

Therapies Involving Touch for Pain in Children



CAM rarely studied in children

- SickKids Foundation has specific competition to seek knowledge in this area
- US pediatric health care providers refer 20-40% for CAM
- Generally acceptable to children (except poorly introduced acupuncture)
- More likely to be used in chronic populations
- 37-60% US Med schools offer CAM courses
- For pediatric referrals, 24% massage, 35% acupuncture

2002 Boston Survey

(McClellan, Highfield, Woolf, 2005)

- 74% response rate of pediatric practitioners attending general pediatric conference
- 42% would refer for TM & A
- Personal beliefs it most predictive
- No report of condition for referral

Manual Therapy for pain in children

- One RCT that had subjects under 20 (18 lower limit) (Hoving et al, 2002)
- MT, Physio, GP care
- 7 week followup success rates (completely or mostly improved on 6 pt Likert scale)
- 68.3% MT
- 50.8% PT
- 35.8% GP
- 0.9 and 1.5 change in pain scores

Acupuncture in Children with Chronic Pain

- One historical retrospective study on satisfaction with acupuncture (Kemper et al 2000)
- 47/50 children attending pain clinic at Boston Children's Hospital agreed to be interviewed
- Median age 17 years
- Migraine, endometriosis, RSD
- One reported worsening
- "Pleasant" and helpful
- Paid out of pocket

Cutaneous Stimulation

- Pretest-posttest in ED (Kubsch, Neveau, Vendertie, 2001)
- Decrease in pain rating 1.5/10
- Children not reported separately

Underlying Mechanisms

- Several 'acceptable' explanations
- Stimulation of large diameter nerves counters pain signals
- Release of endorphins
- Increased circulation

The comfort of Touch

Pictures of the year by NBC



David Gray / Reuters

Massage Therapy/ Gentle Human Touch



www.lajames.com/pages/massage.html

Massage Therapy/ Gentle Human Touch

- Promotes calming in infants (Scadifi, Field, Schanberg, 1993)
- Decreases pain in children with JRA (Field et al, 1997)
- Decreases pain in children with burns (Hernandes-Reif et al, 1991)

Kangaroo Care



Johnston, Stevens, Pinelli, Gibbins, Filion, Jack, Steele, Boyer & Veillieux, 2003.

Kangaroo Care

- Originated as alternative to isolette care in Columbia (*Rey & Martinez, 1979*)
- Diaper-clad infant held skin-to-skin on mother's bare chest, blanket swaddles both
- Increased frequency and duration of quiet sleep
- Infants who received KC as preterms, cried less at 6 months (*Whitelaw et al, 1988*)
- Used with fullterms (*Gray et al, 2000*) as potent means of decreasing crying, grimacing and heart rate change to heelstick



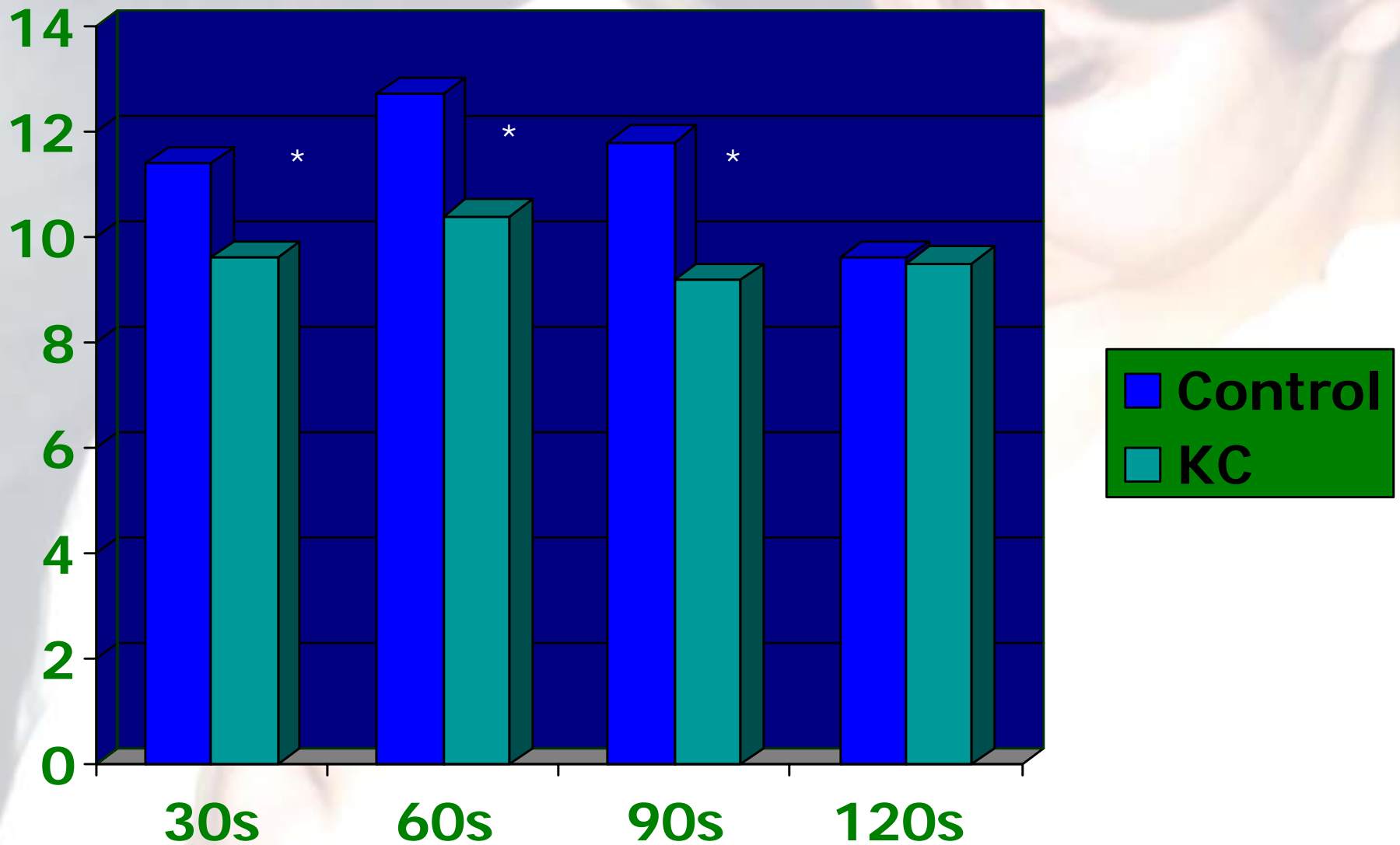
Kangaroo Care Is Effective in Diminishing Pain Response in Preterm Neonates

Johnston,C.C., Stevens,B., Pinelli,J., Gibbins,S., Filion,F., Jack,A., Steele,S.,

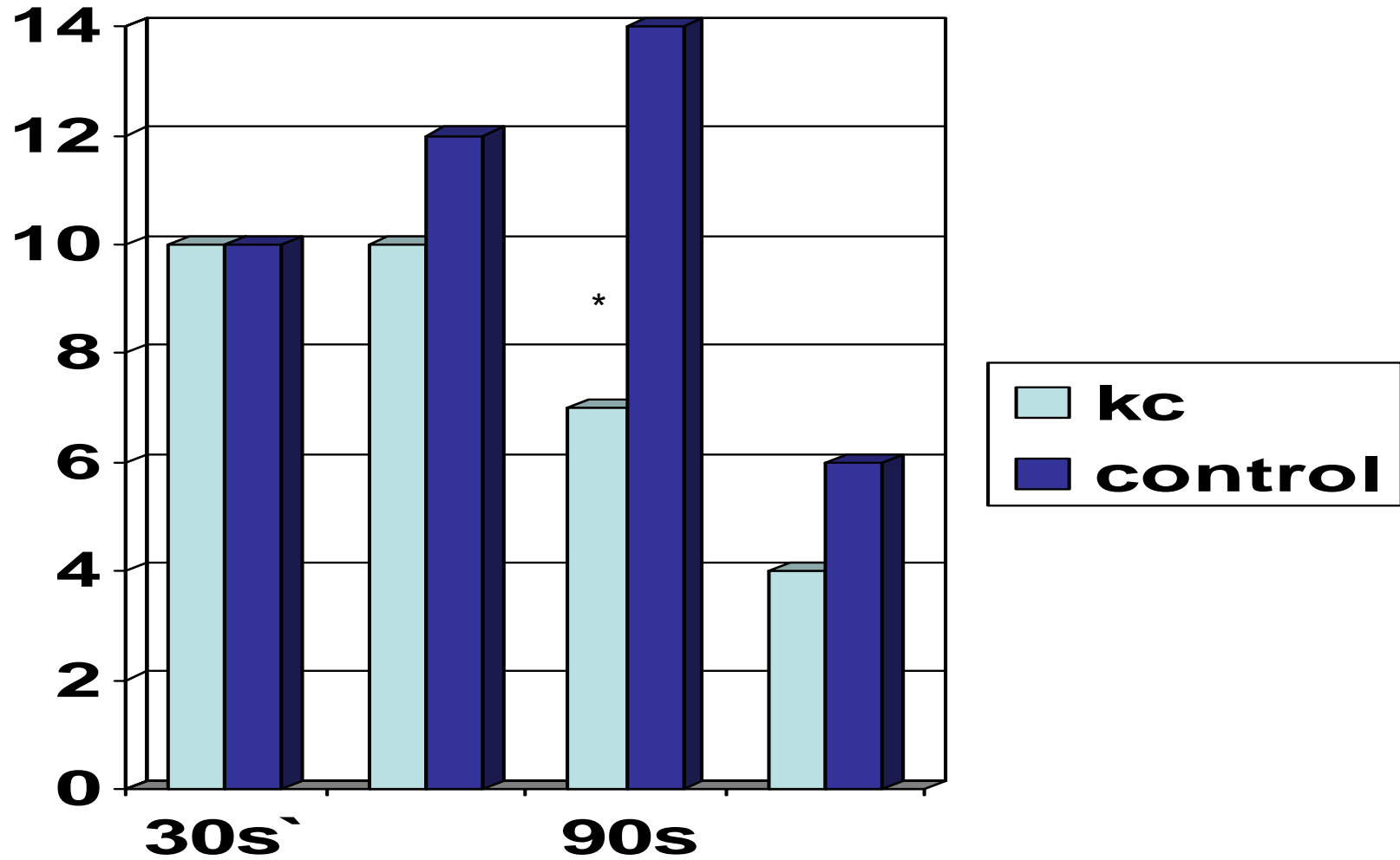
Boyer,K., Veilleux,A., *Arch Peds Adol Med*, 2003

- Sample: 32-36 weeks pca (n=80)
- Cross-over design
- KC x 30 minutes prior to heelstick
- or isolette
- PIPP

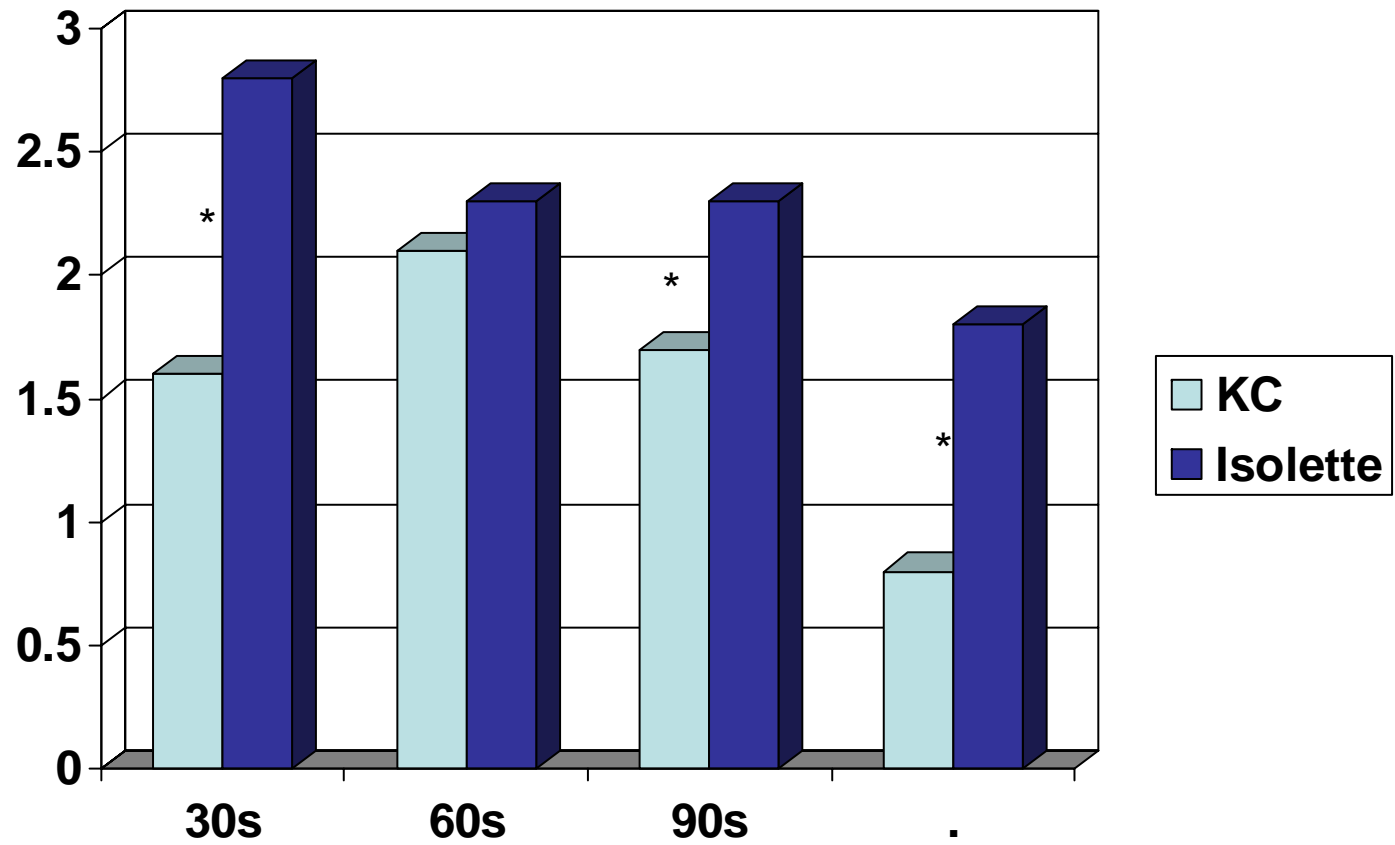
PIPP Scores for KC



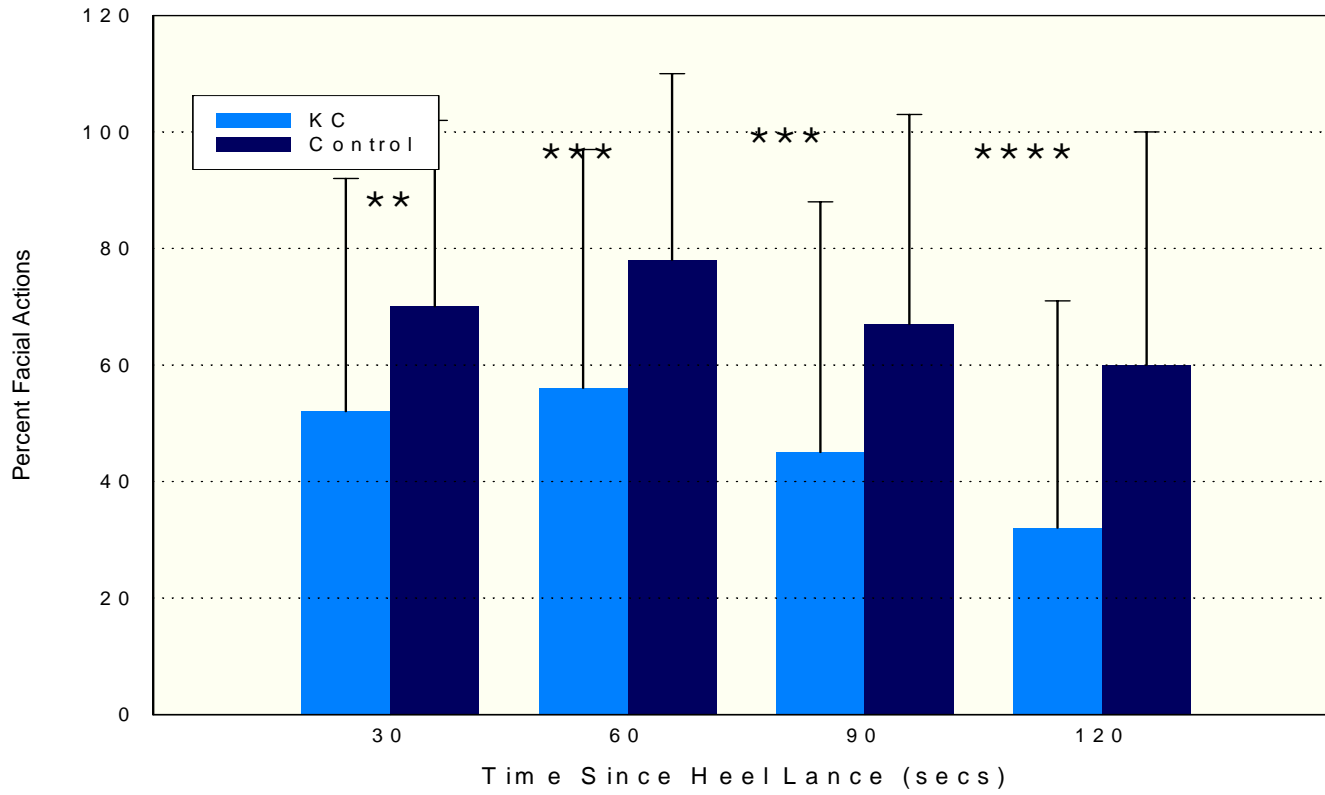
HR Range



O2 Sats Range



Kangaroo Care vs Control Facial Actions





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Further Studies on KC

- Ludington-Hoe et al, 2005
- Preterms
- Less crying
- lower heart rate
- Johnston et al, 2006
- Preterms 28-32 weeks
- More rapid return to baseline

Underlying Mechanisms

- *Beta-endorphins* triggered by physical contact (*Panksept, 1994*); yet *KC* decreases *B-e* (*Mooney, 1997*)
- *Oxytocin* promotes bonding and regulation (*Hofer, 1994*) and possibly potentiates endogenous opiate excretion (*Lund, 2002; Uvnas-Moberg, 1997*)
- *Oxytocin* spills into breastmilk (*Insel, 1997; Nelson & Panksepp, 1996, 1998*)
- Role of growth factor 2?



Therapeutic Touch

- Healing touch; Energy Medicine
- With or without actual contact
- Therapist uses hands to assess and rebalance energy field
- Two systematic reviews:
- 13/29 had positive results, 6 had mixed results, and 10 showed no differences (Winstead-Fry & Kijek, 1999)
- 7 studies on pain decrease, 1 when paired with reflexology and, 1 in which there was no change (Wardell & Weymouth, 2004)
- Negative results less likely to be published
- Quality of studies vary
- JAMA study 'debunked' TT (Rosa, Rosa et al 1998)
- Emotional response by health care professionals

TT for Pain in Children/Infants

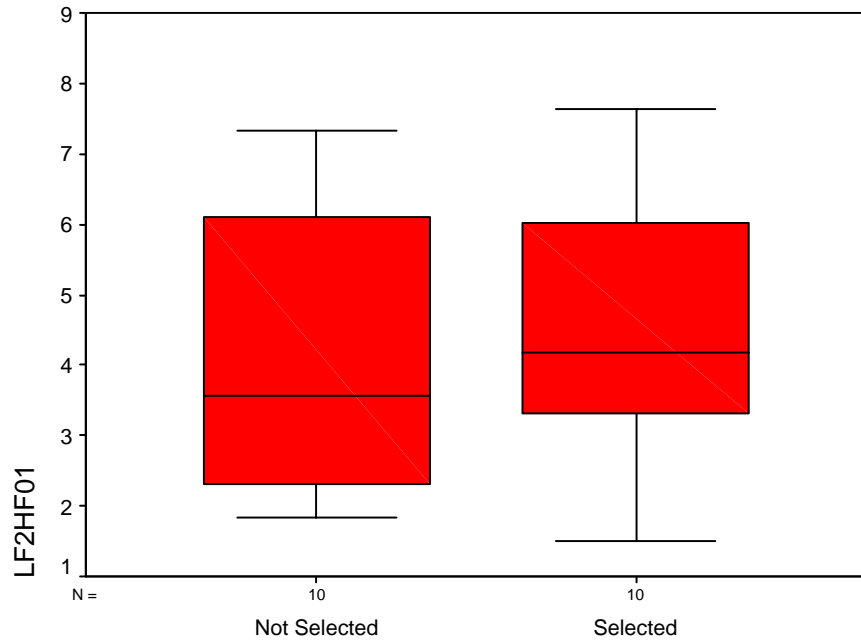
- All non-published theses, dissertations (1 in press)
- Decreased immunization pain in 3-6 year olds (no blinding)
- Did not decrease pain from injection in wide age range of infants >> only area of pain was targeted
- Did not calm, in fact made more agitated in mimc TT

Vagal Tone, Stress

- Blinded RCT infants < 29 weeks (Whitley, Rich, Pinelli, in press)
- TT vs presence at bedside 3 consecutive days
- Physiological stability measured by vagal tone as primary outcome
- Heart rate spectroscopy examining low (SNS) and high (PNS) frequencies

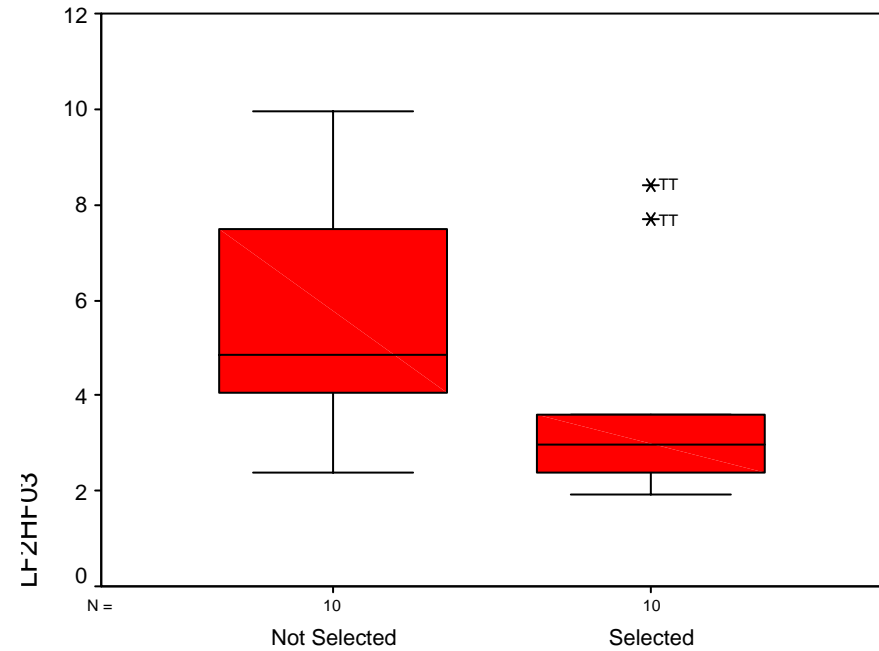


Low-to-High Frequency Ratio Day 1



group = 1 (FILTER)

Pre Intervention



group = 1 (FILTER)

Post Intervention

Results

- Ratio of low-to-high frequency bandwidths reflect sympathetic-parasympathetic balance
- As infants develop, the ratio decreases, reflecting ANS maturity with SNS/PNS equalization.
- Salivary cortisol levels lower
- TT 0.00 to 1.76 (mean .28, SD .29)
- NTT .03 to 2.95 (mean .44, SD .41) $p < .001$

Mechanism?

- Electromagnetic energy?
 - SQUID can measure it (Oshman, 2002)
 - “Healers” hands have 3000 fold level higher levels (Seto et al, 1992)
 - No studies attempted to measure it *during* TT
- Beneficence?
 - Can be done at a distance?

Open field for study

- Almost no research
- Strong beliefs
- Potential benefits
- Probably less harm

Thanks! Merci!

