

Application of tactile/kinesthetic stimulation in preterm infants: a systematic review

Euro Health Care and Fitness Summit
2015 – Valencia, Spain

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J Pediatr (Rio J). 2015; 91(3):213-223





About me:

✓ Physical Therapist (2002)

✓ Osteopathy (2007)

✓ Enhancing Manipulative Skills – Dra Viola Frymann (2007)

✓ Touch Therapy Research Workshop – Dra Tiffany Field (2011)

✓ Private practice with babies

The first little baby

- ✓ Born premature
 - ✓ After no consideration
- severe reflux started to

*Mother:
"Now what? And the children who are in the NICU? Vain all do surgery?"*

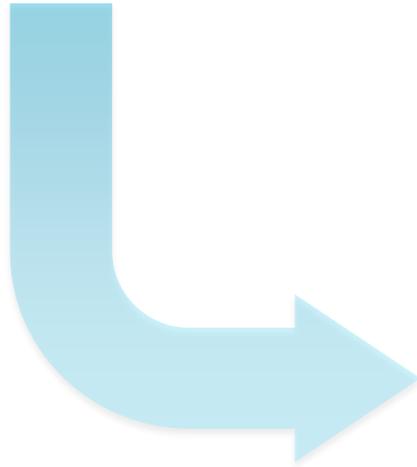
Literature review

Resume

- ✓ Objective
- ✓ Method
- ✓ Inclusion criteria
- ✓ Results
- ✓ Conclusion

Introduction

TKS has been studied as an aid to standard treatment



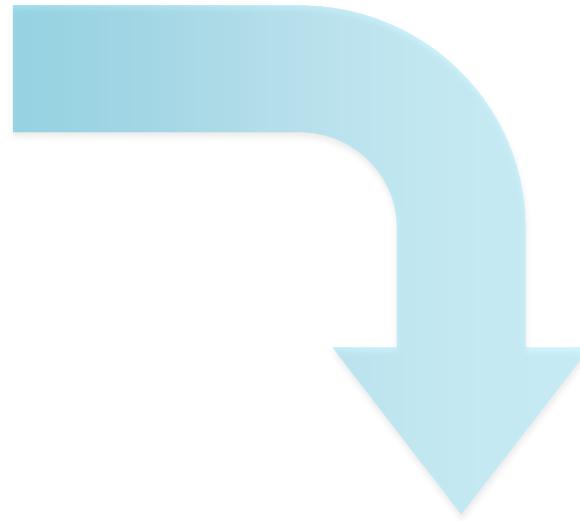
Growth and Development
minimizing stress

Benefits

- ✓ Increased weight gain 3,6-10,14-37,39
- ✓ Reduced length of hospital stay 10,16,17,20,21,23,24,28,31,32,35,37,39
- ✓ Reduced stress behaviors¹¹
- ✓ Improved neurobehavioral responses 6-8,10,14,19-23,25,26,36,39
- ✓ Late-onset sepsis 16
- ✓ Effect on the immune system 32

The Technique

- ✓ Simple procedure
- ✓ Low cost
- ✓ Non-invasive



Still need more studies

Objective

*To verify the **methods** used by the clinical trials that assessed the effect of tactile/kinesthetic stimulation on weight gain in preterm infants and highlight the **similarities** and **differences** among such studies*

Method

Systematic Review

2 databases: PEDro and PubMed (July-2014)

- 1) Title
- 2) Abstract
- 3) Texts

(thoroughly read to select those that met the inclusion criteria)

Inclusion Criteria

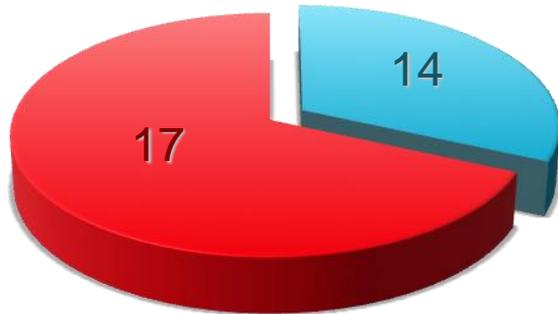
- ✓ Clinical trials **TS** or **massage therapy** whether or not associated with **KS** of **PI**
- ✓ That assessed **weight gain** after the intervention
- ✓ **Control group**
- ✓ Were composed in English, Portuguese, or Spanish

Title/Autor/Year/Dat abase	Sample Size	Objectives and starting conditions	Description of the technique	Main variables	Measured weight gain	Description of adverse events during the procedure	Results achieved statistical significance
<p><i>Massage therapy improves neurodevelopment outcome at two years corrected age for very low birth weight infants</i> 36 Procianoy et al., 2010 PubMed searches 1, 4</p>	<p>Total: 73 TG: 35 GAM= 30 w BWM= 1192g CG: 38 GAM= 29.7w BWM= 1151g both groups Skin-skin care</p>	<p>Assess the outcome of MT growth and neurodevelopment of PI assessed at 2 years corrected age. Beginning after 48 h of life.</p>	<p>MT applied only by mothers, 4x/day for 15 min, intervals of 6 hours of TS: temporal, frontal, periorbital, nasal, and perilabial regions of the face and the external side of the upper and lower limbs + KS (3x each: wrist, elbow, ankle, and knee)</p>	<p>1)Anthropometric 2) Bayley scales of infant development, second edition (BSID-II) Measured at 2 years of corrected age</p>	<p>Body weight taken with normal nursery routine</p>	<p>Mothers of the TG were instructed to observe the newborns' tolerance signs, avoiding excessive stimulations.</p>	<p>2) TG: Greater mental development index (p = 0.035)</p>

Results

520 titles

31 met the
inclusion
criteria



Making the revision we have seen that most studies (14 of 31) follow the protocol proposed by Dr. Field in 1986

Tactile Kinesthetic Stimulation

FASE 1

- Tactile stimulation
- Prono position



FASE 2

- Kinesthetic stimulation
- Supine position

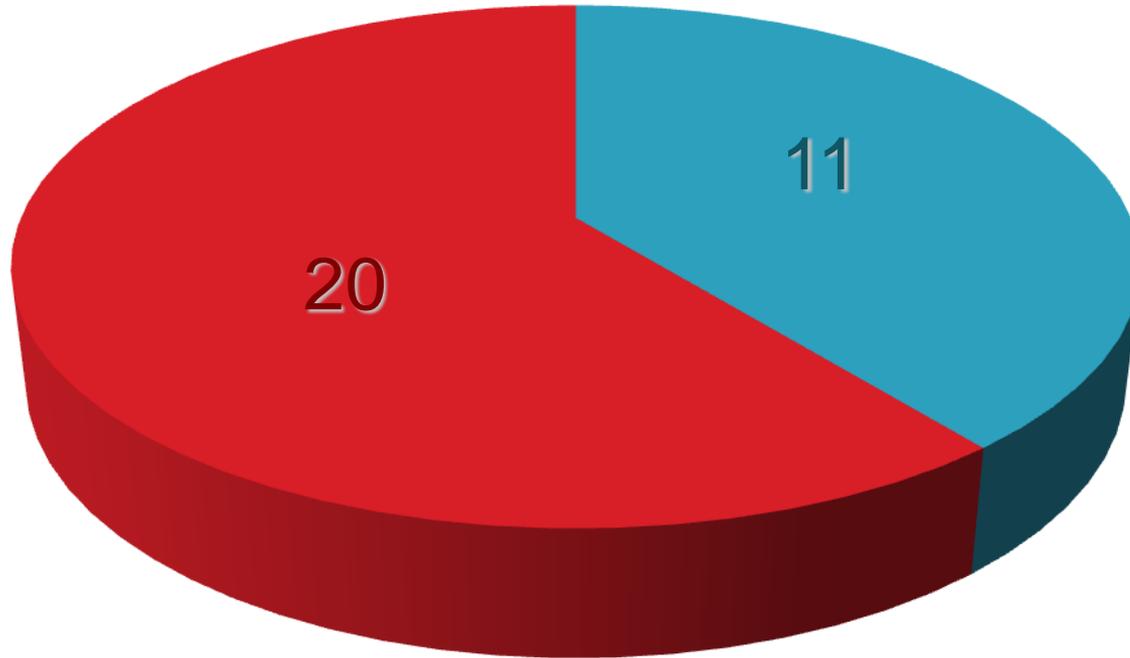


FASE 3

- Tactile stimulation
- Prono position



Results



20 of the 31 studies^{3,10,14,15,17-19,21-32,34} described a significantly benefit on weight gain in the PI group that received the TS/TKS

Correlations faster weight gain and TKS

- ✓ *Greater vagal stimulation*^{28,29}
- ✓ *Greater gastric activity*^{28,29}
- ✓ *More relaxed → Lower heart rates → Lower energy expenditure → Faster weight gain*
- ✓ *Some studies using only KS obtained results not only in greater weight gain but also in bone mineralization.*⁴⁵⁻⁴⁸

Analyzing the Technique

Older studies: did not specify

- ✓ Which parts of the body were stimulated or how often
- ✓ The pressure used during the intervention and its duration

Analyzing the Technique

- *White & Labarba* were the first to combine TS and KS
- In 1981, *Rausch* divided TKS into 3 phases of 5 min and applied TKS only when the PI were awake, without changing their position in the incubator
- *Scafidi et al* standardized the three 5 min phases into prone TS + supine KS + prone TS

Analyzing the Technique

- Some studies used some type of **oil** to reduce friction on the PI's skin^{14,17,33-35}
- *Ferber et al*¹⁵ suggested that during the **first 10s** of TS, the caregiver should **only rest his hand** on the PI, avoiding movements
- *Dieter et al*²⁷ was the first to provide **TKS for only 5 days**

Analyzing the Technique

- *Diego et al*²⁸ moderate pressure promoted better outcomes than the group who received light pressure
- Also, in another time, trained a few therapists and suggested that the technique was effective, regardless of therapist
- *Massaro et al*³¹ tested TKS and TS separately in different groups of infants and found that TKS appears to be better

Adverse Events

INTERRUPT THE PROCEDURE

- ✓ Stress or uninterrupted crying for more than 60 seconds²⁶
- ✓ Defecation¹⁴
- ✓ Increased heart rate >200 ^{19,27}
- ✓ Decrease heart rate <100 for 12s^{19,27}
- ✓ Oxygen Saturation level less than 90% for more than 30s¹⁹

Adverse Events

*Some authors considered some **signs in the 24 hours that preceded the intervention** to suspend the procedure*

- ✓ Fussing
- ✓ Vomiting
- ✓ Growing oxygen demand
- ✓ Frequent episodes of apnea
- ✓ Bradycardia
- ✓ Desaturation
- ✓ Interventions conducted within the 30min that preceded TKS, such as **sight and hearing tests**¹⁸

Analyzing the technique

Most of the studies **did not** provide a detailed description of **how to proceed** during the stimulation **if adverse events** occur, nor **which are** and **neither of the possible effects** of these events on the outcomes

Adverse Events

Exchange of
oximeter

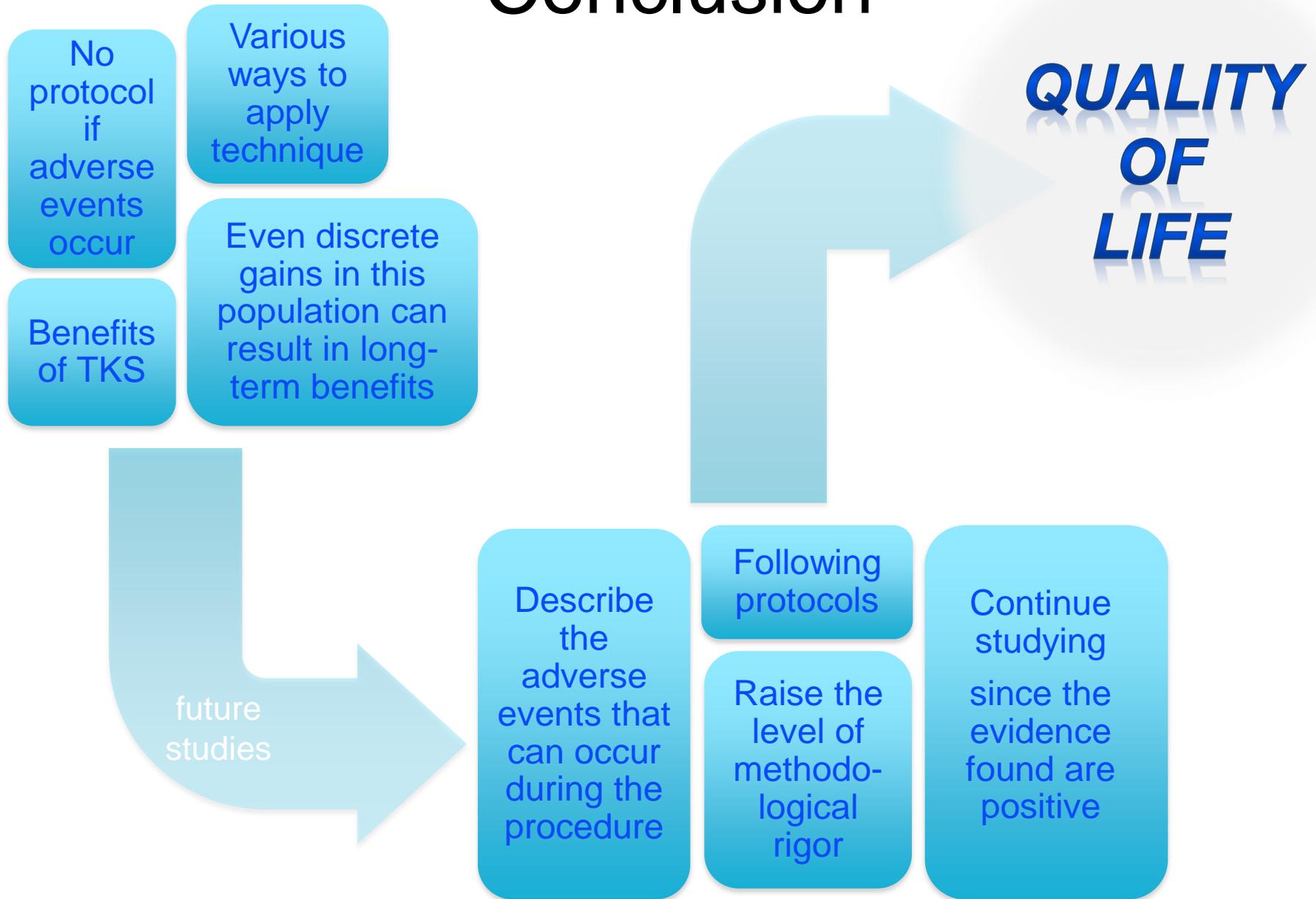
Use of
pacifiers

Routine
medical
examination
just before
the
procedure

Diaper

Some other
position to
calm the
baby

Conclusion





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