



## Several factors may predict which premature infants will gain weight following massage therapy

**CITATION:** Scafidi, F. A., Field, T., & Schanberg, S. M. (1993). Factors that predict which preterm infants benefit most from massage therapy. *Developmental and Behavioral Pediatrics*, 14 (3), 176–180.

**LEVEL OF EVIDENCE:** IA1a

### RESEARCH OBJECTIVE/QUESTION

To identify infant and clinical characteristics that would predict maximal weight gain in preterm infants who receive massage therapy and those in a control group.

### DESIGN

X	RCT		Single Case		Case Control
	Cohort		Before-After		Cross Sectional

Infants were randomly assigned to either a treatment or a control group. Random stratification was based on gestational age, birth weight, duration of NICU care, and entry weight into the study.

### SAMPLING PROCEDURE

	Random		Consecutive
X	Controlled		Convenience

### SAMPLE

N=93	M age=30 weeks gestational age	Male Treatment Group=23 Control Group=17	Ethnicity= Hispanic=18; Black=61; White = 14	Female Treatment Group=27 Control Group=26
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### PARTICIPANT CHARACTERISTICS

Random stratification was based on gestational age, birth weight, duration of NICU care, and entry weight into the study.

Inclusion criteria included gestational age between 26 and 36 weeks; birth weight between 800 and 1,550 grams; absence of chromosomal aberrations, major congenital malformations, Grades II and IV intraventricular hemorrhages, documented congenital infections chronic lung disease, necrotizing enterocolitis, and central nervous system infections such as herpes encephalitis and meningitis; a neonatal intensive care (NICU) duration of <60 days; and entry weight into the study between 1,000 and 1,500 grams. Infants of substance abusing mothers were not eligible for the study. All infants were considered medically stable, were free from ventilatory assistance, and were not receiving intravenous feedings or medications.

**MEDICAL DIAGNOSIS/CLINICAL DISORDER**

Prematurity

**OT TREATMENT DIAGNOSIS**

N/A

**OUTCOMES**

Weight Gain

Measures	Reliability	Validity
Daily clinical measures	NR	NR

NR=Not reported

**Outcome—OT terminology**

N/A

**Outcome—ICIDH-2 terminology**

N/A

**INTERVENTION**

**Description**

- Both groups received standard medical and nursing care, including daily physical examination by a physician; feeding by a nurse, nursing assistant, or volunteer; and bathing.
- The massage group had sessions of three standard 15-minute phases. The first and third massage sessions provided tactile stimulation, and the second provided kinesthetic stimulation. The tactile phases were conducted in prone; firm touch was used over specific regions of the body in a specific order. For the kinesthetic phase, the infants were supine and were moved passively through flexion and extension of the arms and legs in a specific order.

**Who delivered**

A “therapist” (not specific)

**Setting**

Hospital, intermediate care unit

**Frequency**

Three 15-minute periods at the beginning of 3 consecutive hours

**Duration**

10 days

**Follow-up**

Not reported

**RESULTS**

- The treatment group averaged a greater daily weight gain ( $M=32$  grams) than did the control group ( $M=29$  grams) ( $F [1,90]= 6.42, p < .01$ ). However, some of the treatment infants gained less weight than expected.
- To determine which factors predicted weight gain, the infants were divided into two groups: high and low weight gainers. To determine the differentiating characteristics of high and low weight gainers,  $t$  tests were performed on obstetric, perinatal, and clinical variables.
- For the control group, the high weight gainers consumed more calories before and during the study and had fewer obstetric complications, spent fewer days in the intermediate care nursery before the study, and received better orientation scores on the Neonatal Behavior Assessment Scale than the low weight gainers.
- The high weight gainers in the treatment group had a greater number of obstetric complications, were younger gestational ages, spent more time in the intermediate care nursery before the study, and consumed more calories before and during the study than the low weight gainers.
- To determine which variables significantly related to daily weight gain, separate partial correlation analyses were conducted. For the treatment group, the following variables related to greater weight gain: more obstetric complications ( $r = .05$ ), more formula intake before the study ( $r = .001$ ), and more days in intermediate care before the study began ( $r = .04$ ). For the control group the following variables were related to greater weight gain: fewer days of intermediate care ( $r = .03$ ) and greater caloric intake before the study ( $r = .001$ ).

**CONCLUSIONS**

Preterm infants who receive massage therapy during intermediate care gain more weight than those infants who do not receive massage therapy.

1. Not all infants who receive massage therapy gain weight.

2. Infants who consumed more formula before the study period, who had more obstetric complications, and had longer stays in the intermediate care nursery responded best to massage therapy.
3. Massaged infants with more problematic obstetric and perinatal histories do as well or better than healthier preterm infants who do not receive massage.

## LIMITATIONS

- Subjects only from 1 NICU.
  - Cohort of sample was not specified.
  - Sudden Infant Death Syndrome (SIDS) protocol has changed views on prone positioning since the study was conducted.
  - Predominately female, Black sample.
  - Amount of tactile pressure was not clear; reliability issue.
  - Latency effects of intervention were not measured (CNS compromise).
  - Two people provided intervention; reliability was not reported.
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- Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.

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