

Olav Skille
 Munkegaten 12A
 3126 Tønsberg
 Norway

Low frequency sound massage therapy for people with lung diseases

Table 1.
 Dean's Hierarchy for Treatment of Patients With Impaired Oxygen Transport^a

Premise: Position of optimal physiological function is being upright and moving	
I. Mobilization and Exercise	Goal: To elicit an exercise stimulus that addresses one of the three effects on the various steps in the oxygen transport pathway, or some combination
	A. Acute effects B. Long-term effects C. Preventative effects
II. Body Positioning	Goal: To elicit a gravitational stimulus that simulates being upright and moving as much as possible (ie, active, active assisted, or passive)
	A. Hemodynamic effects related to fluid shifts B. Cardiopulmonary effects on ventilation and its distribution, perfusion, ventilation, and perfusion matching and gas exchange
III. Breathing Control Maneuvers	Goal: To augment alveolar ventilation, facilitate mucociliary transport, and stimulate coughing
	A. Coordinated breathing with activity and exercise B. Spontaneous eucapnic hyperventilation C. Maximal tidal breaths and movement in three dimensions D. Sustained maximal inspiration E. Pursed lip breathing to end-tidal expiration F. Incentive spirometry
IV. Coughing Maneuvers	Goal: To facilitate mucociliary clearance with the least effect on dynamic airway compression and adverse cardiovascular effects
	A. Active and spontaneous cough with closed glottis B. Active assist (self-supported or by other) C. Modified coughing interventions with open glottis (eg, forced expiratory technique, huff)
V. Relaxation and Energy Conservation Interventions	Goal: To minimize the work of breathing, of the heart, and oxygen demand overall
	A. Relaxation procedures at rest and during activity B. Energy conservation (ie, balance of activity to rest, performing activities in an energy-efficient manner, improved movement economy during activity) C. Pain control interventions
VI. ROM Exercises (Cardiopulmonary Indications)	Goal: To stimulate alveolar ventilation and alter its distribution
	A. Active B. Assisted active C. Passive
VII. Postural Drainage Positioning	Goal: To facilitate airway clearance using gravitational effects
	A. Bronchopulmonary segmental drainage positions
VIII. Manual Techniques	Goal: To facilitate airway clearance in conjunction with specific body positioning
	A. Autogenic drainage B. Manual percussion C. Shaking and vibration D. Deep breathing and coughing
IX. Suctioning	Goal: To facilitate the removal of airway secretions collected centrally
	A. Open suction system B. Closed suction system C. Tracheal tickle D. Instillation with saline E. Use of manual inflation bag (bagging)

^a Reprinted with permission from Dean.^{21(p228-230)} ROM=range of motion.

The table at left show intervention for optimal physiological functions for patients with reduced oxygen transport. The table includes manual therapeutic approaches (VIII A, B, and C & D). Vibration can also be obtained by use of single low frequency sound wave massage.

COPD has become a common disease as the use of this diagnostic term has become commonly used for some pulmonary diseases. (f. ex. Asthma, CF, MLD)

COPD is defined to be an obstructive pulmonary disease in which the patient has a progressive pulmonary obstruction with little or no significant reaction on therapy. Other findings include chronic bronchitis and pulmonary emphysema in varying degree depending of the patient. Chronic obstructive pulmonary disease (COPD). In: EBM Guidelines. Evidence-Based Medicine [CD-ROM]. Helsinki, Finland: Duodecim Medical Publications Ltd.; 2005 Mar 2

The therapy is mostly palliative. Use of bronchodilating medication and/or steroids are the most usual approaches... Physiotherapeutic supportive therapy is well known and can be used with good effect for short or long periods.. One can find literature describing palliative physiotherapy being available on a 24 hour basis in intensive care units for hospitalized lung patients. *Physical Therapy* Volume 80 · Number 7 · July 2000 Case Report Physical Therapy for a Patient in Acute Respiratory Failure *Wai Pong Wong*

Coughing and mucus production are the most known symptoms of pulmonary disease. Chest physiotherapy can increase transposition of secretions in the bronchies and reduce mucus deposits in the lungs. Increased life quality and positive changes

in the course of the illness are usually not used as result variables, but one should consider this in the future. Eur Respir J 1999; 13: 1477-1486 Copyright © ERS Journals Ltd 1999

Other studies show that traditional physiotherapy can increase the production of fluids in patients with COPD, but there is no improvement in lung functions.. Jones AP, and Rowe BH: Bronchopulmonary hygiene physical therapy for chronic obstructive pulmonary disease and bronchiectasis (Cochrane Review). Cochrane Library 1998; 3 : -

In the book *It Takes My Breath Away END-STAGE COPD: Part 2: Pharmacologic and Nonpharmacologic Management of Dyspnea and Other Symptoms* by CONSTANCE DAHLIN APRN, BC, PCM it is said “COPD is a progressive terminal illness with no cure. In end-stage disease, respiratory distress is the primary etiology of suffering. However, patients experience myriad secondary symptoms, including depression, anxiety, insomnia, and constipation, that the home care nurse can help alleviate. With proper support, these patients can receive care at home and avoid acute care settings. Nurses can advocate for patients in establishing a plan of care consistent with the patient’s values and beliefs that also promotes a peaceful death.....Music therapy can help patients reduce their respiration rates. Meditation, relaxation, and guided imagery may help reduce anxiety and again affect breathing. Vibration therapy can help patients with secretions and muscle tenseness. Nurses in the home can teach patients and families these techniques, and they can perform some relaxation techniques on visits (Warren et al., 2002). **Home Healthcare Nurse** April 2006 Vol. 24 Nr 4 Side-224

Use of low frequency sound wave therapy for treating ambulant patients with COPD is not commonly known neither in Norway nor abroad. From 1987 to 2006 Olav Skille has been treating 10 patients with severe pulmonary dysfunctions using Vibroacoustic Therapy (VAT). The effect of the therapy has been described anecdotically, based on the patients’ subjective experience og the effect of this therapy after therapy periods of varying length. Some patients have bought VAT equipment for home use – on a daily basis. The patients have asked for VAT after having heard of this therapeutic method. Some children in the pediatric ward in Sykehuset Levanger (a local hospital) did in the 1980 and –90’ies supportive therapy with VAT equipment provided by Olav Skille. (Reference: Dr. Sigurd Børsting). 3 children with Metachromatic Leucodystrophia (MLD) in Ullensaker community were given VAT daily with good results while they were in the day care unit. (Ref: Vidar Arnesen) One patient with pulmonary emphysema at Sonjatun Health Center were in 1984-85 given VAT by physiotherapist Arne Nilsen. After 6 months therapy she was dismissed as symptomless.

In June – August 2006 a study was conducted about the effect of VAT on COPD at the therapy center of GaiaCare AS in Tønsberg, Norway. 4 COPD diagnosed patients received 10 therapy sessions each. There was written a logg over the patients’ subjective experiences on the primary symptom (COPD) and the secondary symptoms (see above) if such symptoms were present. The team recorded positive changes in the primary symptoms – in varying degree -in all patients already after the first therapy session (23 minutes) As the number of therapy sessions increased, the secondary problems were considerably reduced in all patients. Systolic and diastolic blood pressure and pulse were routinely logged at the beginning and end og each therapy session. The study was a part of a research project in which 17 volunteers with different symptoms (digestive problems, neck- sholulder pains, low back pains, headache/migraine and lung problems) participated,- totalling 170 therapy sessions.

After 10 therapy sessions there were considerable improvement in 100% of the COPD patients. (An article in the local paper is attached)

VibroAcoustic therapy (VAT)

Most of us have every-day issues which are reducing our life quality. When our ailments become too bothersome, we seek help from our physician in order to get medical help. Even with good and adequate medication it can happen that we are not able to keep the discomfort at bay. Our body still is complaining. Vibroacoustic Therapy (VAT) – Low Frequency Sound Wave Massage – can reduce this pain and discomfort and enhance life quality considerably. We usually believe that all sound is perceived by the ear. Most of us are little aware of the fact that we can receive sound via the whole body – but we usually perceive sound transferred directly to the body as being vibrations. Very often body-perceived vibrations are associated with harmful noise,- but VAT is developed in order to give the body full benefit of the positive effect of controlled use of low frequency sound waves.

The auditive function of the foetus is beginning to develop already 45 days after conception. But before this the developing zygote has received vibrations (or sound) via the amniotic fluid. These vibrations are influencing all of the foetus' surface area – or skin surface. Vibrations are one of the properties of life – and are a necessary prerequisite for development of all life. Without vibrations the foetus would not develop healthily.

Adult individuals are also surrounded by sounds and vibrations. All our verbal concepts about sound are irrevocably associated with binaural perception of sound. We do not have language concepts describing the positive effects of low frequency sound ,- Just as we do not have concepts describing the positive effect of sound vibration on the unborn child.

The adult body has not forgotten the positive effect of the life-developing sound vibrations in the uterus. The memories remain in us on a cellular level – but we are not conscious of these memories. Evoking these memories can contribute to re-establish the harmonic state of a developing human being. VAT is re-creating the positive vibrational environment in the amniotic fluid – in order to enhance the self-repairing systems in our body and brain. The body yearns for the life-giving sound massage.

We have developed a controlled method of transferring such method directly to the whole body, or we can give local sound massage. Our bodies consist mainly of water, and can be compared with a water-filled sack. Sound transferred to any single point will be transferred by the watery substances to any part of the body – and will virtually massage every cell in the body – including the brain - when we apply sound along the spine.

A suffering body is giving signals that some thing is not as it ought to be – and it remembers that it can obtain relief in this recreation of life-giving cell-massaging sound environment.

VAT and medical therapy

VAT is poison free and does not use foreign substances. The sound stimuli which are used are increasing the production of stress hormones (beta-endorphine, ACTH and cortisol) in the body. The primary effect of VAT is that it adds mechanical stress to our organism,- just as we add stress to our body when we are jogging. Afterwards we experience relaxation and well-being. When we experience VAT stress, the brain starts producing stress hormones, and we reach the stress-hormone peak after about 15 minutes. At the same time the body feels the positive effect of the gentle, all-encompassing sound massage which unconsciously is interpreted as calming and relaxing. The positive , “silent jogging” effect of VAT can give positive effect on persons who are sitting in a wheelchair, are lying in bed, or are

understimulated physically or neurologically. It can give them a positive hormonal substitute for physical exercise.

VAT is a positive "add-on" for any other therapy we use – it does not matter if it is medicines, physiotherapy, chiropractic, acupuncture or other alternative therapies. The Estonian physician, Professor Saima Tamm, described VAT as being an adaptogenous therapy which has an effect which adapts itself to the needs of the patient. The body listens for signals which are needed in order to obtain full harmony, and start processes in the body which eventually will satisfy the signalled needs.

What is VAT doing with us?

We are being massaged by low frequency (low/deep) sound waves which are felt as vibrations. The vibrations can also be heard. The sound waves are so long that they penetrate all body tissue – and the body absorbs about 2 % of the energy which enters the body. (Forsvarets materialverk, Stockholm. FMV:ELEKTRO A12:142/83. Infrasound – a summary of interesting articles. 1985-06-06, Page 33) The effect can be described in a few main points – and all conditions which respond positively on VAT therapy will come from one or more of these points.

- Skin surface massage and deep tissue massage.
- Changing the viscosity of phlegm in lungs.
- Deep massage of intestines.
- Effect on smooth and striped muscles.
- Analgesia
- Stimulating blood circulation.
- Has a positive effect on systolic and diastolic blood pressure.
- Has a marked effect on stress-hormone levels (Cortisol, Beta-endorphine and ACTH)
- Marked effect on the vegetative nervous system..
- General stimulation of the pressure-receptors in the body have a stimulating effect on then CNS.

The effect on COPD, Cystic fibrosis or Asthma can be explained by the effect the vibrations are having on the viscosity of the phlegm in the bronchies and lungs – and the spasmolytic effect is reducing bronchospasms .. Correct choice of frequency may also stimulate the cough reflex. VAT can have the same physiologic effect as heat treatment and physical massage, but the vibration effect is even, smooth and lasts for 23 minutes.

NB: VAT-VISIC has an immediate pleasurable effect, but some effects can appear several hours, often days , after the therapy session. Repeated therapy sessions will increase the cumulative effect of the therapy series.

Afterword

It is necessary to find a cooperative environment which can find cross-professional partners who could carry out controlled trials on the effects described above,- both in clinical and non-clinical settings.

Such an approach would probably arrive at working methods which could be suitable both for therapy in different clinics, or for home-based therapy.

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Olav Skille (olav@skille.org)