 35 including 4 reviews (not rated) and 2 articles being rated

18 articles Pedro scoring 5-9

11 articles Pedro scoring 2-4

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Systematic reviews

- Bassett KT et al (2010)
- Bronner S. (2008)
- Calero Saa PA et al (2012)
- Celiker R et al (2011)
- Comploi Gregor (2009)
- **Carmo do Silva Parreira P (2014)**
- Espejo L y Apolo M.D. (2011)
- Escura-Aixas J (2010) *
- Frankamp H. et al (2012)
- Golik Kellie (2012)
- Heuberger M & Hofer N (2013)*
- Hyyppä J (2011) *
- Kalron A & Bar-Sela S (2013)
- Koss J en Munc J. (2010)
- Kiebzak W et al (2012)
- Krausse C. (2010)
- Lazar-Villar P et al (2011)
- Mendez-Rebolledo G et al (2013) *
- Morichon A (2014) *
- Morris D et al (2012)
- Williams S et al (2012)
- * = another languages

Example SR of SR's; how things can go so wrong

Current evidence does not support the use of Kinesio Taping in clinical practice: a systematic review. Patrícia do Carmo Silva Parreira, Luciola da Cunha Menezes Costa, Luiz Carlos Hespanhol Junior, Alexandre Dias Lopes, Leonardo Oliveira Pena Costa

Journal of Physiotherapy Volume 60, Issue 1 , Pages 31-39, March 2014

http://www.sciencedirect.com/science/article/pii/S1836955314000095

Really thorough research but results not correct & detrimental for professionals!!!

Result: letter to the Editor (on its way)

* Original Model K. Kase

Systematic Review France

- Extensive Systematic Review in French by Aurélie Morichon, Adrein Pallot called:
- Le Taping: à l'épreuve des faits ? Revue des revues systématiques. Taping: Trial by evidence? Review of systematic reviews.
- Doi : 10.1016/j.kine.2013.12.014
- Authors are milder in their conclusions ☺
- Who read?

Akio Mori, Masaki Takasaki, Professor, Nihon University 2005

Activation of Cerebral Cortex in Various Regions After Using Kinesio Tape.

Yuh-Hwan Liu, Shu-Min Chen, Chi-Yi Lin, Chung-I Huang, Yung-Nien Sun 2007

Motion Tracking on Elbow Tissue from Ultrasonic Image Sequence for Patients with Lateral Epicondylitis

The experimental results show that Kinesio Taping makes the motion of muscle on the ultrasonic images enlarge. It means that the performance of muscle motion gets improve.

Thedon T., Mandrick K., Foissac M., Mottet D. & Perrey S. 2011

Degraded postural performance after muscle fatigue can be compensated by skin stimulation

Gait & Posture 33 (2011) 686–689

M.J.Callaghan 2012

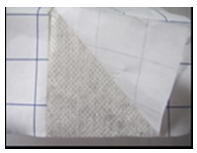
What does proprioception testing tell us about patello-femoral pain?

Research knee hypafix. "Despite there being no directional tension or compressive force, we were able to show that proprioception was still improved.

Conclusion: It is likely that it is the sensory input that is important and not the biomechanical effects of taping. **That patellar taping modulates brain activity in several areas of the brain** during a proprioception knee movement task.

Research M.J. Callaghan

These results give the impression that this tape with a subtle, non-mechanical effect on the knee is sufficient to influence various areas of the brain associated with **decision making, coordination and motor control".**
Quote Callaghan "Tape used 10cm strip of Hypafix (Smith & Nephew), but Fixomull will also be OK."



Bae SH, Lee JH, OH KA, Kim KY 2013

The effects of kinesiotaping on potential in chronic low back pain patients anticipatory postural control and cerebral cortex.

J.PhysTher Sci 2013 Nov;25(11):1367-71

12 weeks, control group N=10 KTgroup N=10

- KT reduces pain in CLBP
- KP affects anticipatory postural control and Movement Monitoring Potentials

Research: skin–brain-tape

Blog Todd Hargrove (2011) on http://www.bettermovement.org/

described two possible neurological mechanisms why tape might relieve pain. Taping will cause ruffini's to send continuous information to the brain the whole time the tape is there.

Two benefits of this flood of mechanoreception? '**sensory gating'** (rubbing) and '**movement illusion**.'

Research into original model

Direction tape (origin-insertion or visa versa):

Yuan-Yuan Lee et al (2012) The effect of applied direction of kinesio taping in ankle muscle strength and flexibility. 30th Ann. Conf.Biom.I.Sports.Melbourne 2012 p.140-143

Luque Saurez A et al (2013) Short term effects of kinesiotaping on acromio-humeral distance in asymptomatic subjects: a randomised controlled trail. http://dx.doi.org/10.10.16/j.math.2013.06.002

(no significant differences found in both studies)

Convolutions:

Carmo de Silva Parreira et al (2013) Do convolutions in Kinesio taping matter? Comparison of two Kinesio taping approaches in patients with chronic non-specific low back pain: Protocol of a Randomised Trail JoP2013 vol 59 1-12 . **Ongoing study…**

Research into fascia model

Kinesiologic taping and muscular activity: a myofascial hypothesis and a randomised blinded trail on healthy individuals. **N=9** doi.org/101016/ j.jbmt.2013.11.07

Hypothesis: taping has significant effects distant to site tape application. (tone pectoralis major muscle contralateral side+). Fascia sheath between both pectoralis muscles. Positive effect only directly after fascilitatory application. Effect gone after 24 hours

Research into WHY tape works favouring skin model.

- **Akio Mori et al.** (2005) Activation of Cerebral Cortex fMRI epicondylitis
- **Yuh-Hwan Liu et al.** (2007) Ultrasonic Imaging epicondylitis
- **Thedon T et al** (2011) Skin stimulation and muscle fatigue achilles tendon balance platform 40 Hz fMRI
- **Fukui T.** (2011) Physiological skin movement using Vicon Motion Systems 64 markers trunk (publi. Book Skin Physiology)
- **Callaghan MJ** (2011/2012) knee (PFPS) tape and fMRI
- **Konishi Y** (2012) knee EMG, attenuation of Ia afferents
- **Bae SH et al** (2013) Chronic LBP, postural anticipatory control & Cerebral Cortex

Indications

Muscle & tendon disorders
Nerve entrapment (deep and superficial)
Orthopaedic disorders
Neurological disorders
Blood flow problems
Breathing problems
Lymph & circulation problems
Pain
Injuries (sports)

Contra-indications

Skins diseases & sunburn
Swelling without detailed knowledge of history
Open wounds*
Severe trauma*
Thrombosis
Allergic reaction to test patch
Allergic reaction after longer use
No result after 2 or 3 applications
Epileptic patients; extra care

Tape is applied to skin....

Do we all agree?

Skin function

Protection - water resistance
Sensation
Heat regulation
Control of evaporation
Aesthetics and communication
Storage
Excretion
Absorption

Returns to its original state after stretching

Skin properties

Protection - water resistance
Sensation
Heat regulation
Control of evaporation
Aesthetics and communication
Storage
Excretion
Absorption

Returns to original state after stretch

Skin characteristics

Structural characteristics skin **children** differs from adults, especially in the first years of life. The young child's skin is more vulnerable to agents that act on or through the skin because it is skin is thinner and it has a larger surface-to-mass ratio than in adults.

Skin thickness gradually increases from birth to adulthood.

In the **elderly**, the skin becomes lax, is dryer, has delayed healing and is generally weaker

Skin anatomy & physiology modifies during life

Structural characteristics skin children differs from adults especially in the first years of life.
Skin thickness gradually ↑ from birth to adulthood.

Dermatology 2000;201:218-222 **Thickness and Echogenicity of the Skin in Children as Assessed by 20-MHz Ultrasound**
Stefania Seidenari, Giulia Giusti, Laura Bertoni, Cristina Magnoni, Giovanni Pellacani

Skin of small child:

- has a significantly ↓ **hygroscopicity** (is the capacity of a product e.g. cargo, packaging material) to **react to the moisture content of the air by absorbing or releasing water vapour.**
- has ↑**cutaneous blood perfusion**
- is **more vulnerable to agents that act on or through the skin!!!** because it is skin is thinner and they have a larger surface-to-mass ratio than adults.

Immune system

Immune system matures continuously until 2 years of age

TSH fluctuations have an effect on the skin. Children have more thyroid per kilogram of body weight than adults.

Children/adults with M. Down more likely to have hypothyroidism. **(check skin condition)**

Aging: increased risk skin injury

Aging skin repairs itself more slowly than the younger skin.

Wound healing may be up to 4 times slower.

More than 90% of all older people have a skin disorder and this can be caused by many conditions: arteriosclerosis, Diabetes, heart disease, liver disease, nutritional deficiencies, obesity & medication.

Age and skin care

- Skin care is important because this tape is applied for a **long time**.
- Extra careful with **thinner skin** child and the elderly patient.
- Wash area with **water** (and soap) to prevent skin problems.
- Use **more brands** to prevent contact dermatitis. (test patch different brands)

Be careful when taping…

Before using tape:

- **Use test patch.**
- Examine skin carefully.
- Check sensibility skin.

When applying tape:

- Use little (0-10%) stretch OR stretch the skin.
- Check effect tape on skin the first few days.
- **Leave it on as long as possible ?!?!**

Golden standard: Test patch

Apply 2 days, remove, check skin 3rd day.

Optimal size 3-5cm2 (min. 1cm2)

Safe tape removal

Use application to let parents feel how strong the adhesive is

Pull tape parallel to itself or ‘scratch’ it off

Contact allergy

20-30% in child and adolescents & 40% adults develop contact allergies Spiewak*

Contact allergy caused by substance passing through the skin causing activation of local immune system. Looks similar to excema, skin is red, slightly swollen and itches.

*Spiewak R (2007) Contact allergy- diagnosing and treatment. Alergia Astma Immunologia 2007,12(3)109-127

Examples contact allergy

Mikolajewska E (2011) Side effects of kinesiotaping- own observations. J.healthSci 2011 vol 1, no 4 93-99

Development S-tape

Use of Kinesio® Tape in Pediatrics to Improve Oral Motor Control **Trish Martin PT, CKTI with Audrey Yasukawa, MOT, OTR/L, CKTI (2003). 18th Annual Kinesio Taping International Symposium Review.**

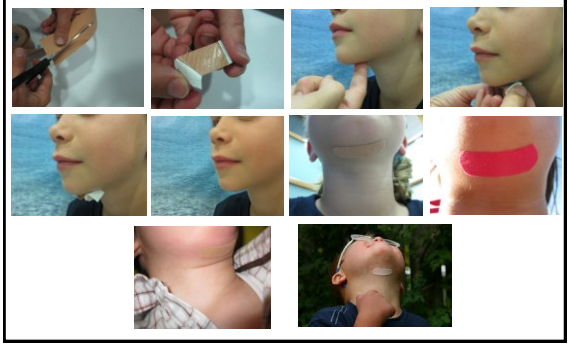
In general, the use of Kinesio Taping® to improve lip closure needs to be further explored. The mechanism of impact may be primarily sensory, or may involve facilitation of the orbicularis oris. I believe Kinesio® Tape provides another tool for use in the therapeutic treatment of children with oral motor concerns.

First publications 2009

Case study: Drooling possible new treatment method to help reduce excessive drooling in a 4 yr old girl with Rett Syndrome* And... 7 months later.

In Brazil a speech-language therapist came up with the very same idea. The use of the Kinesio taping method in the control of sialorrhea in (42) children with cerebral palsy.

S-tape application



Applying s-tape: do not hyperextend!

Patient questionnairre QETED

T0 = A situation before taping
T1 = B 1 month after tape application
T2 = C 3 months after tape application
T3 = D 6 months after tape application
T4 = E 1 year after tape application

Results: after 6 months in reader
Results: after > 1 year presented

QETED (mix of 2 tests)

1. Initials, dob, diagnosis & GMFCS levels
2. Daily frequency drooling past week (per day)
3. Daily severity drooling pas week (per day)
4. Changing bibs
5. Changing clothes
6. Smell
7. Rash
8. Embarressed
9. Wiping mouth
10. Wiping toys
11. Couching & choking

This little s-tape can influence:

frequency & severity drooling
coughing and chocking
rash
odour
bib use

Other reported outcomes have been:
more oral motor and tongue activity
less problems during feeding
better articulation
(!!!!! Very rarely: increases drooling !!!!!!)

Conclusion effects s-tape

It works in about 20-25% of all cases (adults & children)
Effective in both genetic disorders & with serious developmental delay
Children/adults with CP benefit
Tape's size differs per person
Tape's application method (daily or 1-2x wk.) differs per person
Learning effect/adaptation?
Some need application always, some don't?

Questions still are:

- **Which disorders react best?**
- **How long do we go on taping?**
- **Apply daily or 1-2x week?**
- **Long term effects?**
- **Why does it sometimes worsen symptoms?**

S-tape research 2009-2012

- **Ru de E** (2009) Drooling: possible new treatment method to help reduce excessive drooling. And...7 months later . Case study TNM Newsletter www.aevnm.com (Spanish, English, Portuguese) **N=1**
- **Oliveiro Ribeiro de M. et al.** (2009) The use of the Kinesio taping method in the control of sialorrea in children with cerebral palsy. Actafisiatrica.vol.16.nr4.dec.2009 Brazil **N=42** children CP (4-15yrs)
- **Lopez Tello C et al** (2012) Eficacia del kinesiotaping en la sialorrea en ninos con necesidades educativas especiales : un asayo clinico abierto. Spain. Fisioterapiedoi.org/10.1016/j.ft.2012.05.002 **N=10** children (mean age 9.8yrs): 5 with CP, 2 with developmental delay, 3 unspecified
- **Brink Evd** (2012) Het geheim van de s-tape. Down+Up 99 J.Dutch Down Syndrome Society **N=2** (3 &4 yrs old)

S-tape research 2013

- **Nieves Estrada N.A., Echevarría González A.C. (2**013) Efecto de la electroestimulación neuromuscular y el Kinesio taping® en la sialorrea en pacientes con parálisis cerebral leve y moderada. Fisioiterapia Volume 35, Issue 6, Nov–Dec 2013, Pages 272–276 **N=18** ♂=15 ♀=3 (age 4-18 yrs.)
- **S-Tape** Article on s-tape in Leben mit Down-Syndrom Nr. 74, September 2013, Deutsches Down-Syndrom InfoCenter, www.ds-infocenter.de **N=2** (German version of article v.d.Brink)
- **S-tape: (2013)** Nieuwsblad Vereniging Nee-eten!, jaargang 15, mei 2013 Article in journal of the Dutch Organisation of patients/parents of children with chronic food rejection and tube feeding.
- **Ru de E** (2013) Elastic Therapeutic Taping in Paediatrics pgs 160-61 (data collection effect after 6 months **N= 13**) in reader

Conference proceedings

Ru de E (2010) Numerous children with cerebral palsy suffer from excessive drooling. Experimental study **N= 39** of an elastic therapeutic tape application to address excessive drooling. III Congreso de la SEFIP Vallodolid13,14 y 15 de mayo de 2010

Prof. Mousa Amayreh, CCC-SLP & **Fatimah Rada** PPT (2012) CP Conference 11-13 Dec. 2012 in Saudi Arabia. Research s-tape use on **34** children with CP. Results: > 50% improvement with 9 children showing no progress. Some children improved but lost positive effect 1 month after removal. Conclusion: Recommend that the tape can be seen as another efficient method for managing drooling. It is not a cure for all cases. It reduces drooling for some and is not helpful for others.

Litts J SLP et al (2013) presented 'The effect of kinesiology tape on the frequency of swallows in normal subjects' N=5 http://2013.laryngologyconference.com/

Presentation Laryngology Conference in London June 2013

Juliana Litts, CCC-SLP; Peter Belafsky, PhD, MD; Esther de Ru, OMT, PPT

Abstract first subjects N=5 was promising.

Observation = 10 min swallowing

Presentation research N= 22.

Results; no significant difference.

This is often the case when research on taping is only performed on healthy subjects…

www. speechbite.com

No articles on elastic therapeutic(Kinesio) taping

Nothing on s-tape

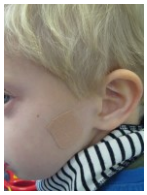
Data 2014 N=5 (2 kids)

Follow-up patients s-tape for > 1 year

1. DG 17-06-2008 Down syndrome- improved and using 3 yrs
2. LvdB 31-07-2007 Down syndrome- improved and using 2 yrs
3. WD 24-07-60 Mentally handicapped improved and still using
4. AMD 17-07-81 CP improved still using?
5. MR 14-10-73 CP & epilepsy, no change.

Future in taping head, neck and throat disorders

Much more is possible and Taping Course coming!



S-tape instruction sheet 2014

How to apply s-tape & instruct parents/caregivers/patients.

1. Always begin with a tape *test- patch* and leave this on for two days. Check the skin on the third day for possible allergic skin reactions.

2. Instruct parents how to cut & tear the paper and apply the tape without touching it. Make sure the tape is not too large. In small children it should be no bigger than: 2cm x 1 cm, in older children we need more, in adults 4(5) cm x 1.5(2) cm.

3. Before taping the child apply tape to parents' hand (*test-strip*) and under their chin. By doing so they will perceive what their child feels and what removing the tape feels like later on.

4. Teach the parents to feel the muscles we are influencing by feeling behind the jawbone in the soft muscle during swallowing.

5. Apply the tape in the middle of the child's chin. Hold the tape- ends with paper folded back. Stretch the tape 10% when applying (ligament technique) and apply both ends without using stretch. The tape should not be visible. Let the parent practice applying the tape on you. Tell them about the *heat sensitive adhesive*. They must rub or hold on to the tape to make it stick properly.

6. The three different possibilities are:
Apply daily in the morning and take off before bedtime (*a must with adult males/shaving*).
Apply and leave it on for 2 to 4 days. In this case a tape free day in between is needed.
Apply and leave on for max a week, remove, allow for tape free interval and repeat. Keep checking the skin regularly in this cases.

7. Show parents how to remove the test-strip on their hand and let them remove the tape under their own chin. Let them pull horizontally or let parent/child 'rub' the tape off. Tell parents to do so **SLOWLY** and **CAREFULLY.** Be sure not to tape the skin (*dermatome*) belonging to the mandibular nerve. Only apply tape in the area of the superficial branches of the cervical plexus under the chin.

Please use the online QETED questionnaires to keep me informed of the progress and results.

It is advised to try this application for 4 weeks. In the rare case that an increase in excessive drooling is experienced it is advised to stop immediately or after max. 2 weeks.
If you have any questions please let me know.

Kind regards

Esther de Ru estherderu@gmail.com

P.s. When speaking of parents, caregivers and adult patients are included.

S-tape development, reasoning and studies

The orbicularis oris muscle tape.

Martin T* and Yasukawa A* presented 'Use of Kinesio® Tape in Pediatrics to Improve Oral Motor Control' at the 18th Annual Kinesio Taping International Symposium in 2003 in Japan. The result of taping the orbicularis oris muscle in a number of children with a variety of disorders was presented. The conclusion was: 'In general, the use of Kinesio Taping® to improve lip closure needs to be further explored. The mechanism of impact may be primarily sensory, or may involve facilitation of the orbicularis oris. I believe Kinesio® Tape provides another tool for use in the therapeutic treatment of children with oral motor concerns.' In 2007 Martin P* described another case study of a 9 year old girl in the winter edition of Advanced Healing. Taping the orbicularis oris muscle has been presented as a tape to improve oral management since.


Example tape orbicularis oris muscle.

The two main reasons for the author not being in favour of taping the orbicularis oris muscle are:

- This tape gives an enfeebling impression.
- It is not functional for swallowing saliva.

According to the freemedicaldictionary.com 'the orbicularis oris is the muscle that encircles the oral cavity; it encompasses both fibres proper to the lips as well as the adjacent facial muscles. Also known as the "kissing muscle" for its puckering role, it is intimately involved in the opening and closing of the oral cavity.'
You can actually swallow without using it at all.

Development s-tape
The author developed the s-tape after having read about the tape application on the orbicularis oris muscle. The idea that applying the tape to a different area could possibly have similar or better effects and look a lot better was born. A number of tape applications were tried on a 9 year old quadriplegic boy and they all worked to some extent. He was swallowing spontaneously and his extreme drooling had vanished. The best was chosen to work with from there on.
The need to share this information was the result and a first case study was published in 2009*. The author hoped to make clear that she is not in favour of taping the orbicular oris

Excerpt pages 158-161 of Elastic therapeutic Taping in Paediatrics December 2013 in Press
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muscle in her case study on drooling at the time (2009). This first publication on a tape in the submandibular region was rapidly followed by the publication of a study using virtually the same tape. Speech language therapist Mrs Oliveiro Ribeiro de M. et al.* had conducted research on 42 children with CP (4-15yrs) in Brazil. She also found favourable results for the same tape application. The only difference was the amount of stretch used.

The s-tape did not have a name at first.
As colleagues kept asking what the name of the tape was, the name s-tape was devised. It seemed a logical choice as the letter **S** comes back in a number of languages for situations related to swallowing and drooling such as: slikken, schlucken, saliva, sabbern, sialorrhea, sylki and salivation.

The author has endeavoured to 'get the message out there and educate colleagues'. Speech language therapists, orofacial myologists, therapists trained in NDT-prelogedia or Castillo Morales Method are most knowledgeable about the facial, neck and head area and have the expertise to decide when to use taping as a treatment option. They are the ones most educated to use tape.

A number of studies on the s-tape that have been published since 2009:
Ru de E* (2009) Drooling: possible new treatment method to help reduce excessive drooling. And seven months later. Case study
Oliveiro Ribeiro de M. et al.* (2009) The use of the Kinesio taping method in the control of sialorrea in children with cerebral palsy.
Lopez Tello C et al* (2012) Eficacia del kinesiotaping en la sialorrea en ninos con necesidades educativas especiales: un asayo clinico abierto. The efficiency of taping in drooling with children from a special education school; an open clinical trail.
The first study repeating the findings of the first case study by the author consisted of ten children (mean age 9.8yrs): 5 with CP, 2 with developmental delay, 3 unspecified who were taped for 7 months. Caregivers and parents were asked for data. Frequency and Severity of drooling, skin problems and smell and feeding problems were measured.
Nieves Estrada N.A., Echevarría González A.C. * (2013) Efecto de la electroestimulación neuromuscular y el Kinesio taping® en la sialorrea en pacientes con parálisis cerebral leve y moderada in Fisioiterapia Volume 35, Issue 6, November–December 2013, Pages 272–276
In this study from Mexico called: 'Neuro Muscular Electro Stimulating (NMES) and the Kinesio taping® application for the siallorrhea treatment in patients with mild and moderate cerebral palsy'' 18 participants ♂=15 ♀=3 (age 4-18 yrs.) were divided into two groups.
Group 1. NMES 2/3 x week was applied for 3 months.
Group 2. Kinesiotape was used daily for the 1st month and used twice a week in the second and third month. The Frequency & Severity of Drooling was measured. Results reported were that: Treatment with NMES and Kinesio taping® treatment is equally effective in the management of drooling in children with mild to moderate cerebral palsy. The hope is that this research will be published.

Presentations on S-tape from 2010
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At the CP Conference 11-13 December 2012 in Saudi Arabia **Prof. Mousa Amayreh,** CCC-SLP & **Fatimah Rada** PPT presented data regarding research into the s-tape use on 34 children with CP. They reported > 50% improvement with 9 children showing no progress. Some children improved but lost positive effect 1 month after removal. Conclusion: the presenter's recommend that the tape can be seen as another efficient method for managing drooling. It is not a cure for all cases. It reduces drooling for some and is not helpful for others. The author has been informed that presenter's hope to publish this study.
In June mrs **Litts J SLP et al** (2013) presented 'The effect of kinesiology tape on the frequency of swallows in normal subjects' http://2013.laryngologyconference.com/ in London.

Various patient organisations have published articles on this subject.
The first was in the Dutch Journal of the Down Syndrome Society in 2012. A second was published in the journal of the Dutch Organisation of patients/parents of children with chronic food rejection and tube feeding this year. The third was published in September 2013 in the Journal of the German Down Syndrome Society.

Data collection author:
The results of using s-tape for a longer period of time with 29 children and 10 adults are summarized here below. Results were collected online by means of the patient QETED* questionnaire.
T0 - prior tape application,
T1- 1 month after 1st application,
T2- 3 months after 1st application,
T3- 6 months after 1st application.

T0-T3	2.7 – 16.11 yrs.	19—50 yrs.	Lost -follow up 0-17yrs	Lost follow-up +17yrs
T0	29	10	-	-
T1	23	10	6	-
T2	19	0	12	10
T3	13	0	26	-

General results after 6 months of s-tape use in these 13 children were:

Symptom	N=child	Improved	No change	Worse
Choking	3	3 mayor improvement	-	-
Rash	13	6	3	4
Smell	13	7	3	3 slightly worst
Frequency	13	10	3	
Severity	13	6	6	1

This group of 13 children consisted of:
Eight children with a genetic conditions such as Rett syndrome, Down syndrome, Angelman syndrome and Otahara syndrome and five children with Cerebral Palsy.
Of the eight (genetic) children: 5 improved, one reported no change and two worsened (1x rash and 1x severity). Increased drooling was reported in one case of child with Rett Syndrome. Of the 5 children with Cerebral Palsy, 4 improved and one worsened (smell).

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So far author's conclusions are that the s-tape:
1. Is effective in about 20-25% of all cases treated (adults & children),
2. Can be effective in children with; genetic disorders, serious developmental delay and adults and children with Cerebral Palsy, adults with Parkinson and stroke,
3. Size will differ per person and this is a question of trial and error,
4. Application method (daily, 2 x week, 1 x week) differs per person.
In some cases there is a clear learning effect, in others adaptation. The result is that some patients need application always and some don't. The reason behind this is unknown and the author welcomes more research regarding this question.

This little s-tape can influence: frequency & severity drooling, coughing and choking, the rash, smell and bib use. Other reported outcomes have been: more oral motor activity, tongue activity, less problems during feeding and better articulation.

When taping the orbicularis oris muscle could be useful.

The Thesis on: Assessment of the effects of mechanical labial contention based on oral clinical parameters in patients with cerebral palsy was published by dentist mrs **Dr.Freitas C.M.*** (2012). Mrs Freitas's findings with a tape to the lower orbicular oris muscle similar to the one in the photo here below, was that the saliva was contained. She does not speak of swallowing.

Colleague clinicians have reported that taping the orbicularis oris muscle can be very useful during therapy sessions: It has been successfully used treating:
1. Paralysis or palsy of the facial nerve.
As the orbicularis oris is one of the many muscles that can be affected it is possible this tape will be meaningful in a number of these cases.
2. Tape for the cleft palate.
A case study was published in Advance Healing (2010) by Pulcher M & Sellier-Piteo S* using Kinesio Tex Tape in the treatment of an infant with cleft lip and palate in Brazil. In this case study tape was successfully applied to the upper orbicularis only. So far this is the only study found on this topic. In the November 2013 edition of Noticias de VNM colleague Isabel Jiménez Mata* speaks of taping the whole orbicularis oris muscle with favourable results during therapy sessions.

Author can imagine using this tape during oral therapy sessions to enhance mouth closure but is not in favour of keeping this application on for a longer period of time.
*QETED Questionnaire Elastic Taping Excessive Drooling.

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