

## Best Evidence Statement (BESt)

### Date published/posted

May 8, 2009

### Topic and/or question as originally asked: “In youth with Cystic Fibrosis ages 8 to 18 years, what is the effect of massage therapy on improving quality of life?”

### Clinical Question

P (population/problem)	In youth with Cystic Fibrosis (CF) ages 8 to 18 years
I (intervention)	what is the effect of massage therapy
C (comparison)	(none)
O (outcome)	on improving Quality of Life (QOL)?

#### Definitions:

Massage therapy - hands on manipulation of the soft tissue of the body with the intent to produce therapeutic, physiologic effects and to promote health and well being.

Quality of life - defined as: a self-description of the individual's perceived health and well-being based on satisfaction with the individual's physical, mental, emotional, social and spiritual life experiences. Examples: pulmonary function, ease of breathing, energy, sleep, anxiety, mood, activities of daily living, pain

### Target Population

Youth ages 8 to 18 years with CF

### Recommendations

1. It is recommended that massage therapy be used in youth with CF based on findings outlined in the Table (*Hernandez-Reif 1999 [2a], Field 1998 [2b], Robertson 1984 [2b], Witt 1986 [4a], Lee 2009 [4b], McQueen 2003 poster abstract [4b], Beeken 1998 [4b]*).

**Note:** There is insufficient evidence to recommend any specific frequency, type, or duration of massage therapy over another. Higher-level evidence reported that parent-administered massage resulted in decreased child and parent anxiety with improved child mood and peak airflow (*Hernandez-Reif 1999 [2a]*) and decreased anxiety with improved breathing (*Field 1998 [2b]*). The remaining studies included adults with CF, asthma or other chronic lung disease. All but one (*Robertson 1984 [2b]*) reported positive findings related to the benefits of massage on improving quality of life (as defined above).

2. It is recommended that further research be done on the effects of massage therapy on improving quality of life in youth with CF (using a valid and reliable quality of life tool) (*Local Consensus [5]*).

**Table: Studies of Massage Therapy for Patients with Pulmonary Conditions**

Study	Type of Therapy	Provider	Subjects	Length of session	Frequency and duration of therapy	Results
<i>(Hernandez-Reif 1999 [2a])</i>	Swedish massage strokes	Parent	20 children ages 5 to 15 years with CF and their parents	20 minutes	Nightly for 30 consecutive days	Decreased child and parent anxiety Improved child mood and peak airflow
<i>(Field 1998 [2b])</i>	Swedish massage strokes	Parent	32 children with asthma ages 4 to 14 years	20 minutes	Nightly for 30 consecutive days	Lower anxiety Improved pulmonary function (FEV) Decreased salivary cortisol Improved attitude toward asthma
<i>(Robertson 1984 [2b])</i>	Connective tissue vs simple surface massage	Physio-therapist	10 adults with asthma	15 minutes	Once	No significant changes in FEV1
<i>(Witt 1986 [4a])</i>	Trager Psycho-physical Integration	Physical Therapist	12 adults with chronic lung disease	20 minutes	Four times over two weeks	Significant positive changes in FVC, respiratory rate and chest expansion ( $p < .05$ ) No significant changes in FEV1, FEV3 or subjective breathing. Reported feeling better with longer sleep, more energy and less shortness of breath
<i>(Lee 2009 [4b])</i>	Massage/soft tissue therapy combined with Physiotherapy (mobilization) techniques	Musculo-skeletal and massage physio-therapy service	105 adults with CF; 70 with acute exacerbation, 35 clinically stable	Up to 1 hour	Once	Overall significant reduction in pain ( $p < 0.001$ ) Acute group with significant improvement in ease of breathing ( $p < 0.001$ )
<i>(McQueen 2003 poster abstract [4b])</i>	Massage therapy and Physio-therapy	Massage/Physio-therapist	33 adults with CF	1 hour	Once	Subject report: more relaxed (72.7%); reduced muscle tightness (42.4%) and pain (9.1%); improved well being (51.5%); easier breathing (24.2%); improved airway clearance or chest expansion (21.2%), posture (11.5%) and sleep (6.1%)
<i>(Beeken 1998 [4b])</i>	Neuromuscular release massage therapy	Massage Therapist	5 adults with moderate chronic obstructive pulmonary disease	1 hour	Once/week for 24 weeks	Improved oxygen saturation and heart rate ( $p = .0001$ ) Increased time of breath hold ( $p = .0001$ ) Improved systolic BP Improved quality of life (daily diary analysis): more energy and muscle strength; decreased dyspnea; improved ADLs

ADLs = activities of daily living; BP = blood pressure; FEV = forced expiratory volume; FVC = forced vital capacity; FEV1 = forced expiratory volume in first second; FEV3 = forced expiratory volume in 3 seconds

## Discussion/summary of evidence

No studies used a valid and reliable quality of life tool to measure the effects of massage therapy on improving quality of life in youth or adults with CF or other chronic pulmonary conditions. However, several studies found potential benefits of massage on youth and adults with CF and other chronic pulmonary conditions as measured by quality of life indicators (see Definitions: Quality of Life), (*Hernandez-Reif 1999 [2a]*, *Field 1998 [2b]*, *Robertson 1984 [2b]*, *Witt 1986 [4a]*, *Lee 2009 [4b]*, *McQueen 2003 poster abstract [4b]*, *Beeken 1998 [4b]*).

Effects of massage therapy on key “quality of life” indicators measured with valid and reliable tools included decreased pain (*Lee 2009 [4b]*, *Zimmer 2009 Poster presentation [5]*), improved breathing and pulmonary function (*Hernandez-Reif 1999 [2a]*, *Field 1998 [2b]*, *Lee 2009 [4b]*, *McQueen 2003 poster abstract [4b]*), decreased anxiety (*Hernandez-Reif 1999 [2a]*, *Field 1998 [2b]*), and improved mood (*Hernandez-Reif 1999 [2a]*). The effects of massage therapy on “quality of life” or “well-being” were also described by subjective reporting of decreased pain, less restricted breathing and increased relaxation (*Kemper 2004 [5]*); decreased dyspnea, increased energy and muscle strength, and improved ability to perform activities of daily living (*Beeken 1998 [4b]*); and reduced muscle tightness, easier breathing, increased muscle strength and chest expansion, improved sleep, increased relaxation, and an overall feeling of improved well-being (*McQueen 2003 poster abstract [4b]*). One study described mild discomfort from deep tissue work (*Robertson 1984 [2b]*), with no significant changes in FEV1 in hospitalized adults with asthma who received a 15-minute connective tissue massage versus simple surface massage. Lack of changes in this study may be related to type and brevity of intervention and small sample size.

Massage protocols varied in length, frequency, types of massage (including massage-specific protocols and combination therapies), and who provided the massage. Massage-specific protocols included parent administered Swedish strokes (*Hernandez-Reif 1999 [2a]*, *Field 1998 [2b]*), connective tissue versus simple surface massage (*Robertson 1984 [2b]*), Trager Psychophysical Integration (*Witt 1986 [4a]*), and neuromuscular release therapy (*Beeken 1998 [4b]*). Combination therapies included massage and physiotherapy (*Lee 2009 [4b]*, *McQueen 2003 poster abstract [4b]*), and massage and healing touch or other body work (*Zimmer 2009 Poster presentation [5]*). Providers included parent (*Hernandez-Reif 1999 [2a]*, *Field 1998 [2b]*), massage therapist (*Beeken 1998 [4b]*, *Zimmer 2009 Poster presentation [5]*, *Kemper 2004 [5]*), massage therapist/physiotherapist (*Lee 2009 [4b]*, *McQueen 2003 poster abstract [4b]*), or physiotherapist/physical therapist (*Robertson 1984 [2b]*, *Witt 1986 [4a]*). In spite of these variabilities, massage therapy was consistently found to have positive effects on all but one (*Robertson 1984 [2b]*) of the sample groups. One study on massage and quality of life was eliminated due to poor design and analysis of data, making it difficult to determine true effects of the intervention (*Smith 1999 [4b]*). The outcomes of the remaining six studies and two expert opinions provided moderate support for the use of massage therapy for individuals with chronic pulmonary conditions, including CF. There were no studies with a valid and reliable quality of life tool. Therefore, there exists a need for further research on the effects of massage therapy on improving quality of life in youth with CF.

The grade for this body of evidence is **moderate**.

## Health Benefits, Side Effects and Risks

The potential benefits of massage therapy on individuals with CF and other chronic pulmonary conditions include: decreased pain, muscle tightness, and anxiety; improved mood, breathing, pulmonary function, muscle strength, sleep, relaxation, energy, ability to perform activities of daily living, and improved overall sense of well being. One study described mild discomfort from deep tissue work.

**References/citations** (evidence grade in [ ]; see Table of Evidence Levels following references)

**Note:** When using the electronic version of this document,  indicates a hyperlink to the PubMed abstract. A hyperlink following this symbol goes to the article PDF when the user is within the CCHMC network.

1. **Beeken, J. E.; Parks, D.; Cory, J.; and Montopoli, G.:** The effectiveness of neuromuscular release massage therapy in five individuals with chronic obstructive lung disease. *Clin Nurs Res*, 7(3): 309-25, 1998, [4b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
2. **Field, T.; Henteleff, T.; Hernandez-Reif, M.; Martinez, E.; Mavunda, K.; Kuhn, C.; and Schanberg, S.:** Children with asthma have improved pulmonary functions after massage therapy. *J Pediatr*, 132(5): 854-8, 1998, [2b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
3. **Hernandez-Reif, M.; Field, T.; Krasnegor, J.; Martinez, E.; Schwartzman, M.; and Mavunda, K.:** Children with cystic fibrosis benefit from massage therapy. *J Pediatr Psychol*, 24(2): 175-81, 1999, [2a] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
4. **Kemper, K.; McLellan, M.; and Highfield, E.:** Massage therapy and acupuncture for children with chronic pulmonary disease. *Clinical Pulmonary Medicine*, 11(4): 242-250, 2004, [5] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
5. **Lee, A.; Holdsworth, M.; Holland, A.; and Button, B.:** The immediate effect of musculoskeletal physiotherapy techniques and massage on pain and ease of breathing in adults with cystic fibrosis. *J Cyst Fibros*, 8(1): 79-81, 2009, [4b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
6. **Local Consensus:** During BESt development timeframe. [5] .
7. **McQueen, K. L.; Button, B. M.; and Heathcote, C. H.:** Massage and musculo-skeletal physiotherapy service for CF adults; Effects on chest mobility, posture, muscle tension, pain, ease of breathing and well-being. In *Pediatric Pulmonology 36(S25)*, 266-267, *Poster session abstracts, 2003 Cystic Fibrosis Conference*, Anaheim, California, 2003, [4b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
8. **Robertson, A.; Gilmore, K.; Frith, P. A.; and Antic, R.:** Effects of connective tissue massage in subacute asthma. *Medical Journal of Australia*: 52-53, 1984, [2b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
9. **Smith, M. C.; Stallings, M. A.; Mariner, S.; and Burrall, M.:** Benefits of massage therapy for hospitalized patients: a descriptive and qualitative evaluation. *Altern Ther Health Med*, 5(4): 64-71, 1999, [4b] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
10. **Witt, P. L., and MacKinnon, J.:** Trager Psychophysical Integration. A method to improve chest mobility of patients with chronic lung disease. *Physical Therapy*, 66(2): 214-217, 1986, [4a] [\\_\\_\\_\\_\\_](#)  [\\_\\_\\_\\_\\_](#).
11. **Zimmer, M.; Bogenschutz, L.; and Zink, K.:** Effect of massage therapy on pain in hospitalized pediatric cystic fibrosis patients. Presented at *North American Research Conference on Complementary and Integrative Medicine*, Minneapolis, MN, 2009,  [\\_\\_\\_\\_\\_](#).

Note: Full tables of evidence grading system available in separate document:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (abbreviated table below)

**Table of Evidence Levels** (see note above)

<i>Quality level</i>	<i>Definition</i>
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

**Table of Recommendation Strength** (see note above)

<i>Strength</i>	<i>Definition</i>
“Strongly recommended”	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
“Recommended”	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

---

**Dimensions:** In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.

1. Grade of the Body of Evidence (see note above)
2. Safety / Harm
3. Health benefit to patient (*direct benefit*)
4. Burden to patient of adherence to recommendation (*cost, hassle, discomfort, pain, motivation, ability to adhere, time*)
5. Cost-effectiveness to healthcare system (*balance of cost / savings of resources, staff time, and supplies based on published studies or onsite analysis*)
6. Directness (*the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]*)
7. Impact on morbidity/mortality or quality of life

---

## Supporting information

### Group/team members

Group Leader: Point of Care Scholar Group; Team Leader: Kate Zink, MSN, RN, LMT  
 Other group member: Barbie Giambra, MS, RN, CPNP

### Search strategy:

#### 1. DATABASES

OID MEDLINE

OID EBM Reviews - Cochrane DSR, ACP Journal Club, DARE, CCTR, CMR, HTA, NHSEED

EBM Reviews Full Text – Cochrane DSR, ACP Journal Club, and DARE

EBSCO medline, Biomedical Reference Collection, CINAHL, Nursing & Allied Health, Psychology and Behavioral Sciences, PsycINFO, PsycARTICLES, Cochrane Database of Systematic Reviews

PubMed Clinical Queries

NACHRI List serve

Inquiry regarding working with youth with Cystic Fibrosis. Are you providing massage therapy to youth with Cystic Fibrosis? If yes, what have you found regarding the effects of massage therapy in youth with Cystic Fibrosis, especially related to quality of life?

#### 2. SEARCH TERMS

MASSAGE AND CYSTIC FIBROSIS (AND QUALITY OF LIFE)

MASSAGE AND ASTHMA (AND QUALITY OF LIFE), MASSAGE AND LUNG AND QUALITY OF LIFE

#### 3. LIMITS AND FILTERS: None

Copies of this Best Evidence Statement (BEST) may be available online and may be distributed by any organization for the global purpose of improving child health outcomes. Website address: <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/best.htm>. Examples of approved uses of the BEST include the following:

- copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- hyperlinks to the CCHMC website may be placed on the organization's website;
- the BEST may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at [HPCEInfo@cchmc.org](mailto:HPCEInfo@cchmc.org) for any BEST adopted, adapted, implemented or hyperlinked by the organization is appreciated.

*Additionally for more information about CCHMC Best Evidence Statements and the development process, Center for Professional Excellence/Research and Evidence-based Practice office at [CPE-EBP-Group@chmcc.org](mailto:CPE-EBP-Group@chmcc.org)*

## Note

**This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.**

**Reviewed by** Clinical Effectiveness